

Integrated Water Management Plan

Summitcare Penrith

Prepared for The Trustee for Peter Wohl Family Trust & Trustee for Wohlrén Family Trust c/o Centurion
Project Management / 10 July 2024

211227

Contents

1.0	Introduction	3
1.1	Reference Documents	3
2.0	Relevant SEARs.....	3
3.0	Site Location	4
4.0	Stormwater Management.....	4
4.1	Stormwater Quantity	5
4.1.1	Discharge Points	5
4.1.2	DRAINS Modelling	5
4.2	Stormwater Quality	7
4.2.1	Rainwater Tank and Rainwater Reuse.....	8
4.2.2	MUSIC Modelling	8
4.2.3	Treatment Train Effectiveness	8
4.3	Erosion and Sediment Control	9
4.3.1	Strategies.....	9
4.3.2	Proposed Measures	9
4.3.3	Installation of Measures.....	9
4.3.4	Land Disturbance	10
5.0	Conclusion	11
	Appendix A	12
	Appendix B	13
	Appendix C	17
	Appendix D	18

1.0 Introduction

Taylor Thomson Whitting Pty Ltd (NSW) (TTW) have been engaged by The Trustee for Peter Wohl Family Trust & Trustee for Wohlrén Family Trust c/o Centurion Project Management to prepare an Integrated Water Management Plan to support the State Significant Development Application (SSDA) for the proposed development of Summitcare Penrith at 366 Jamison Road, Jamisontown NSW 2750.

1.1 Reference Documents

The following documents have been reviewed in preparing this report:

- Penrith Development Control Plan 2014 (DCP)
- Penrith City Council Stormwater Drainage Guidelines for Building Developments 2016
- Penrith City Council WSUD Technical Guidelines

2.0 Relevant SEARs

This IWMP addresses the following relevant Secretary's Environmental Assessment Requirements (SEARs) SSD-68603709 set out in Table 1.

Table 1: Relevant Secretary's Environmental Assessment Requirements

SEARs	Location in Report
14. Water Management	
▪ Provide an Integrated Water Management Plan for the development that: ○ Is prepared in consultation with the local council and any other relevant drainage or water authority	Penrith Council have been consulted regarding the stormwater requirements for the site. Refer Appendix D
○ Outlines the water-related servicing infrastructure required by the development (informed by the anticipated annual and ultimate increase in servicing demand) and evaluates opportunities to reduce water demand (such as recycled water provision).	Refer to report by Hydraulic consultant
○ Details the proposed drainage design (stormwater and wastewater) for the site including any on-site treatment, reuse and detention facilities, water quality management measures, and nominated discharge points.	Refer to Section 4.0
○ Demonstrates compliance with the local council or other drainage or water authority requirements and avoids adverse downstream impacts.	Refer to Section 4.0
▪ Where water and drainage infrastructure works are required that would be handed over to the local council, or other drainage or water authority, provide full hydraulic details and detailed plans and specification of proposed works that have been prepared in consultation with, and comply with the relevant standards, the local council or other drainage or water authority.	Detailed plans have been prepared. Refer to Appendix A.

3.0 Site Location

The development is located at 366 Jamison Road, Jamisontown and belongs to Lot 10 of Deposited Plan (DP) 804382. The Summitcare Penrith residential aged care facility (RACF) is currently in operation at this site. The site is bound by Jamison Road to the north, McNaughton Street to the east, residential lots to the south and Harris St to the west, as shown in Figure 1. The site is approximately 11,100m² in area.



Figure 1: Site Location

4.0 Stormwater Management

The following stormwater management strategy has been developed to address the requirements as stipulated in the Penrith DCP 2014 and as shown in Figure 2.

Land Use	Development Type	Water Conservation 5(a)	Stormwater Quality 5(b)	Water Quantity Flow 5(c)
Residential	Alterations and additions, detached dwellings and residential land uses not addressed below	√ - BASIX	No	No
	New single dwellings and dual occupancy	√ - BASIX	No	No
	Existing residential villas, flats and townhouses with additional impervious area greater than 250m ²	√ - BASIX	No	No
	Residential development of 5 or more dwellings including multi dwelling housing, residential housing, residential flat buildings and mixed use development	√ - BASIX	√	√

Figure 2: Extract from Table C3.1 of Penrith DCP

Council was also consulted to confirm the stormwater management requirements for the site. Council correspondence is provided in Appendix D.

4.1 Stormwater Quantity

Penrith City Council's Stormwater Drainage Policy stipulates that for development sites greater than 5000 m² in area, specific site analysis using a computer model must be undertaken. The model must demonstrate that there will be no increase in runoff from the site as a result of the development under all durations, for all the storms up to and including the 1% AEP event.

Additionally, Council's Stormwater Drainage Policy stipulates that the maximum discharge to the kerb at any single point shall be 25 L/s for the 10% AEP storm events.

4.1.1 Discharge Points

Due to the topography, size of the site and frontage on three streets, several points of stormwater discharge have been proposed.

A total of five (5) stormwater discharge points have been nominated. These consist of three (3) direct connections to Council's inground drainage network (one connection to discharge the building catchment via the on-site detention (OSD) tank, one connection to discharge the landscaping to the north and one connection to discharge the landscaping to the south) and two (2) points of discharge to the kerb (one on Harris Street and one on McNaughton Street). The catchments to each nominated discharge point are shown in the Civil Drawings in Appendix A.

4.1.2 DRAINS Modelling

A DRAINS model was used to assess the proposed development stormwater and whether there was any impact to Council's existing drainage system.

An OSD tank is proposed to capture the building roof catchment, which makes up the majority of the site. The OSD tank will mitigate flows up to and including the 1% AEP events to ensure no inundation of the downstream

Council drainage system and to ensure no increase in total runoff from the site as a result of the development. DRAINS modelling has determined that an OSD tank with 40m³ of volume and two orifices of 400mm and 240mm in diameter would be sufficient. The smaller 240mm orifice at the base of the tank mitigates flows during minor storm events while the 400mm orifice, situated higher in the tank, provides additional capacity to discharge stormwater during major storm events. The tank is proposed to be located beneath the driveway, close to the discharge point along Harris St.

The tailwater levels for the 1% AEP storm event were obtained from flood modelling conducted by TTW and based on Council's flood model. For smaller events, tailwater levels followed the recommendations in Council's Stormwater Drainage Policy.

The DRAINS schematic is shown in Figure 3. A catchment plan is included in Appendix A.

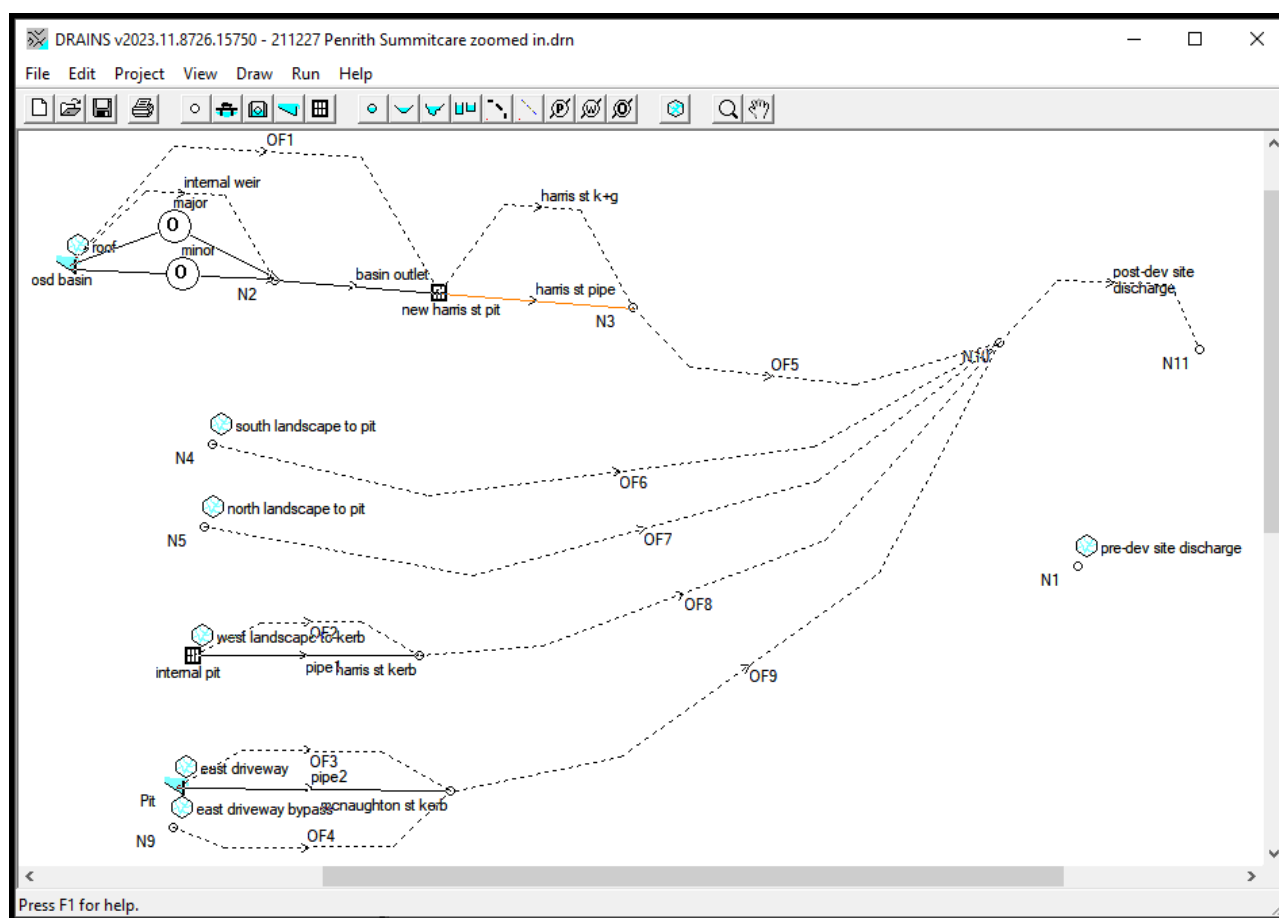


Figure 3: DRAINS Schematic

The DRAINS results have been provided in Appendix B and are summarised in Table 2 below. As shown, the total post development flows are less than pre-development flows for all storm events up to and including the 1% AEP storm event. As such, the development is compliant with Council's requirements.

Table 2: DRAINS Results

Storm Event (AEP)	Pre-Development Peak Discharge (L/s)	Post-Development Peak Discharge (L/s)
1 EY	155	151
20% AEP	296	295
10% AEP	390	374
5% AEP	471	462
2% AEP	580	567
1% AEP	683	638

DRAINS modelling was conducted to demonstrate that both points of discharge to the kerb are limited to 25 L/s for the 10% AEP storm events. Flow from the eastern driveway which is proposed to drain to the kerb is detained with a 105mm orifice plate and approximately 1m³ of above ground detention volume provided within the landscaping. DRAINS results for kerb connections to Harris St and McNaughton St during the 10% AEP storm events are shown in Figure 4. The peak discharge to the kerb on Harris St for the 10% AEP storm events is 11 L/s. The peak discharge to the kerb on Mc Naughton St during the 10% AEP storm events is 25 L/s. As such, these kerb connections comply with Council's requirements.

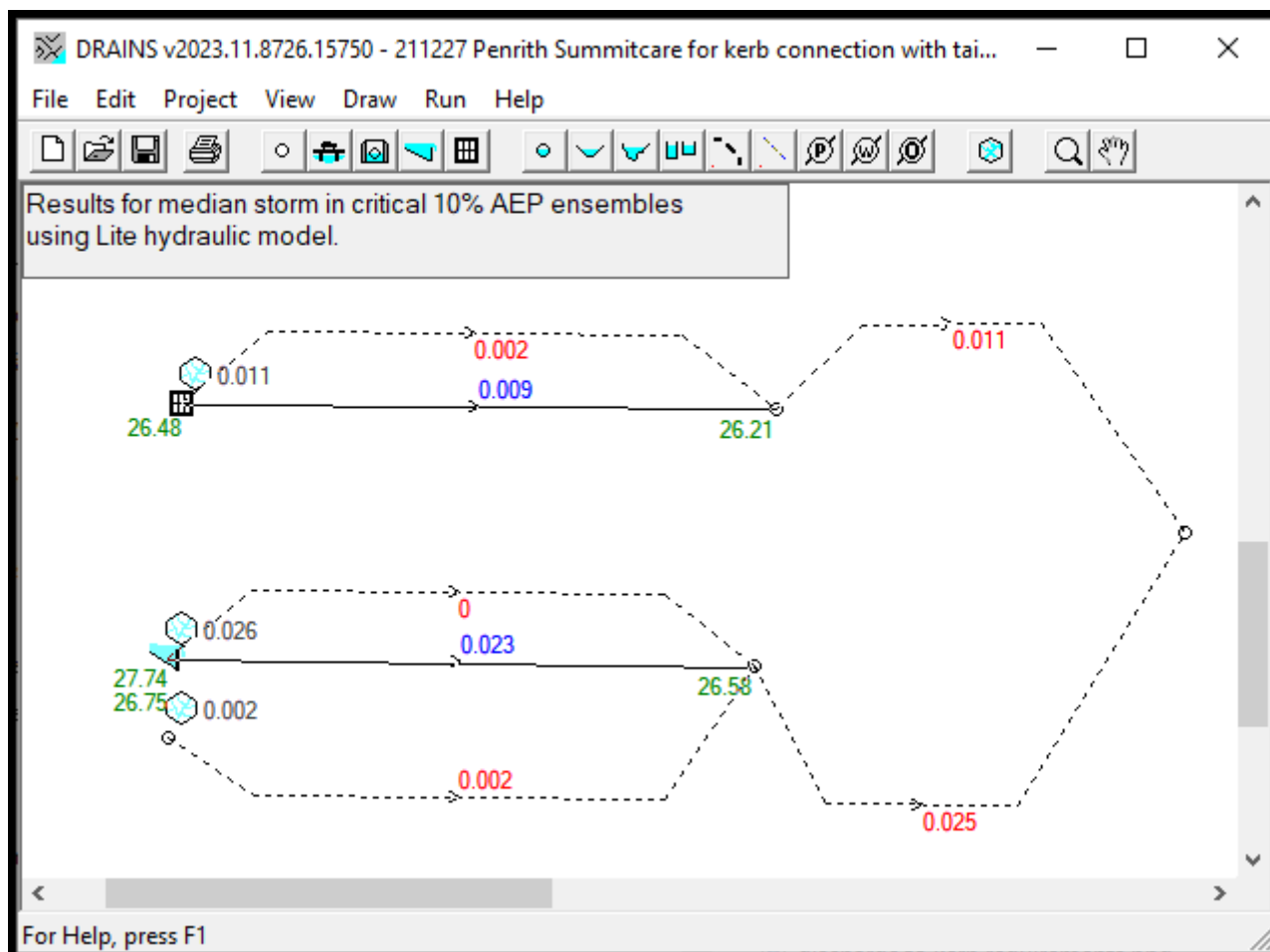


Figure 4: Peak discharge to kerb on Harris St (top) and McNaughton St (bottom) for 10% AEP ensembles

4.2 Stormwater Quality

Table C3.1 of the Penrith Council DCP stipulates that stormwater quality treatment is required to reduce pollutant loads in site discharge. Stormwater quality requirements have been specified in Table 3.

A treatment train consisting of a combination of proprietary stormwater quality devices, swales and a rainwater tank are proposed to manage various catchments of the development.

The roof catchment will be treated by the rainwater tank and OceanProtect Stormfilter cartridges. The majority of the eastern driveway will be treated by a filter basket, with the remainder bypassing any treatment devices. The northern landscaping catchment is to be treated by filter baskets and OceanProtect Stormfilters. The southern landscaping catchment is to be treated using swales and filter baskets. The western landscaping catchment is to be treated by a filter basket. Further, given that there are trafficked areas, it is proposed that an oil arrestor baffle is installed as part of the OSD tank to capture any free oils and grease from runoff within the western driveway and basement as required. A catchment plan is included in the Civil Drawings in Appendix A.

4.2.1 Rainwater Tank and Rainwater Reuse

The entirety of the roof catchment will discharge to a 200kL rainwater tank located in the basement. Rainwater will be utilised for irrigation reuse on site. The rainwater tank will provide significant reductions to pollutant loads in site discharge and will reduce potable water use. During larger storm events, or when the rainwater tank is full, the tank will overflow to the Stormfilter chamber of the proposed onsite detention tank.

4.2.2 MUSIC Modelling

A water quality analysis of the proposed development was undertaken using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) software. Through MUSIC modelling, it has been determined that a total of eleven (11) 690mm Psorb Stormfilter Cartridges, five (5) OceanGuard filter baskets, a 200kL rainwater tank and landscaped swales are sufficient to meet Council requirements. The proposed treatment train is shown in Figure 5.

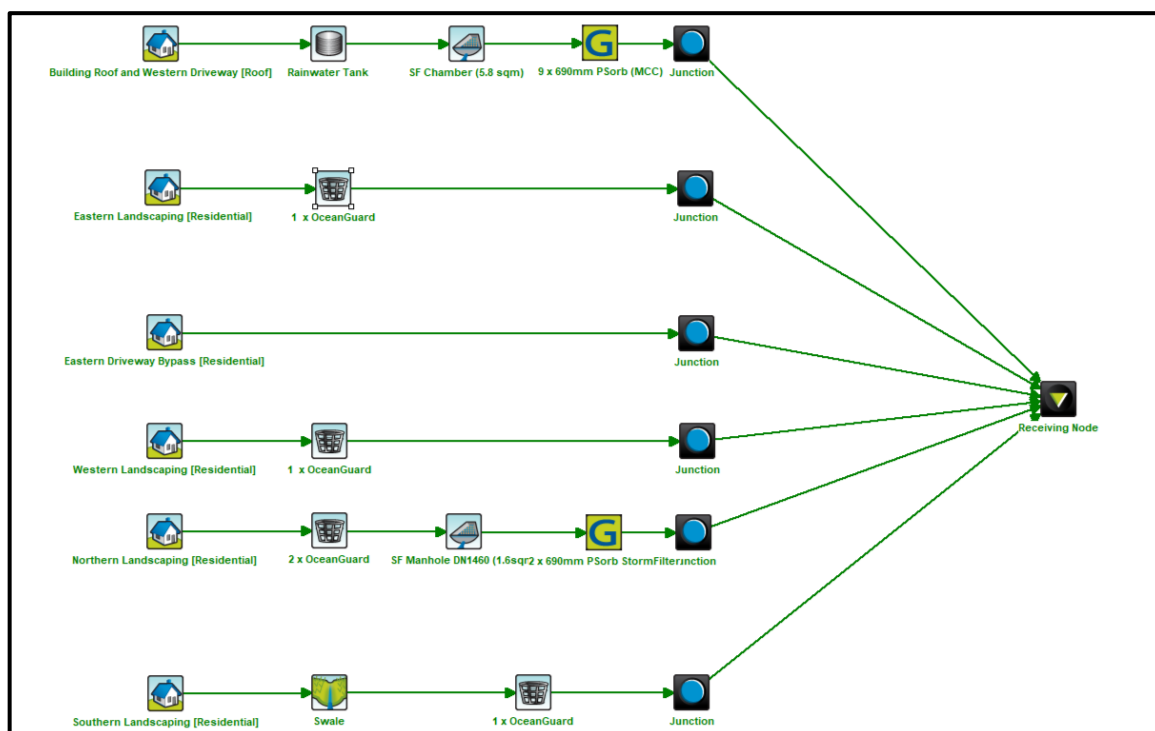


Figure 5: MUSIC Schematic

4.2.3 Treatment Train Effectiveness

The MUSIC modelled reduction in pollutant loads have been summarised in Table 3.

Table 3: MUSIC Pollutant Load Reductions

Pollutant	Target Reduction	Modelled Reduction
Gross Pollutants (GP)	90%	99.4%
Total Suspended Solids (TSS)	85%	87.6%
Total Phosphorus (TP)	65%	66.7%
Total Nitrogen (TN)	45%	51.4%
Free Oils and Grease	90%	N/A

As demonstrated, the proposed treatment train meets the pollution reduction targets as required by Council.

4.3 Erosion and Sediment Control

4.3.1 Strategies

The proposed sedimentation and erosion control measures to manage runoff and ensure no detriment to the receiving environments have been divided into temporary and permanent strategies as summarised below.

Table 4: Temporary and Permanent Strategies

Strategy	Description
Temporary	Temporary strategies generally refer to the control of sediment erosion and water pollution during the construction phase. The primary risks occur when soil is excavated and exposed to the elements during construction works. It is at this stage that suspended solids and other construction activity associated pollutants can be washed into the receiving stormwater network and subsequently the downstream waterways. The strategies that are implemented to prevent potential soil degradation and pollution of waterways include the adequate provision of sedimentation and erosion control measures. Generally, the measures outlined in this report form a minimum basis that should be considered and further documented by the contractor prior to commencement of the works through a Soil and Water Management Plan (SWMP). The temporary controls that are proposed in the concept plans by TTW will limit the displacement of sediment caused by runoff from disturbed areas and are designed to remove sediment prior to discharging from site.
Permanent	Permanent strategies generally refer to the installation of a number of permanent treatment measures to remove gross pollutants, total suspended solids, and phosphorus/nitrogen nutrients effectively in order to maintain stormwater quality discharged from the site. For the permanent water quantity and quality measures, refer to Section 2 of this report.

4.3.2 Proposed Measures

A Sediment and Erosion Control Plan has been prepared and is included in Appendix A.

4.3.3 Installation of Measures

The measures are to be installed as per the requirements outlined below:

Clearly visible barrier, site fencing and hoarding shall be installed at the discretion of the Superintendent to ensure site security, safety of the public, manage traffic control and prohibit any unnecessary site disturbance. Vehicular access to the site shall be limited to only what is essential for the construction activities and shall enter the site only through the stabilised access points.

All disturbed areas are to be stabilised within 14 working days of the completion of earthworks. All disturbed areas are to be protected so that the land is permanently stabilised within six months.

Proprietary silt fencing shall be installed by the Contractor in accordance with the final approved Sedimentation and Erosion Control Plan and elsewhere at the discretion of the site superintendent to contain sedimentation to as near as possible to the original source.

Sediment removed from any sediment trapping device shall be relocated where further pollution to downslope lands and waterways cannot occur.

Stockpiles shall be located by the Contractor in accordance with the final approved Sedimentation and Erosion Control Plan and elsewhere at the discretion of the Project Manager and/or Superintendent. Where stockpiles are to be in place longer than 30 days they shall be stabilised.

Water shall be prevented from entering the permanent drainage system unless it is sediment free. Drainage pits are to be protected in accordance with the final approved Sedimentation and Erosion Control Plan.

Temporary sediment traps located at pits shall be retained throughout the early works stage and until the appropriate replacement measures for the subsequent stages are installed.

4.3.4 Land Disturbance

- Where practicable, the soil erosion hazard shall be kept as low as possible. Limitations to access are to be in accordance with the Table 5.

Table 5: Limitations to Access

Land Use	Limitation
Access areas	Access is to be limited to the designated work zones via the stabilised site access.
Truck cleaning areas	Any truck exiting out of the site shall be thoroughly cleaned and limit the exportation of soil and sediment on public roads.
Remaining undisturbed areas	Access to any undisturbed areas and remaining lands is only permitted with permission from the Project Manager and/or Superintendent.

- Any spilled material shall be immediately removed from areas subject to runoff or concentrated flow;
- Trapped sediment shall be removed where the capacity of the sedimentation trapping device falls below 60%;
- Sedimentation traps are to be inspected after each rainfall event and/or weekly to;
- Ensure that all sediment is removed once the sediment storage zone is full;
- Ensure that outlet and emergency spillway works are maintained in a fully operational condition at all times;
- Ensure rehabilitated lands have effectively reduced the erosion hazard and initiate upgrading or repair as appropriate;
- Additional erosion or sediment control works may be required to be constructed as appropriate to ensure the protection of downslope lands and waterways;
- Erosion and sediment control measures are to be maintained in a fully functioning condition at all times until the site is rehabilitated or secondary stage measures are installed;
- Revegetation schemes are to be adhered to and that any grass coverings are kept healthy, including watering and mowing;
- The removal of the temporary soil conservation and sedimentation control structures is to be the last activity in the rehabilitation program.

5.0 Conclusion

This integrated water management plan provides a summary of the concept stormwater management for the proposed development of a residential aged care facility at 366 Jamison Road, Jamisontown. The stormwater strategy has been prepared to address the requirements of the Penrith DCP and Penrith Stormwater Drainage Policy. In doing so, on-site detention and stormwater treatment measures have been introduced to manage stormwater runoff from the development. A flood impact assessment has been conducted and is detailed in a separate report.

Concept civil plans have been provided in Appendix A for reference.

Prepared by
TTW (NSW) PTY LTD

Authorised By
TTW (NSW) PTY LTD

KIRUSAN SUBAKARAN
Graduate Civil Engineer

COLIN ROPE
Associate Director

P:\2021\2112\211227\Reports\TTW\Civil\Civil SSDA Report\240710 Penrith Summitcare Civil SSDA Report.docx

Appendix A

Civil Drawings

SUMMITCARE PENRITH

CIVIL WORKS

THIS DRAWING IS COPYRIGHT AND IS THE PROPERTY OF
TAYLOR THOMSON WHITTING (NSW) PTY LTD AND MUST
NOT BE USED WITHOUT AUTHORISATION.



LOCALITY PLAN
SCALE 1:2000

DRAWING SCHEDULE

DRAWING NUMBER	DRAWING NAME
C100	COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE
C101	GENERAL NOTES AND LEGENDS
C110	OVERALL GENERAL ARRANGEMENT PLAN
C110	SITEWORKS AND STORMWATER MANAGEMENT PLAN, SHEET 1
C111	SITEWORKS AND STORMWATER MANAGEMENT PLAN, SHEET 2
C120	SEDIMENT AND EROSION CONTROL PLAN & DETAILS
C125	CATCHMENT PLAN
C130	TYPICAL DETAILS, SHEET 1
C131	TYPICAL DETAILS, SHEET 2
C132	TYPICAL DETAILS, SHEET 3
C133	TYPICAL DETAILS, SHEET 4

0 10 20 30 40 50 60 70 80m

1:1000 A1 1:2000 A3

THIS DRAWING HAS BEEN PREPARED USING COLOUR



FILENAME: Z:\p02\211227\ssda_C100.dwg - USER: encodes - Plot File Created: Jul 10, 2024 - 10:38am

P1	ISSUED FOR SSDA	SF	LA	10.07.24	
REV	DESCRIPTION	CHK	DR	DATE	REV DESCRIPTION

ARCHITECT:

JACKSON TEECE

ENGINEER:

TTW Structural
Civil
Traffic
Façade

612 9439 7288 | Level 6, 73 Miller Street, North Sydney, NSW 2060

PROJECT:

SUMMITCARE PENRITH

366 JAMISON ROAD,
JAMISONTOWN NSW 2750

DRAWING NAME:

COVER SHEET, LOCALITY PLAN AND
DRAWING SCHEDULE

SCALE : A1

1:1000

PROJECT No
211227

Plot File Created: Jul 10, 2024 - 10:38am

DRAWN BY

LA

DRAWING No
C100

AUTHORISED BY

CR

REVISION
P1

GENERAL NOTES

- Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the Engineer.
- Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
- Make smooth connection with all existing works.
- Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.
- All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority; the Contractor is to ensure that the drawings used for construction have been approved by all relevant authorities prior to commencement site.
- All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority is to be carried out in accordance with the requirements of the relevant Authority. The Contractor shall obtain these requirements from the Authority. Where the requirements of the Authority are different to the drawings and specifications, the requirements of the Authority shall be applicable.
- For all temporary batters refer to geotechnical recommendations.

REFERENCE DRAWINGS

- These drawings have been based from, and to be read in conjunction with the following Consultants drawings. Any conflict to the drawings must be notified immediately to the Engineer.

Consultant	Dwg Title	Dwg No	Rev	Date
PINNACLE	DETAIL AND LEVEL SURVEY	1480de2	-	06/04/21
JACKSON TEECE	FLOOR PLAN - GROUND FLOOR	DA-110	P5	10/05/24
ARTERA DESIGN	LANDSCAPE PLAN	L-SD-04	A	25/06/24

SURVEY AND SERVICES INFORMATION SURVEY

Origin of levels : SSM 44882 RL 26.78
Datum of levels : AHD
Coordinate system : MGA
Survey prepared by : PINNACLE LAND SURVEYORS
Setout Points : -

Taylor Thomson Whitting does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever.

UNDERGROUND SERVICES - WARNING

The locations of underground services shown on Taylor Thomson Whittings drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.

The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation.

Taylor Thomson Whitting does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.

The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent.

The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to: State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or adjusted in any way.

Taylor Thomson Whitting plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.

BOUNDARY AND EASEMENT NOTE

The property boundary and easement locations shown on Taylor Thomson Whitting drawing's have been based from information received from : PINNACLE LAND SURVEYORS PTY LTD DATED 06/04/21, SUIT 104, LEVEL 1, 447 VICTORIA ST, WETHERILL PARK, NSW 2164, Ph: (02) 9686 2548

Taylor Thomson Whitting makes no guarantees that the boundary or easement information shown is correct.

Taylor Thomson Whitting will accept no liabilities for boundary inaccuracies. The contractor/builder is advised to check/confirm all boundaries in relation to all proposed work prior to the commencement of construction. Boundary inaccuracies found are to be reported to the superintendent prior to construction starting.

SAFETY IN DESIGN

Contractor to refer to Appendix B of the Civil Specification for the Civil Risk and Solutions Register.

EXISTING SERVICES

Contractor to be aware existing services are located within the site. Location of all services to be verified by the Contractor prior to commencing works. Contractor to confirm with relevant authority regarding measures to be taken to ensure services are protected or procedures are in place to demolish and/or relocate.

EXISTING STRUCTURES

Contractor to be aware existing structures may exist within the site. To prevent damage to existing structure(s) and/or personnel, site works to be carried out as far as practically possible from existing structure(s).

EXISTING TREES

Contractor to be aware existing trees exist within the site which need to be protected. To prevent damage to trees and/or personnel, site works to be carried out as far as practically possible from existing trees. Advice needs to be sought from Arborist and/or Landscape Architect on measures required to protect trees.

GROUNDWATER

Contractor to be aware ground water levels are close to existing surface level. Temporary de-watering may be required during construction works.

EXCAVATIONS

Deep excavations due to stormwater drainage works is required. Contractor to ensure safe working procedures are in place for works. All excavations to be fenced off and batters adequately supported to approval of Geotechnical Engineer.

GROUND CONDITIONS

Contractor to be aware of the site geotechnical conditions, refer to geotechnical report by Mariens Consulting for details.

HAZARDOUS MATERIALS

Existing asbestos products & contaminated material may be present on site. Contractor to ensure all hazardous materials are identified prior to commencing works. Safe working practices as per relevant authority to be adopted and appropriate PPE to be used when handling all hazardous materials. Refer to preliminary site investigation by Mariens Consulting Engineers.

CONFINED SPACES

Contractor to be aware of potential hazards due to working in confined spaces such as stormwater pits, trenches and/or tanks. Contractor to provide safe working methods and use appropriate PPE when entering confined spaces.

MANUAL HANDLING

Contractor to be aware manual handling may be required during construction. Contractor to take appropriate measures to ensure manual handling procedures and assessments are in place prior to commencing works.

WATER POLLUTION

Contractor to ensure appropriate measures are taken to prevent pollutants from construction works contaminating the surrounding environment.

SITE ACCESS/EGRESS

Contractor to supply and comply with traffic management plan and provide adequate site traffic control including a certified traffic marshal to supervise vehicle movements where necessary.

VEHICLE MOVEMENT

Contractor to supply and comply with traffic management plan and provide adequate site traffic control including a certified traffic marshal to supervise vehicle movements where necessary.

SITETWORKS NOTES

- All basecourse material to comply with RMS specification No 3051 and compacted to minimum 98% modified standard dry density in accordance with AS 1289 5.2.1.
- All trench backfill material shall be compacted to the same density as the adjacent material.
- All service trenches under vehicular pavements shall be backfilled with an approved select material and compacted to a minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1.

DBYD SERVICES NOTE

"Public Service Utility information shown on plan has been compiled from information received from Dial Before You Dig inquiry, reference Number 30706381 which was obtained on 15/10/2021. Unless specifically shown otherwise, this location and depth of services shown on this plan have not been verified.

The location of services shown on this drawing have been plotted as accurately as possible from diagrams provided by service authorities and should be confirmed by site inspection."

CONCRETE FINISHES NOTES

- All exposed concrete pavements are to be broomed finished.
- All edges of the concrete pavement including keyed and dowelled joints are to be finished with an edging tool.
- Concrete pavements with grades greater than 10 % shall beheavily broomed finished.
- Carborundum to be added to all stair treads and ramped crossings UNO.

CONCRETE NOTES

EXPOSURE CLASSIFICATION : External : B2

CONCRETE

Place concrete of the following characteristic compressive strength f_c as defined in AS 1379.

Location	AS 1379 f _c MPa at 28 days	Specified Slump	Nominal Agg. Size
Kerbs	S20	80	20
Retaining wall footing	S40	80	20

- Use Type "GP" cement, unless otherwise specified.
- All concrete shall be subject to project assessment and testing to AS 1379.
- Consolidate by mechanical vibration. Cure all concrete surfaces as directed in the Specification.
- For all falls in slab, drip grooves, reglets, chamfers etc. refer to Architects drawings and specifications.
- Unless shown on the drawings, the location of all construction joints shall be submitted to Engineer for review.
- No holes or chases shall be made in the slab without the approval of the Engineer.
- Conduits and pipes are to be fixed to the underside of the top reinforcement layer.
- Slurry used to lubricate concrete pump lines is not to be used in any structural members.
- All slabs cast on ground require sand blinding with a Concrete Underlay.

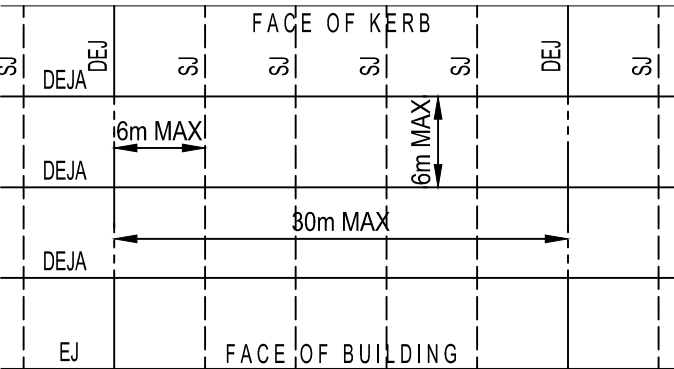
FORMWORK

- The design, certification, construction and performance of the formwork, falsework and backpropping shall be the responsibility of the contractor. Proposed method of installation and removal of formwork is to be submitted to the superintendent for comment prior to work being carried out.

JOINTING NOTES

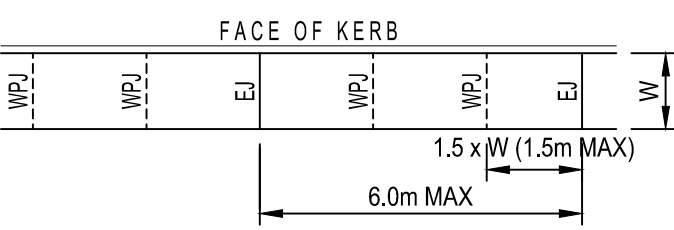
Vehicular Pavement Jointing

- All vehicular pavements to be jointed as shown on drawings.
- Keyed construction joints should generally be located at a maximum of 6m centres.
- Sawn joints should generally be located at a maximum of 6m centres or 1.5 x the spacing of keyed joints, where key joint spacing is less than 4m, with dowelled expansion joints at maximum of 30m centres.
- Provide 10mm wide full depth expansion joints between buildings and all concrete or unit pavers.
- The timing of the saw cut is to be confirmed by the contractor on site. Site conditions will determine how many hours after the concrete pour before the saw cuts are commenced, refer to the specification for weather conditions and temperatures required.
- Vehicular pavement jointing as follows.



Pedestrian Footpath Jointing

- Expansion joints are to be located where possible at tangent points of curves and elsewhere at max 6.0m centres.
- Weakened plane joints are to be located at a max 1.5 x width of the pavement.
- Where possible joints should be located to match kerbing and / or adjacent pavement joints.
- All pedestrian footpath jointings as follows (UNO).



RETAINING WALLS

- Drainage shall be provided as shown on the drainage drawings.
- Backfilling shall be carried out after grout or concrete has reached a minimum strength of 0.85 f_c. Backfilling shall be approved granular material compacted in layers not exceeding 200mm to 95% Standard compaction UNO.
- Provide waterproofing to back of walls as specified or noted.
- Where retaining walls rely on connecting structural elements or stability, do not backfill against the wall unless it is adequately propped or the elements have been constructed and have sufficient strength to withstand the loads.
- For all temporary batters obtain geotechnical engineers recommendations.

KERBING NOTES

Includes all kerbs, gutters, dish drains, crossings and edges.

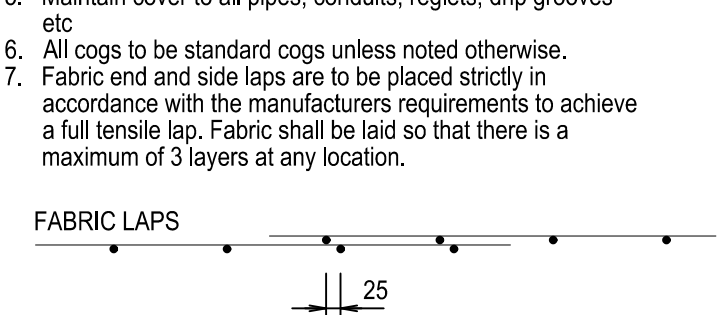
- All kerbs, gutters, dish drains and crossings to be constructed on minimum 75mm granular basecourse compacted to minimum 98% modified maximum dry density in accordance with AS 1289 5.2.1.
- Expansion joints (EJ) to be formed from 10mm compressible cork filler board for the full depth of the section and cut to profile. Expansion joints to be located at drainage pits, on tangent points of curves and elsewhere at 12m centres except for integral kerbs where the expansion joints are to match the joint locations in slabs.
- Weakened plane joints to be min 3mm wide and located at 3m centres except for integral kerbs where weakened plane joints are to match the joint locations in slabs.
- Broomed finished to all ramped and vehicular crossings, all other kerbing or dish drains to be steel float finished.
- In the replacement of kerbs;
 - Existing road pavement is to be sawcut 900mm from lip of gutter. Upon completion of new kerbs, new basecourse and surface is to be laid 900mm wide to match existing materials and thicknesses.
 - Existing allotment drainage pipes are to be built into the new kerb with a Ø100mm hole.
 - Existing kerbs are to be completely removed where new kerbs are shown.

REINFORCEMENT NOTES

- Fix reinforcement as shown on drawings. The type and grade is indicated by a symbol as shown below. On the drawings, this is followed by a numeral which indicates the size in millimetres of the reinforcement.

N, Hot rolled ribbed bar	grade D500N
R, Plain round bar	grade R250N
SL, Square mesh	grade 500L
RL, Rectangular mesh	grade 500L
- Provide bar supports or spacers to give the following concrete cover to all reinforcement unless otherwise noted on drawings.

Footings	• 50 top, 50 bottom, 50 sides.
Walls	• 30 generally, • 30 when cast in forms but later exposed to weather or ground, • when cast directly in contact with ground.
- Cover to reinforcement ends to be 50 mm u.n.o.
- Provide N12-450 support bars to top reinforcement as required, Lap 500 U.N.O.
- Maintain cover to all pipes, conduits, reglets, drip grooves etc
- All cogs to be standard cogs unless noted otherwise.
- Fabric end and side laps are to be placed strictly in accordance with the manufacturers requirements to achieve a full tensile lap. Fabric shall be laid so that there is a maximum of 3 layers at any location.



- Laps in reinforcement shall be made only where shown on the drawings unless otherwise approved. Lap lengths as per table below.

PIT SCHEDULE

Note:Grate size does not necessarily reflect pit size, refer pit type details, shown on detail sheets - **C130 to C133**
Final internal pit dimensions are to comply with AS3500

Type	Description	Cover (Clear Opening)	Number
A	Kerb inlet pit with no lintel	Council standard 450 x 900 galvanised mild steel grate hinged to frame	33
B	OSD Access lid	900 x 900 Class D galvanised mild steel grate hinged to frame	10, 11
		900 x 900 Class D cast iron cover with concrete infill	12 to 15
C	Surface inlet pit	900 x 900 Class B galvanised mild steel grate hinged to frame with OceanProtect OceanGuard insert	1 to 8, 22 to 31
D	Ø1460 OceanProtect Manhole	900 x 900 Class B galvanised mild steel grate hinged to frame	21
E	Oil arrestor kerb inlet pit	900 x 450 galvanised mild steel grate hinged to frame and 450 x 450 cast iron cover with concrete infill	32
F	Existing pit	Existing pit to remain	20

Note: All surface inlet pits within property boundary to be installed with Oceanprotect Oceanguard filter basket or approved equivalent.

STORMWATER DRAINAGE NOTES

- Stormwater Design Criteria :
 - (A) Average exceedance probability - 1% AEP for roof drainage to first external pit
 - 5% AEP for paved and landscaped areas
 - (B) Rainfall intensities - Time of concentration: 5 minutes 1% AEP =249.6mm/hr 5% AEP =180.0mm/hr
 - (C) Rainfall losses - Impervious areas: IL = 1.5 mm , CL = 0 mm/hr Pervious areas: IL =32.2mm , CL =1.36 mm/hr
- Pipes Ø300 and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints UNO.
- Pipes up to Ø300 may be sewer grade uPVC with solvent welded joints, subject to approval by the Engineer.
- Equivalent strength VCP or FRP pipes may be used subject to approval.
- Precast pits may be used external to the building subject to approval by Engineer.
- Enlargers, connections and junctions to be manufactured fittings where pipes are less than Ø300.
- Where subsoil drains pass under floor slabs and vehicular pavements, unslotted uPVC sewer grade pipe is to be used.
- Grates and covers shall conform with AS 3996-2006, and AS 1428.1 for access requirements.
- Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 UNO.
- Care is to be taken with invert levels of stormwater lines. Grades shown are not to be reduced without approval.
- All stormwater pipes to be 150 dia at 1.0% min fall UNO.
- Subsoil drains to be slotted flexible uPVC UNO.
- Adopt invert levels for pipe installation (grades shown are only nominal).

ABBREVIATIONS

TOK	TOP OF KERB	eRL	EXISTING SURFACE LEVEL
IOK	INVERT OF KERB	F	FINISHED SURFACE LEVEL
RCL	ROAD CENTRELINE	F*	FUTURE SURFACE LEVEL
BDY	BOUNDARY		
TOW	TOP OF WALL	FFL	FINISHED FLOOR LEVEL
BOW	BOTTOM OF WALL	SSL	STRUCTURAL SLAB LEVEL
CL	COVER LEVEL	CH	CHAINAGE
IL	INVERT LEVEL	TP	TANGENT POINT
OL	OBVERT LEVEL	TWL	TOP WATER LEVEL

WORKS NEAR EXISTING SERVICES

ALL EXISTING UNDERGROUND SERVICES ARE TO BE LOCATED ON SITE PRIOR TO COMMENCING WORKS

WORKS NEAR EXISTING TREES

PRECAUTIONS ARE TO BE UNDERTAKEN TO ENSURE EXISTING TREES IN THE VICINITY OF WORKS ARE NOT DAMAGED DURING CONSTRUCTION ACTIVITIES

CIVIL SPECIFICATIONS

DRAWINGS TO BE READ IN CONJUNCTION WITH THE CIVIL SPECIFICATION. REFER APPENDIX A FOR INSPECTION HOLD POINTS

HIGH PRESSURE GAS MAIN

PRECAUTIONS ARE TO BE UNDERTAKEN TO ENSURE HIGH PRESSURE GAS MAIN IN THE VICINITY OF WORKS IS NOT DAMAGED DURING CONSTRUCTION ACTIVITIES. LIAISE WITH THE ASSET OWNER AS REQUIRED

HIGH VOLTAGE ELECTRICAL CABLE

PRECAUTIONS ARE TO BE UNDERTAKEN TO ENSURE HIGH VOLTAGE CABLE IN THE VICINITY OF WORKS IS NOT DAMAGED DURING CONSTRUCTION ACTIVITIES. LIAISE WITH ASSET OWNER AS REQUIRED

EXISTING STORMWATER ASSETS

SIZE, INVERT LEVEL AND CONDITION OF ALL AFFECTED EXISTING STORMWATER ASSETS TO BE CONFIRMED PRIOR TO COMMENCING WORKS

SITETWORKS LEGEND

FINISHED SURFACE LEGEND

× F22.20	FINISHED SURFACE LEVEL
----- 22.50 -----	MAJOR FINISHED SURFACE CONTOUR
----- 22.10 -----	0.5m INTERVAL MINOR FINISHED SURFACE CONTOUR
	0.1m INTERVAL

KERBS LEGEND

KG	KERB AND GUTTER
KO	KERB ONLY
FK	FLUSH KERB
DD	DISH DRAIN
IK	INTEGRAL KERB
VC	VEHICULAR CROSSING
CKG	CASTELLATED KERB & GUTTER
TE	THICKENED EDGE

STORMWATER LEGEND

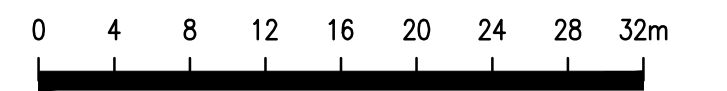
eSW	EXISTING STORMWATER PIPE
→	STORMWATER PIPE, FLOW DIRECTION
→	STORMWATER PIPE, FLOW DIRECTION
uIL 10.00 Ø600 '2' 1.25% Q=345L/s dIL 9.65	UPSTREAM PIPE INVERT LEVEL PIPE SIZE AND STRENGTH CLASS PIPE GRADIENT PEAK DESIGN FLOW DOWNSTREAM PIPE INVERT LEVEL
⊠	JUNCTION PIT
⊠	GRATED INLET PIT
⊠	HAUNCHED GRATED INLET PIT
⊠	SAG KERB INLET PIT
⊠	ON-GRADE KERB INLET PIT
⊠	DOMESTIC KERB OUTLET
⊠	DRAINAGE LINE AND PIT NUMBER
GD#	GRATED DRAIN
-----	SUBSOIL DRAINAGE LINE, Ø100mm U.N.O.
-----	FLUSHING POINT
-----	INTERMEDIATE RISER
-----	DOWNPIPE
-----	RAINWATER OUTLET
-----	CONCRETE ENCASED PIPE
→	GRASS CATCH DRAIN
→	OVERLAND FLOW PATH

EXISTING SERVICES LEGEND

eEA	EXISTING OVERHEAD ELECTRICAL
eEU	EXISTING UNDERGROUND ELECTRICAL
eG	EXISTING GAS
T	EXISTING TELECOMMUNICATIONS
eS	EXISTING SEWER
eW	EXISTING WATER
eSW	EXISTING STORMWATER

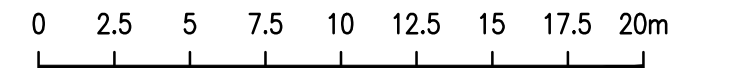
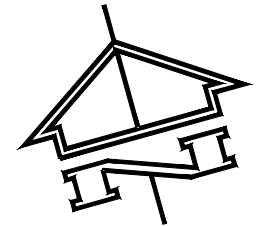
THIS DRAWING HAS BEEN PREPARED USING COLOUR

			ARCHITECT:	ENGINEER:	PROJECT:	DRAWING NAME:	SCALE : A1	DRAWN BY	AUTHORISED BY
					SUMMITCARE PENRRITH	GENERAL NOTES & LEGENDS	1:1000	LA	CR
					366 JAMISON ROAD, JAMISONTOWN NSW 2750		PROJECT No	DRAWING No	REVISION
P1	ISSUED FOR SSDA	SF LA 10.07.24					211227	C101	P1
REV	DESCRIPTION	CHK DR DATE	REV	DESCRIPTION	CHK DR DATE	REV	DESCRIPTION	CHK DR DATE	Plot File Created: Jul 10, 2024 - 10:34am



THIS DRAWING HAS BEEN PREPARED USING COLOUR

[illegible]



1:250 A1 1:500 A3

THIS DRAWING HAS BEEN PREPARED USING COLOUR

FOR CONTINUATION REFER TO DRG C112

FILENAME: Z:\proj\211227\proj C111.dwg - USER: mcshee - Plot File Created: Jul 10, 2024 - 4:13pm

REV	DESCRIPTION	CHK	DR	DATE	REV	DESCRIPTION	CHK	DR	DATE
P2	ISSUED FOR SSDA	SF	LA	10.07.24					
P1	ISSUED FOR COORDINATION	SF	LA	25.06.24					

ARCHITECT:
JACKSON TEECE

ENGINEER:
TTW Structural
Civil
Traffic
Façade

612 9439 7288 | Level 6, 73 Miller Street, North Sydney, NSW 2060

PROJECT:
SUMMITCARE PENRITH

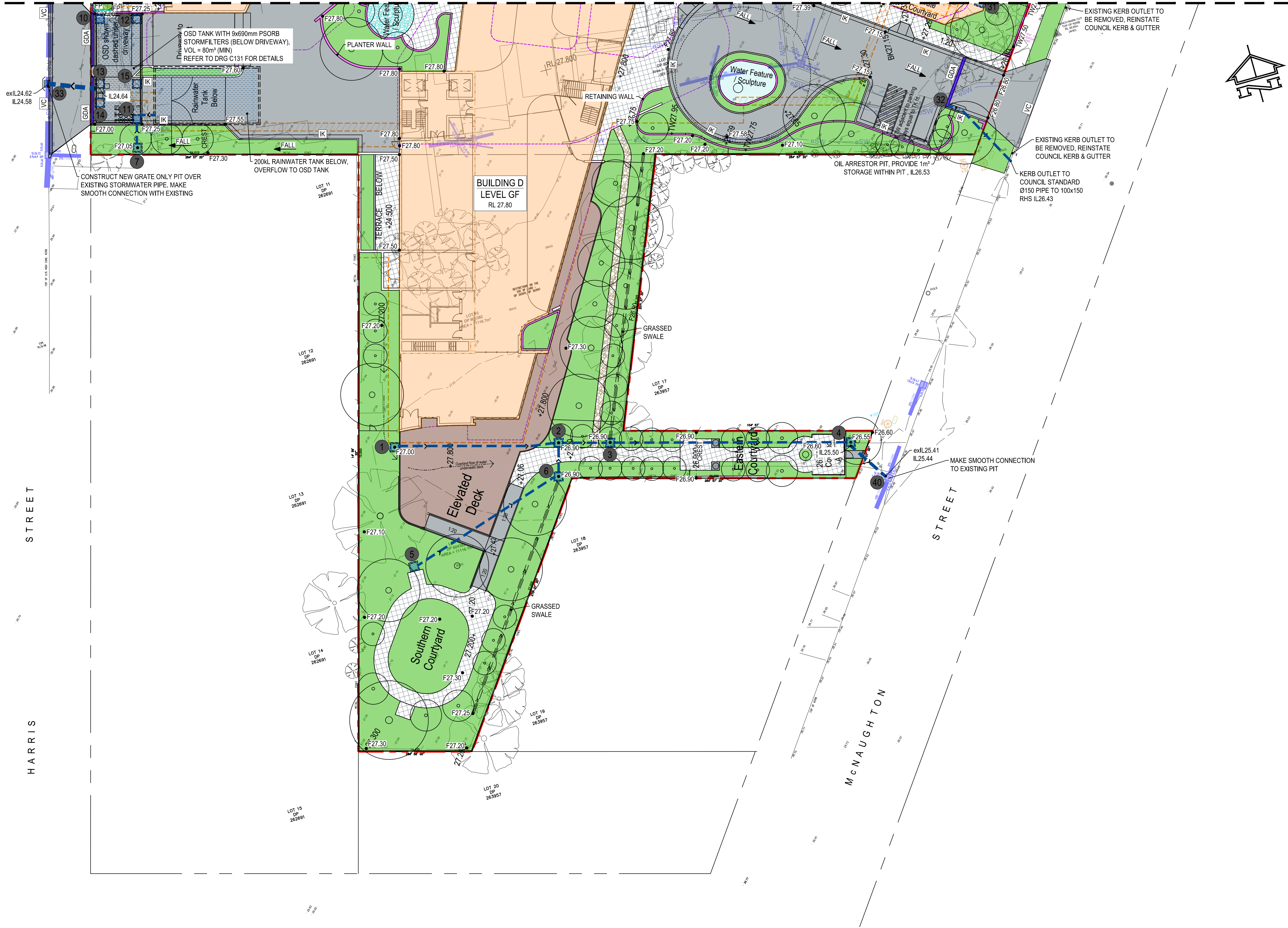
366 JAMISON ROAD,
JAMISONTOWN NSW 2750

DRAWING NAME:
SITEWORKS AND STORMWATER
MANAGEMENT PLAN, SHEET 1

SCALE : A1	DRAWN BY	AUTHORISED BY
1:250	LA	CR
PROJECT No	DRAWING No	REVISION
211227	C111	P2
Plot File Created: Jul 10, 2024 - 4:13pm		

FOR CONTINUATION REFER TO DRG C111

THIS DRAWING IS COPYRIGHT AND IS THE PROPERTY OF
TAYLOR THOMSON WHITTING (NSW) PTY LTD AND MUST
NOT BE USED WITHOUT AUTHORISATION.
THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL
RELEVANT NOTES ON DRAWING C101



EROSION AND SEDIMENT CONTROL NOTES

- ### Sequence Of Works
1. Prior to commencement of excavation the following soil management devices must be installed.
 - 1.1. Construct silt fences below the site and across all potential runoff sites.
 2. Construct temporary construction entry/exit and divert runoff to suitable control systems.
 3. Construct measures to divert upstream flows into existing stormwater system.
 4. Construct sedimentation traps/basin including outlet control and overflow.
 5. Construct turf lined swales.
 6. Provide sandbag sediment traps upstream of existing pits.
 2. Construct geotextile filter pit surround around all proposed pits as they are constructed.
 3. On completion of pavement provide sand bag kerb inlet sediment traps around pits.
 4. Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

Prior to discharge of site stormwater, groundwater and seepage water into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environmental consultant outlining the following:

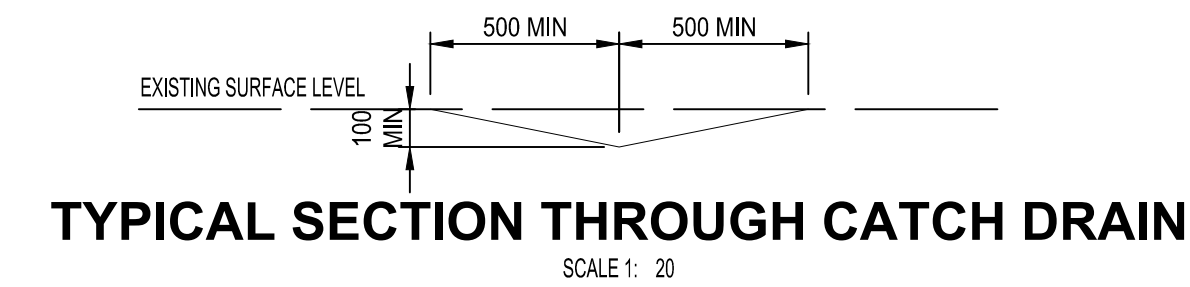
- Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)
- If required subject to the environmental consultants advice, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system. This should include comments from a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site into Councils storm water drainage system. Outlining the proposed, ongoing monitoring, contingency plans and validation program that will be in place to continually monitor the quality of water discharged from this site. This should outline the frequency of water quality testing that will be undertaken by a suitably qualified environmental consultant.

Diagram illustrating the proposed drainage system layout for a 32m wide area, showing various components and their relative positions:

- Batter
- Siltation fence
- Stormwater pit with Geotextile filter surround
- Hay bale barriers
- Sandbag sediment trap
- Catch drain
- Overland flow path

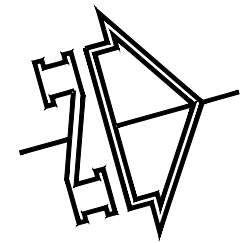
Scale: 0 to 32m (1:400 A1, 1:800 A3, A3)

THIS DRAWING HAS BEEN PREPARED USING COLOUR



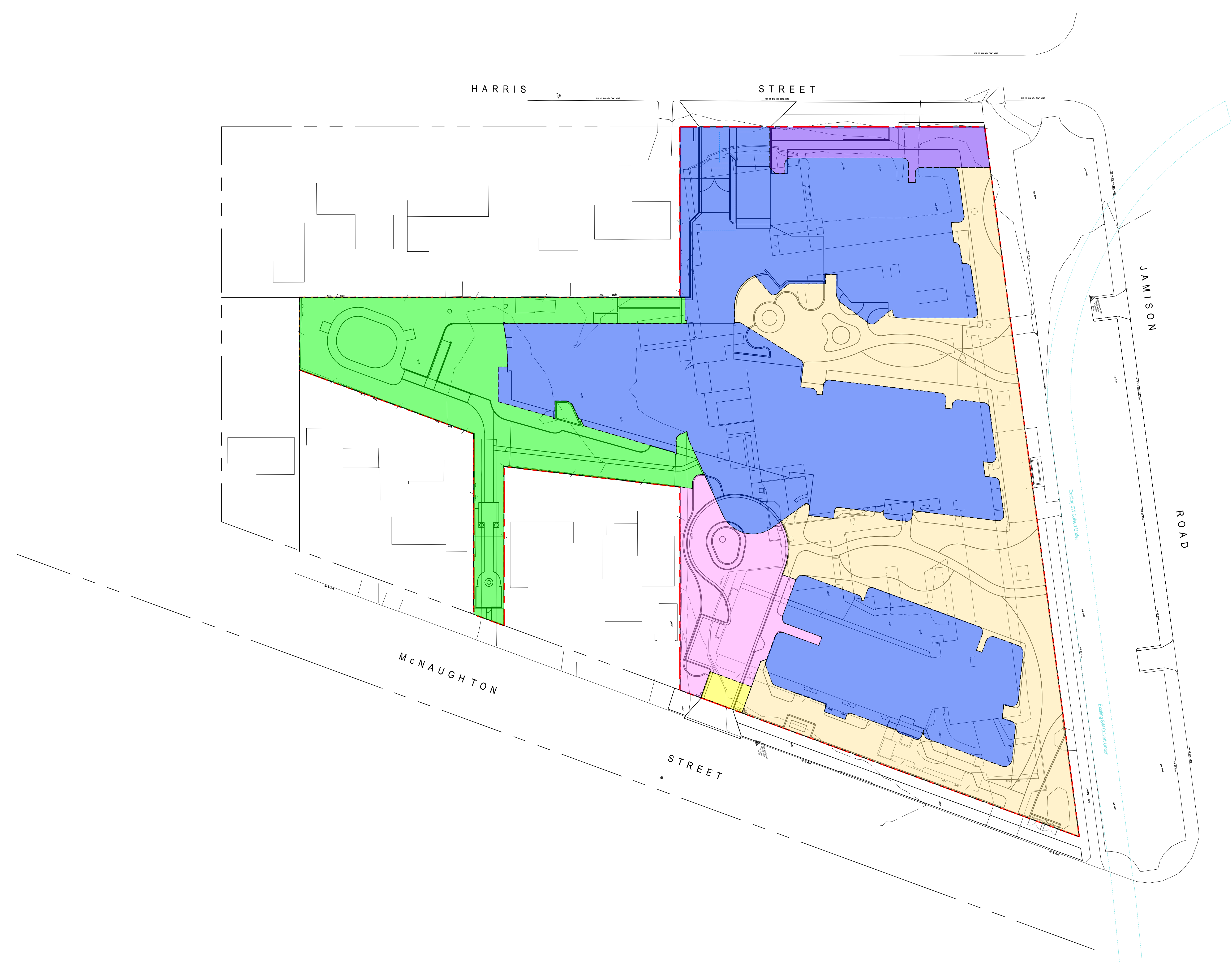
**NOTE: STAKE TO BE EITHER TAR COATED
STAR OR 50 x 50 HARDWOOD**

										ARCHITECT:	ENGINEER:	PROJECT:	DRAWING NAME:	SCALE : A1	DRAWN BY	AUTHORISED BY
										JACKSON TEECE		SUMMITCARE PENRITH 366 JAMISON ROAD, JAMISONTOWN NSW 2750	SEDIMENT AND EROSION CONTROL PLAN AND DETAILS	1:400	LA	CR
														PROJECT No	DRAWING No	REVISION
														211227	C120	P1
														Plot File Created: Jul 10, 2024 - 10:44am		
P1 ISSUED FOR SSDA	SF	LA	10.07.24													
REV DESCRIPTION	CHK	DR	DATE	REV DESCRIPTION	CHK	DR	DATE	REV DESCRIPTION	CHK	DR	DATE					



THIS DRAWING IS COPYRIGHT AND IS THE PROPERTY OF TAYLOR THOMSON WHITTING (NSW) PTY LTD AND MUST NOT BE USED WITHOUT AUTHORISATION. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C101

- BUILDING ROOF AND WESTERN DRIVEWAY**
CATCHMENT TO OSD
DISCHARGE TO EXISTING COUNCIL DRAINAGE IN HARRIS STREET
AREA = 0.54Ha
- NORTHERN LANDSCAPING**
DISCHARGE TO EXISTING DRAINAGE TO NORTH OF SITE
AREA = 0.3Ha
- SOUTHERN LANDSCAPING**
DISCHARGE TO EXISTING COUNCIL DRAINAGE IN MCNAUGHTON STREET
AREA = 0.17Ha
- EASTERN LANDSCAPING**
DISCHARGE TO KERB AND GUTTER ON HARRIS ST
AREA = 0.07Ha
- EASTERN DRIVEWAY BYPASS**
BYPASS ONTO KERB AND GUTTER ON MCNAUGHTON ST
AREA = 0.005Ha
- WESTERN LANDSCAPING**
DISCHARGE TO KERB AND GUTTER ON HARRIS ST
AREA = 0.03Ha



1:400 A1 1:800 A3
THIS DRAWING HAS BEEN PREPARED USING COLOUR

FILENAME: Z:\p042127\c0125\dwg - USER: encodes - Plot File Created: Jul 10, 2024 - 10:48am

			ARCHITECT:			ENGINEER:			PROJECT:			DRAWING NAME:			SCALE : A1			DRAWN BY			AUTHORISED BY		
									SUMMITCARE PENRITH			CATCHMENT PLAN			1:400			LA			CR		
									366 JAMISON ROAD, JAMISONTOWN NSW 2750						PROJECT No			DRAWING No			REVISION		
P1 ISSUED FOR SSDA			SF LA 10.07.24												211227			C125			P1		
REV DESCRIPTION			CHK DR DATE			REV DESCRIPTION			CHK DR DATE						Plot File Created: Jul 10, 2024 - 10:48am								

JACKSON TEECE

ENGINEER: **TTW** Structural Civil Traffic Façade

612 9439 7288 | Level 6, 73 Miller Street, North Sydney, NSW 2060

PROJECT: SUMMITCARE PENRITH

366 JAMISON ROAD,
JAMISONTOWN NSW 2750

DRAWING NAME: CATCHMENT PLAN

SCALE : A1 1:400

DRAWN BY LA

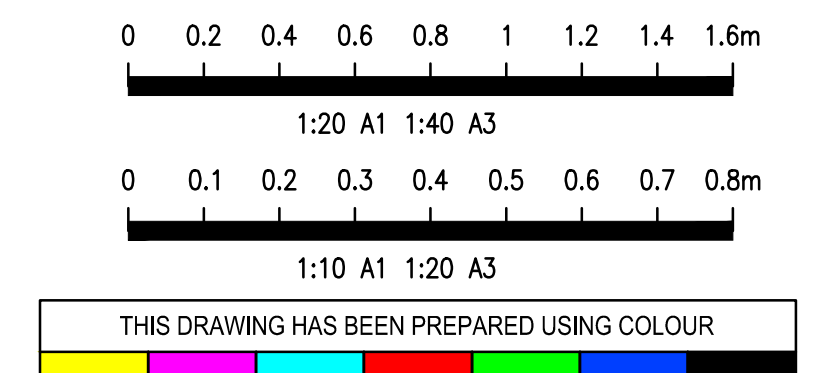
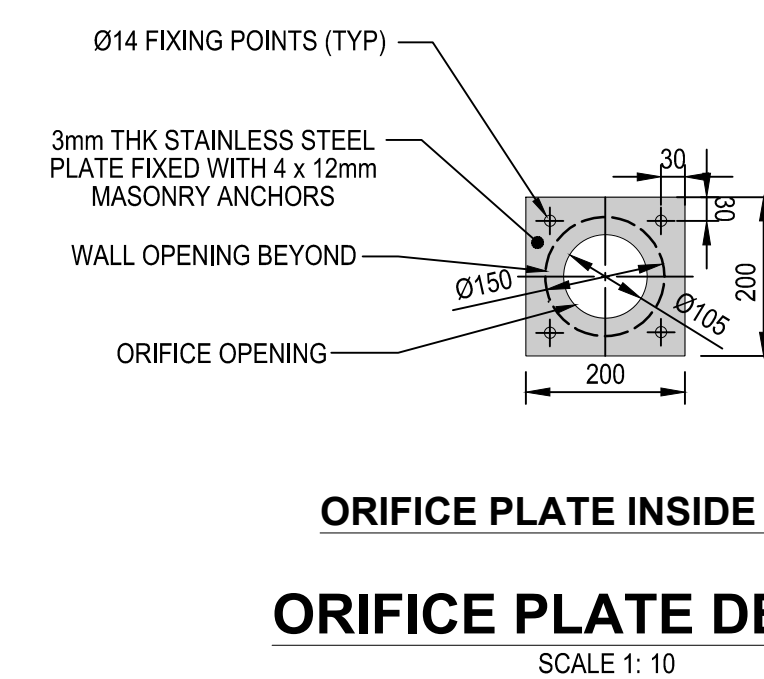
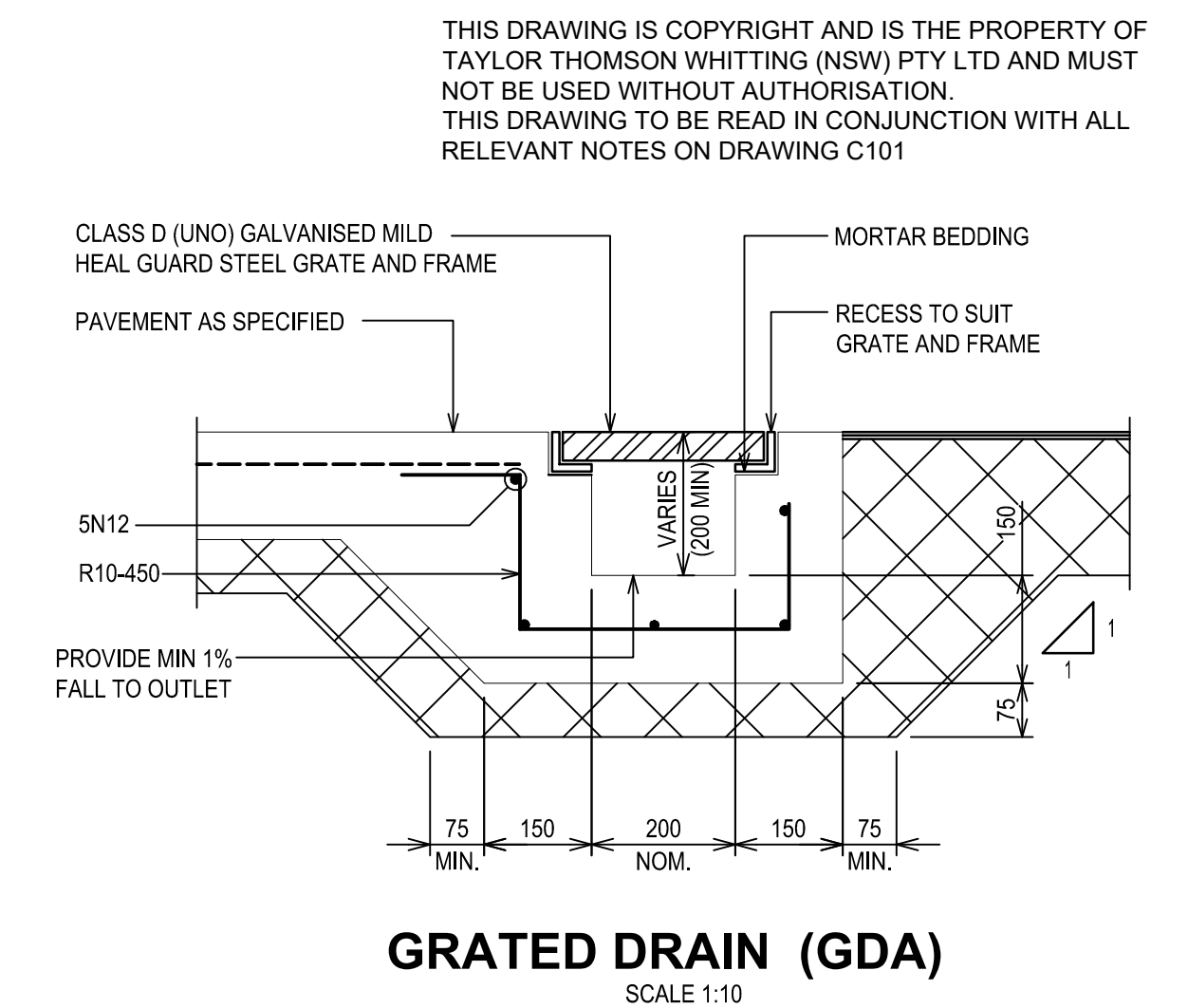
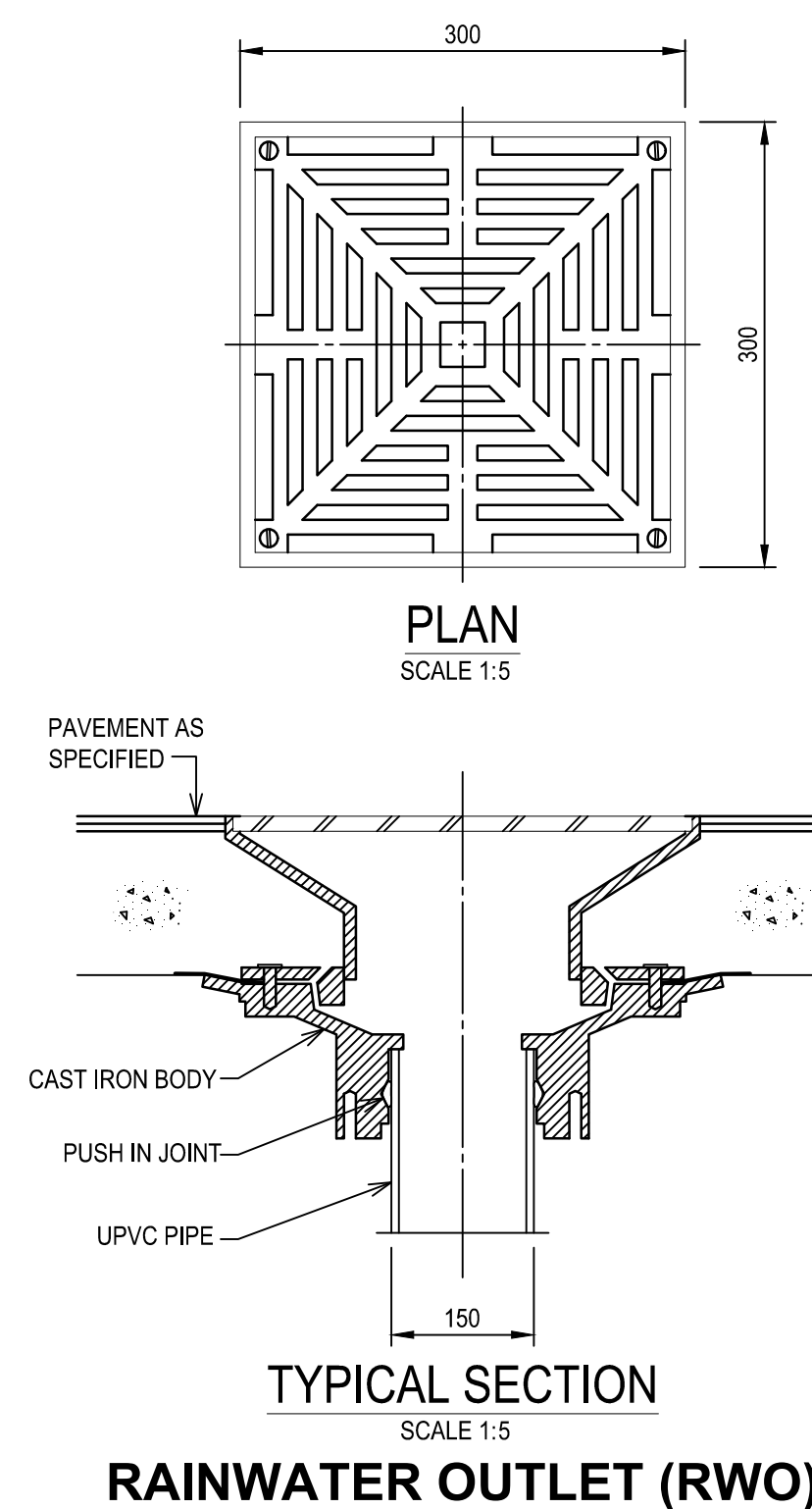
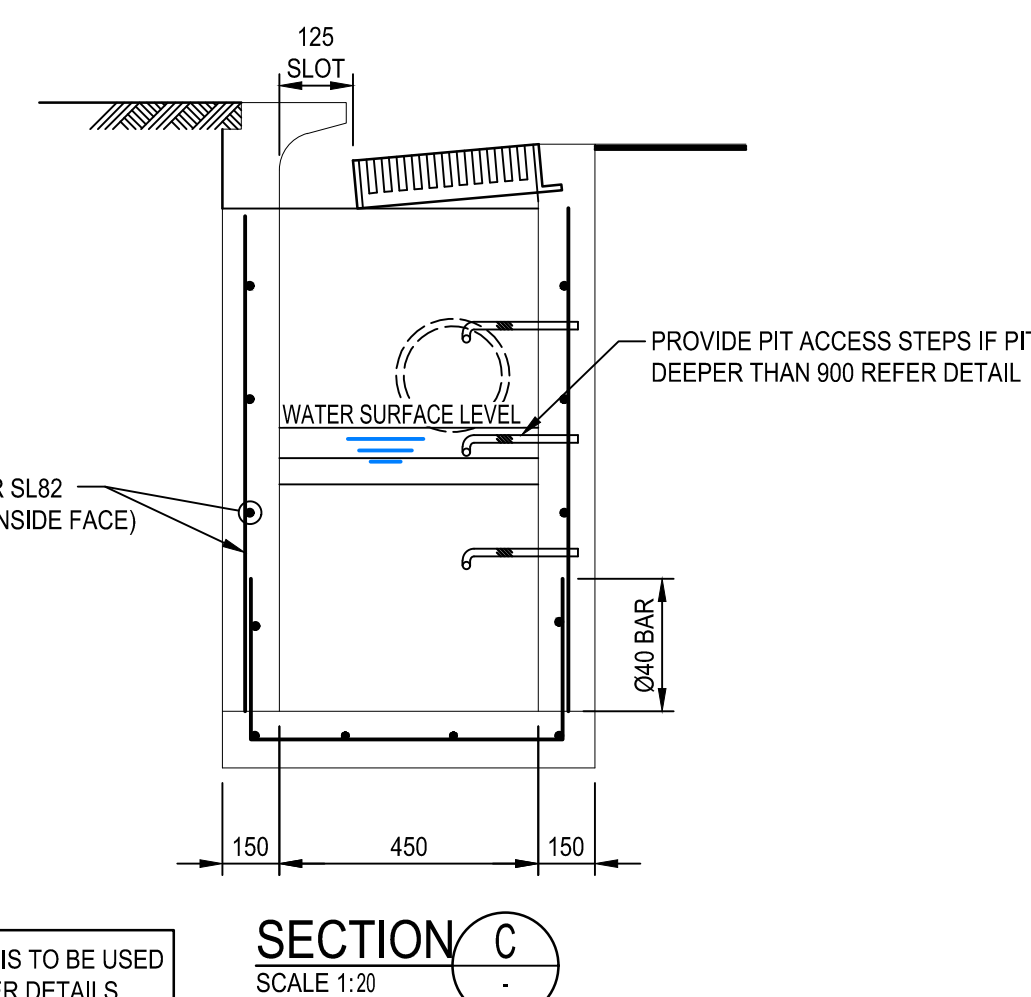
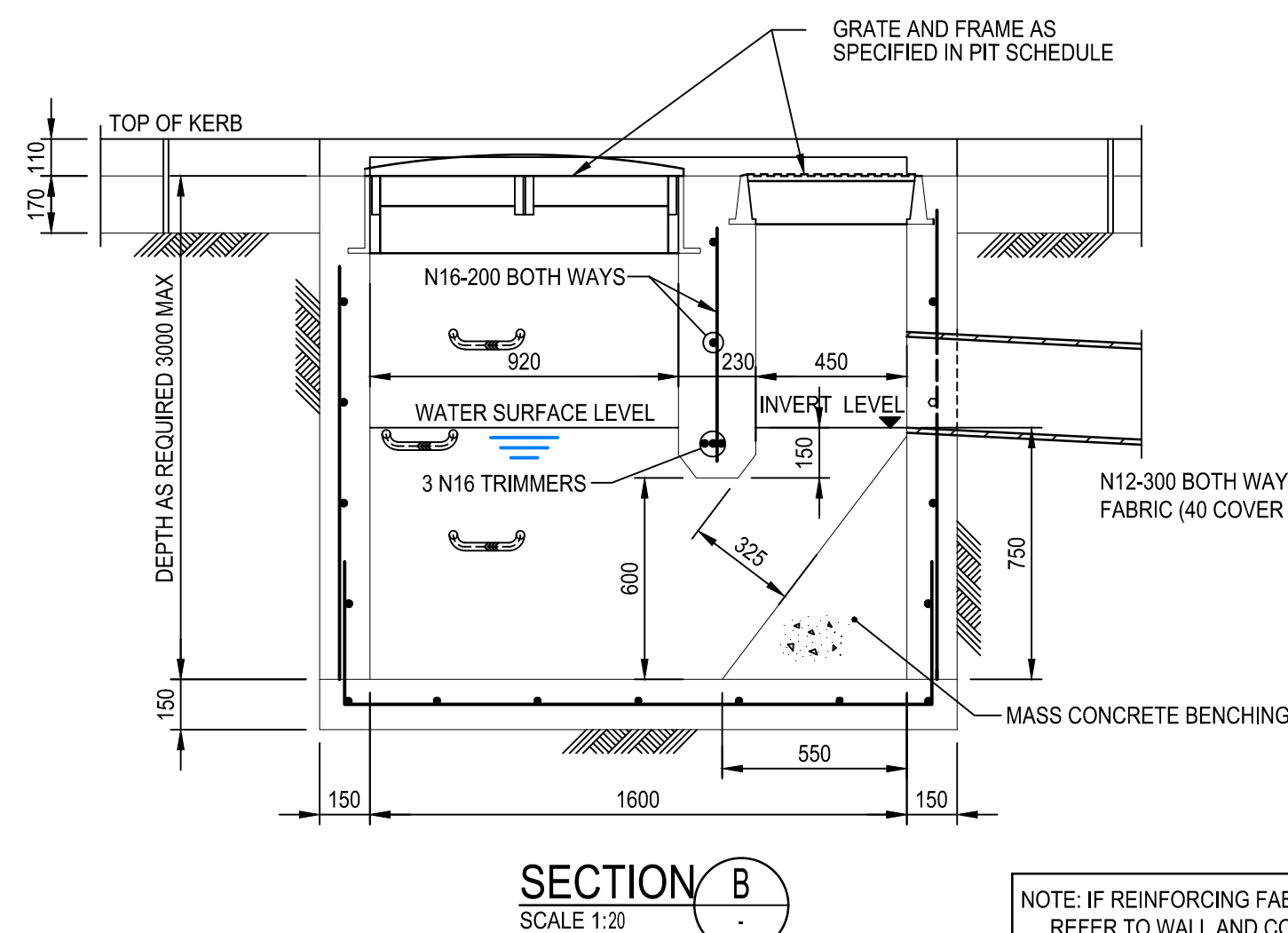
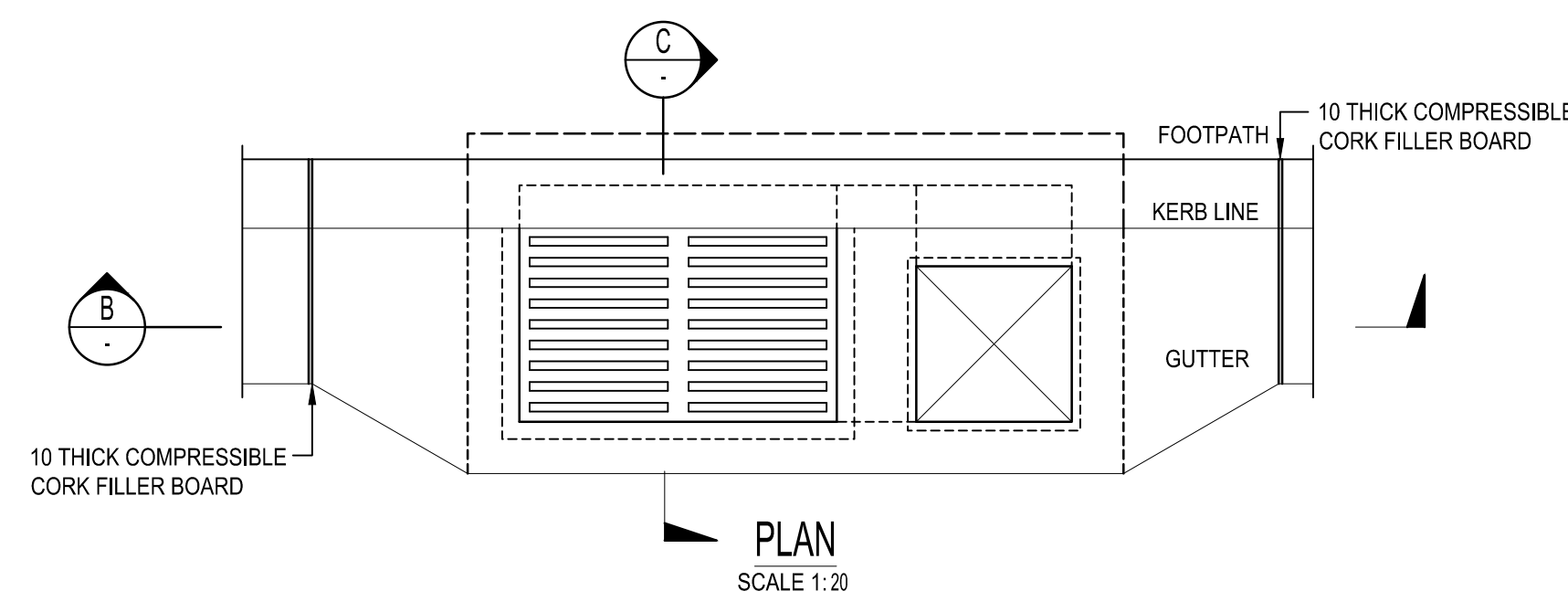
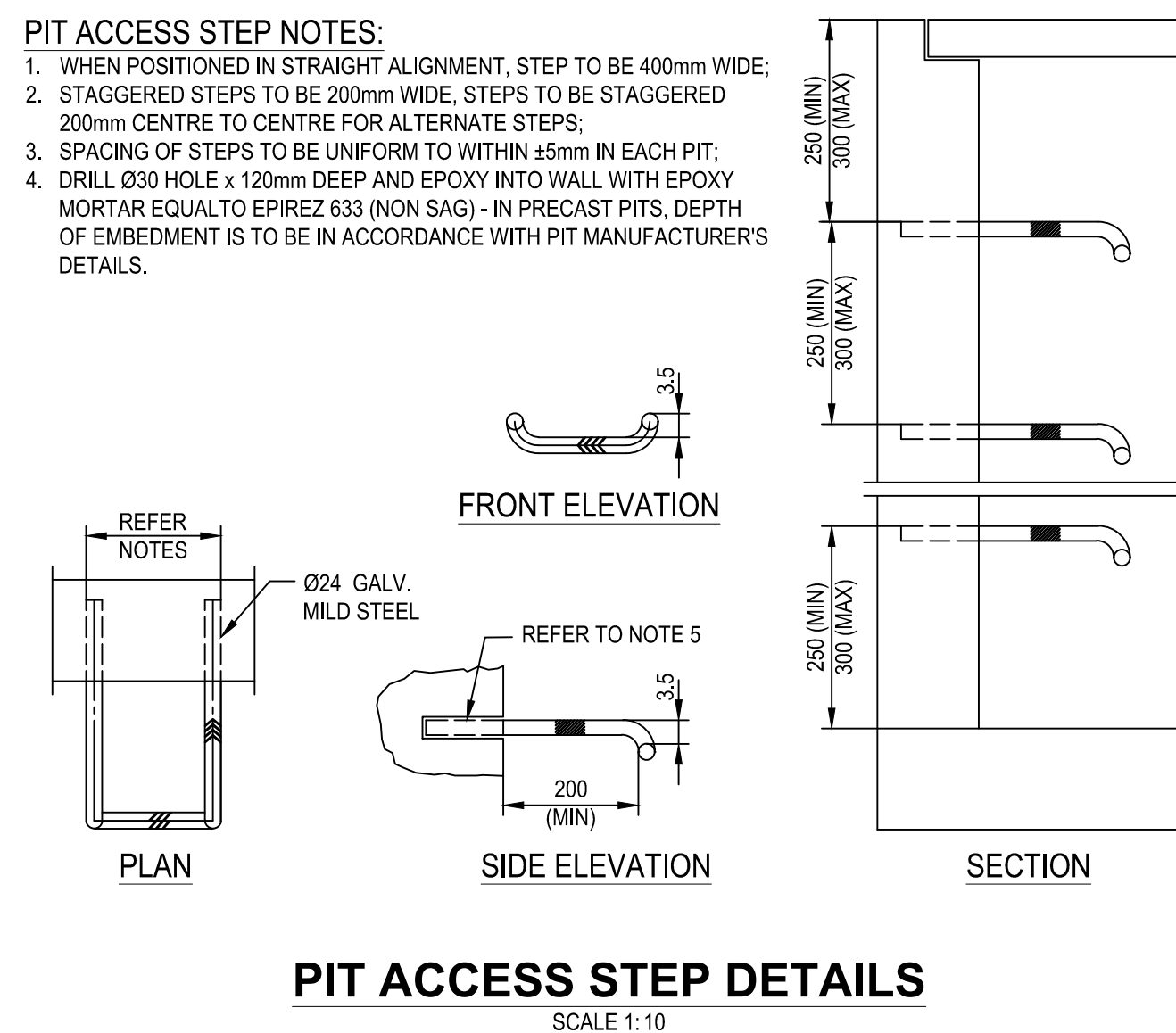
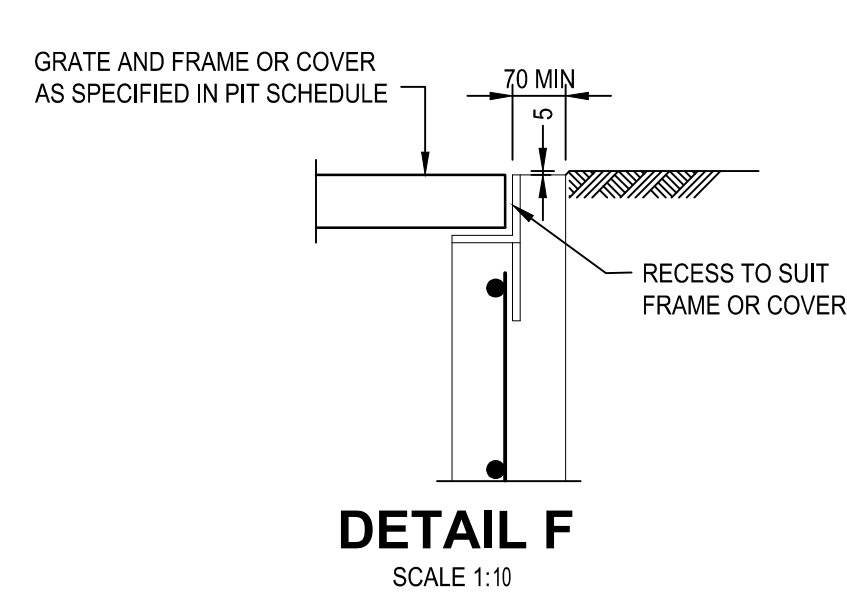
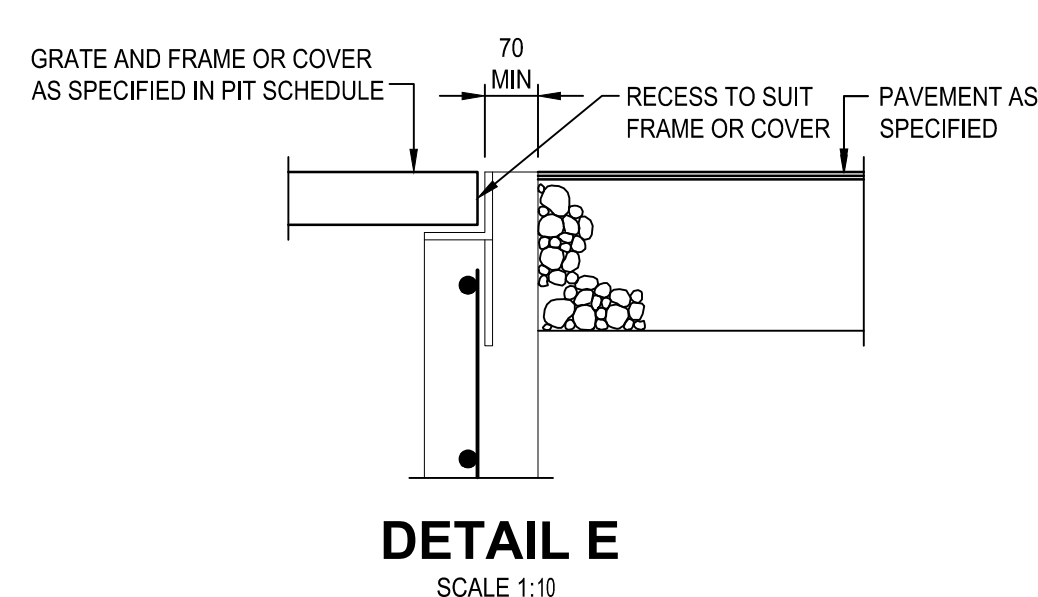
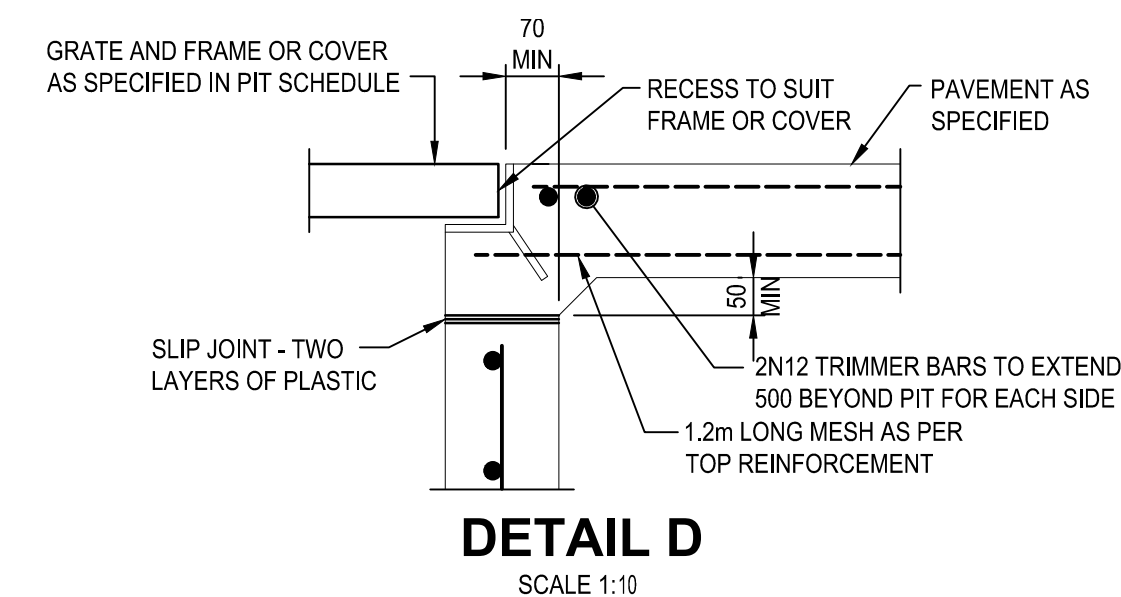
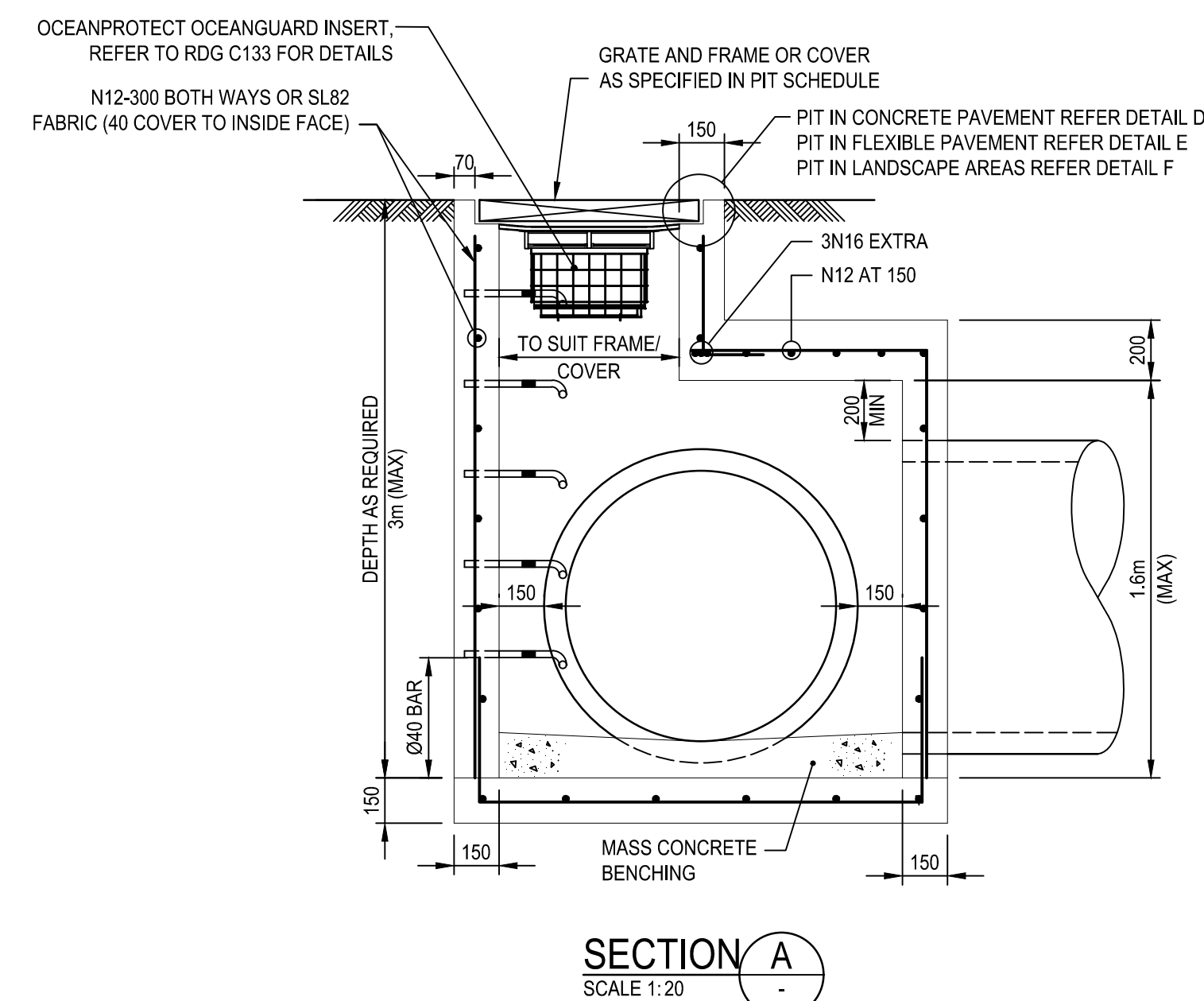
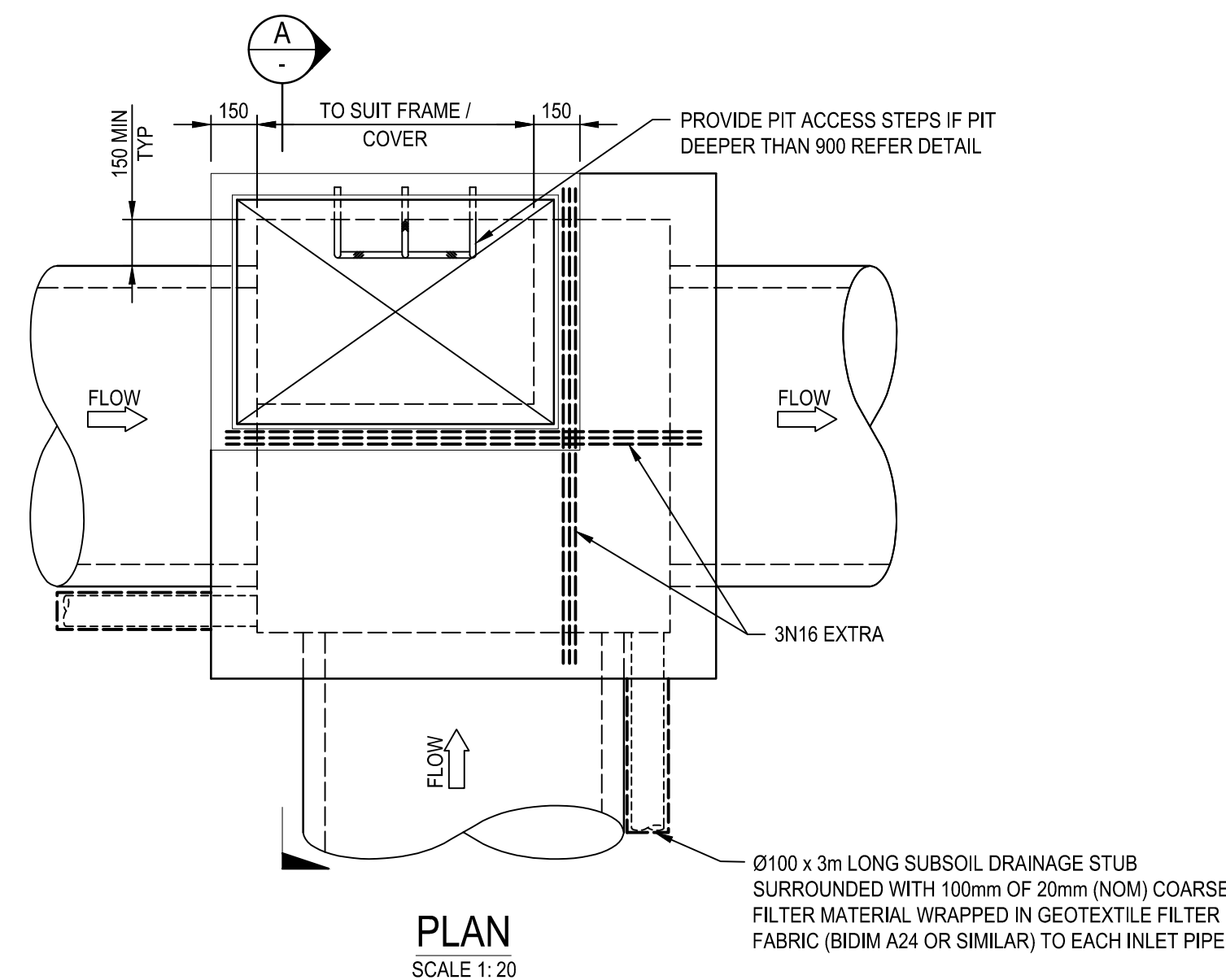
AUTHORISED BY CR

PROJECT No 211227

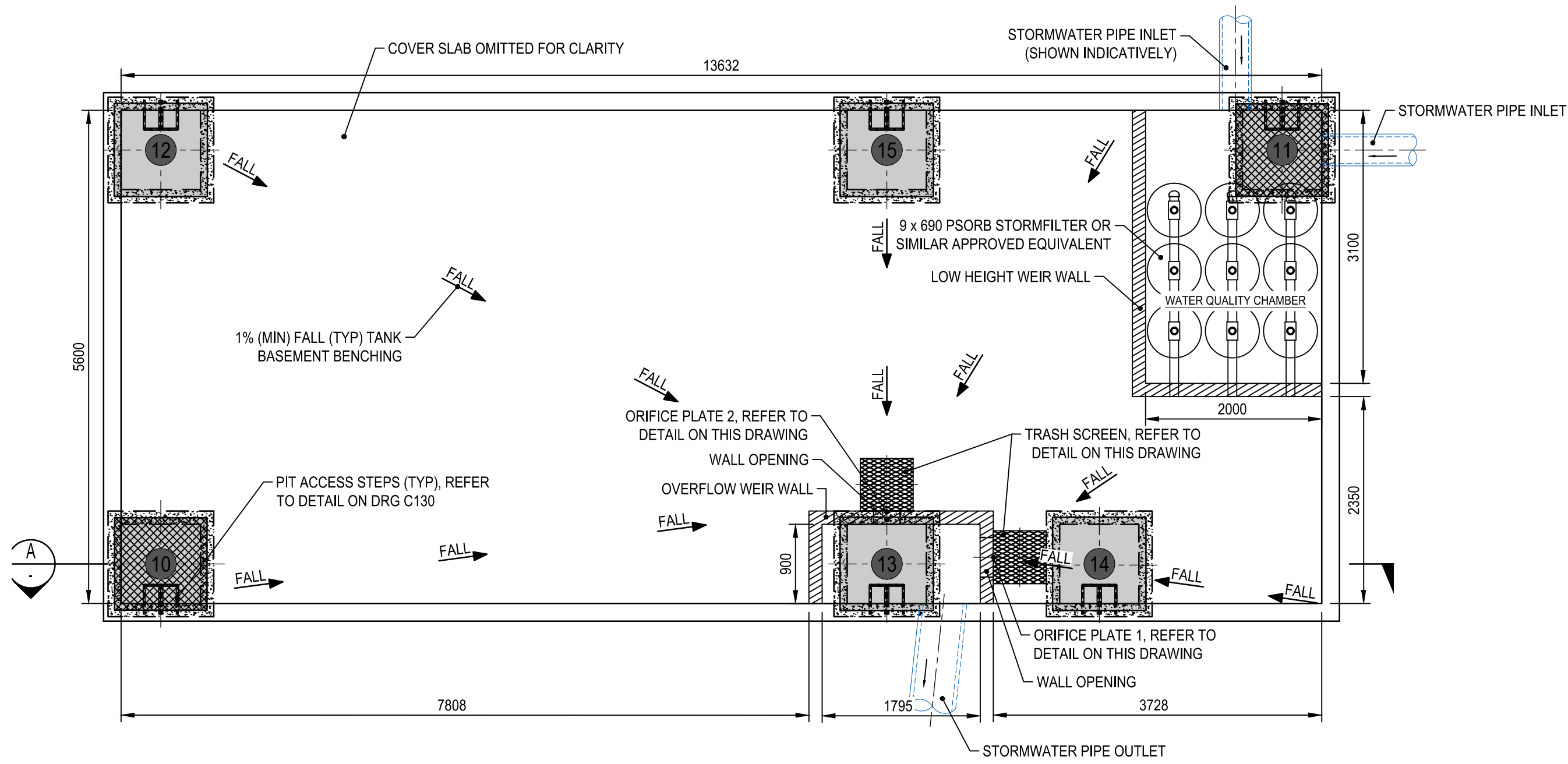
DRAWING No C125

REVISION P1

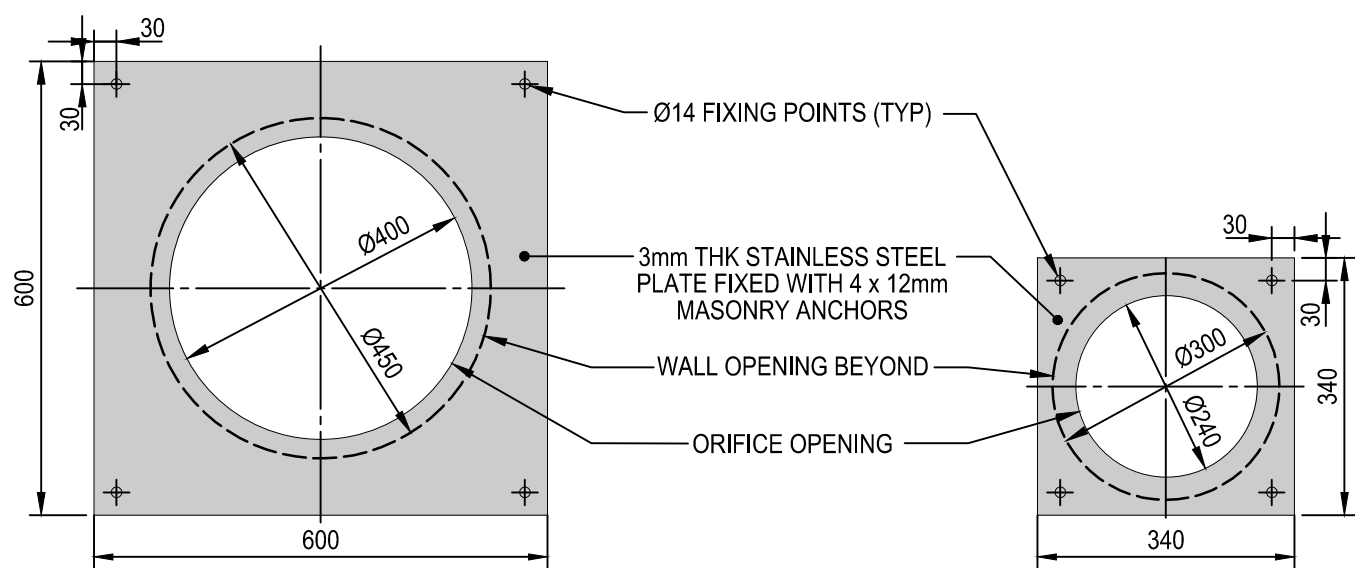
Plot File Created: Jul 10, 2024 - 10:48am



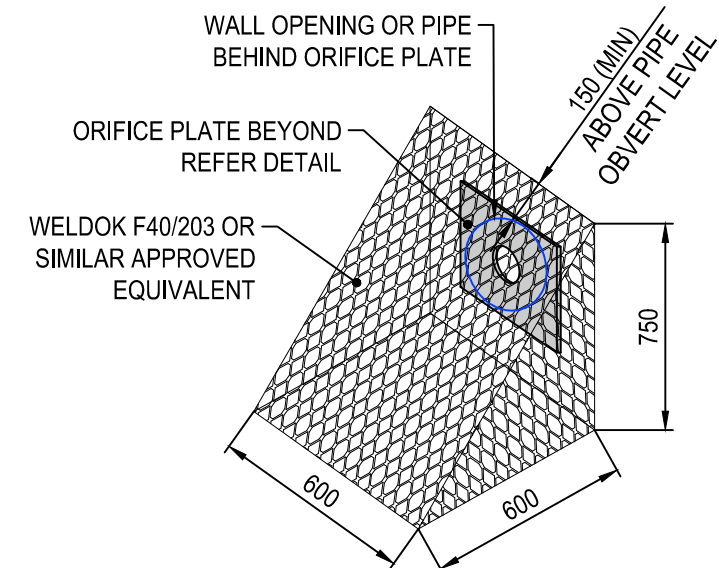
THIS DRAWING IS COPYRIGHT AND IS THE PROPERTY OF
TAYLOR THOMSON WHITTING (NSW) PTY LTD AND MUST
NOT BE USED WITHOUT AUTHORISATION.
THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL
RELEVANT NOTES ON DRAWING C101



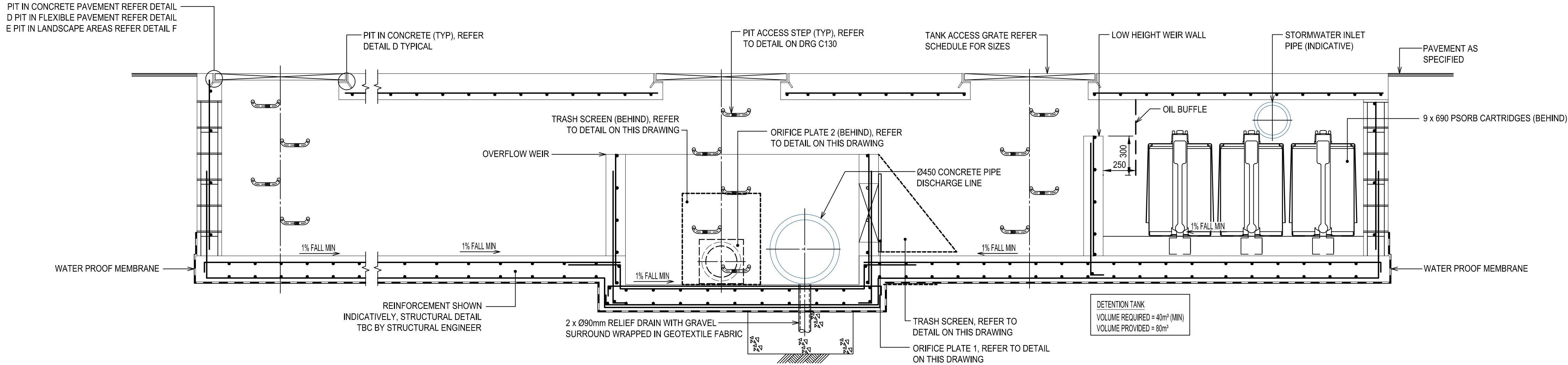
PLAN
SCALE 1:50



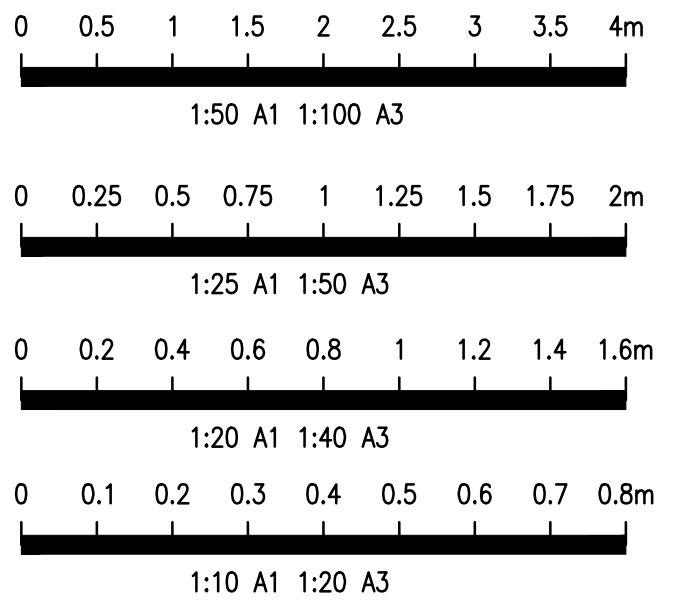
ORIFICE PLATE DETAILS
SCALE 1:10



TRASH SCREEN DETAIL
SCALE 1:25



SECTION THROUGH DETENTION TANK
SCALE 1:20



THIS DRAWING HAS BEEN PREPARED USING COLOUR

FILENAME: Z:\path\211227\swa\c131.dwg - USER: mcshe - Plot File Created: Jul 10, 2024 - 11:00am

P1	ISSUED FOR SSDA	SF	LA	10.07.24	
REV	DESCRIPTION	CHK	DR	DATE	REV DESCRIPTION

ARCHITECT:
JACKSON TEECE

ENGINEER:
TTW Structural
Civil
Traffic
Façade
612 9439 7288 | Level 6, 73 Miller Street, North Sydney, NSW 2060

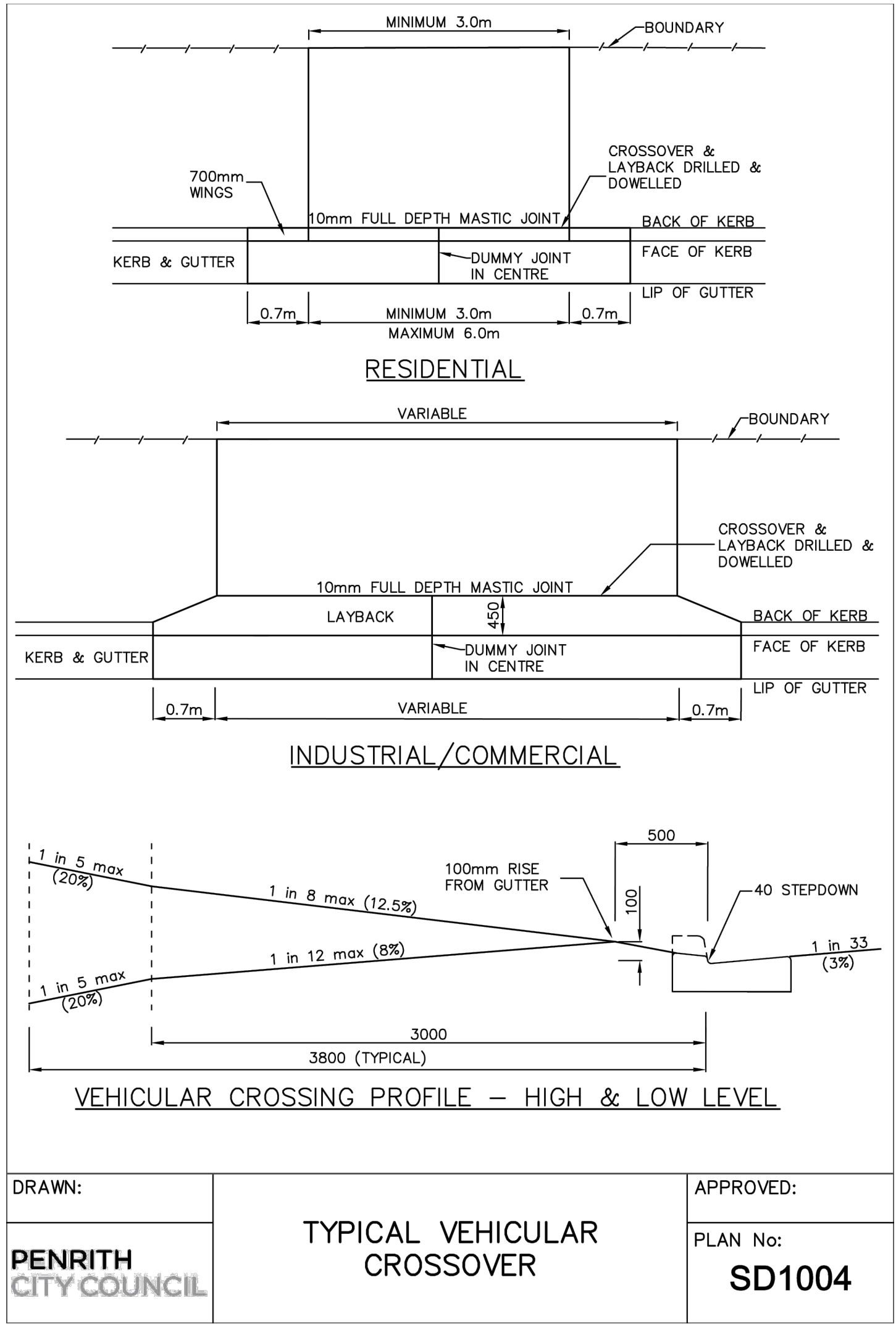
PROJECT:
SUMMITCARE PENRITH
366 JAMISON ROAD,
JAMISONTOWN NSW 2750

DRAWING NAME:
TYPICAL DETAILS, SHEET 2

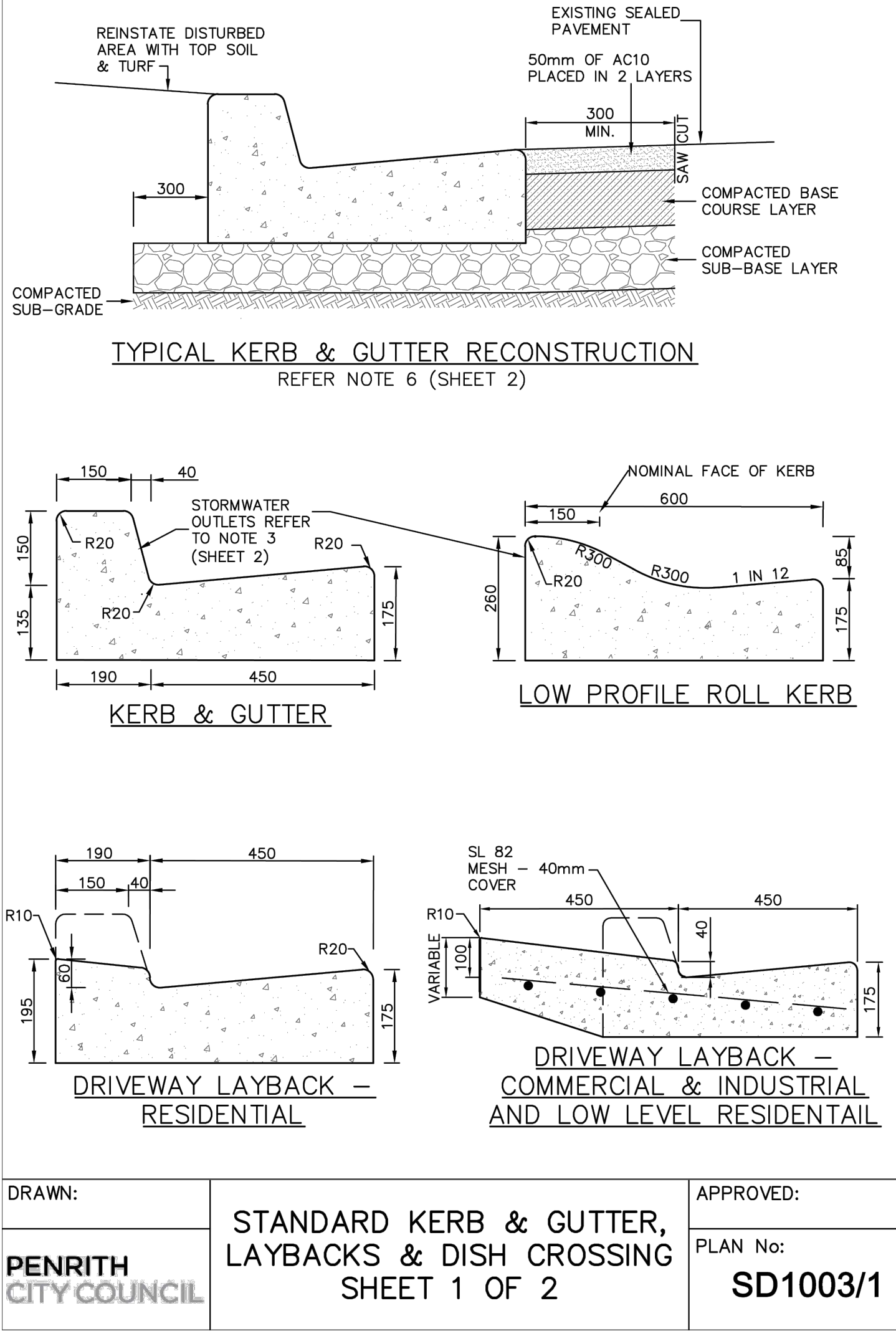
SCALE : A1
AS SHOWN
PROJECT No
211227
Plot File Created: Jul 10, 2024 - 11:00am

DRAWN BY
LA
DRAWING No
C131

AUTHORISED BY
CR
REVISION
P1

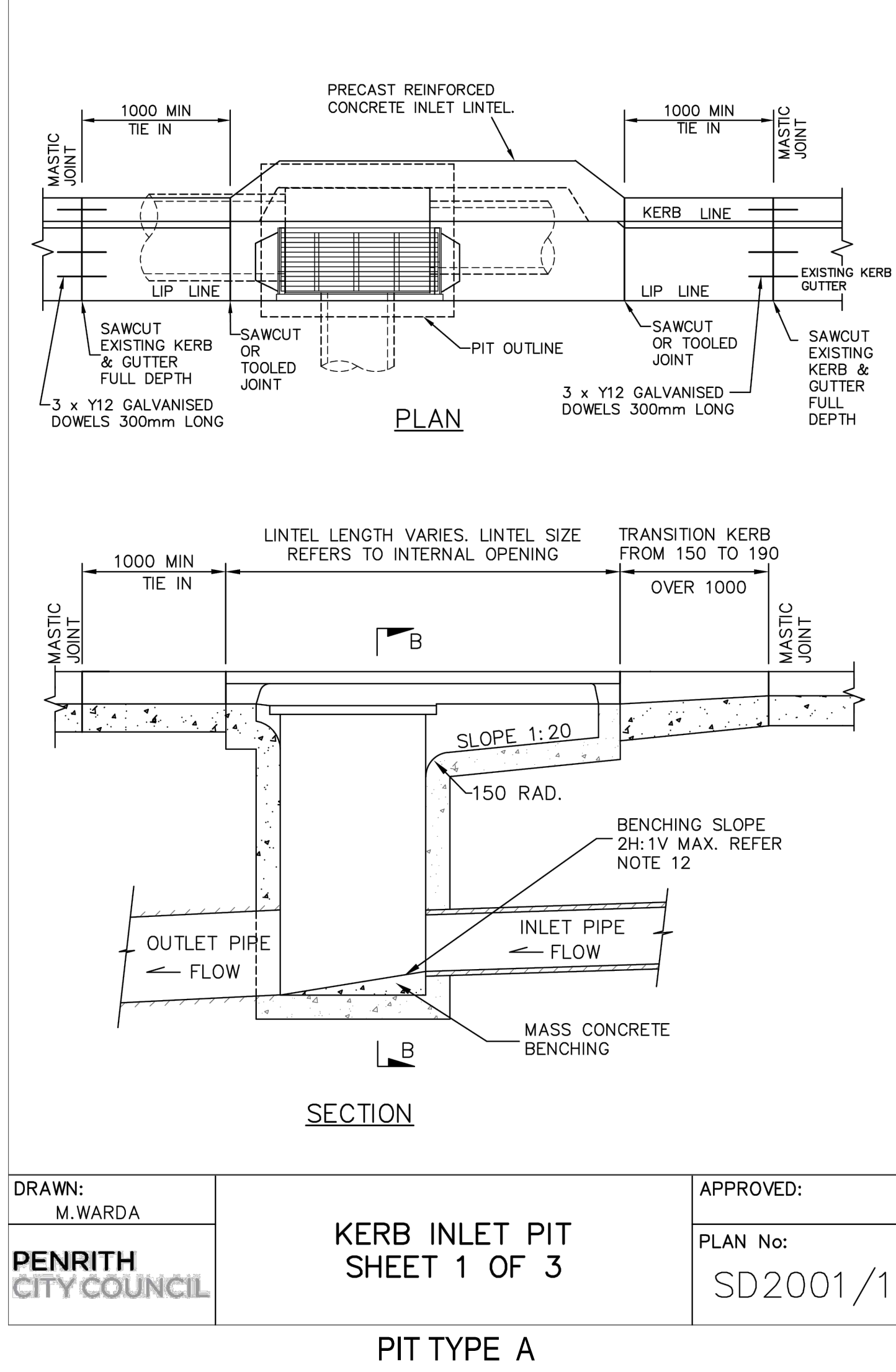


DRAWN:		APPROVED:
PENRITH CITY COUNCIL	TYPICAL VEHICULAR CROSSOVER	PLAN No: SD1004

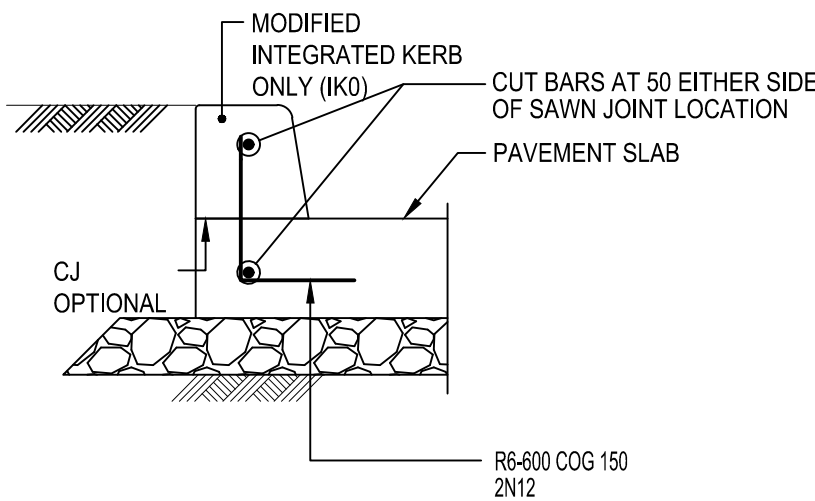


DRAWN:		APPROVED:
PENRITH CITY COUNCIL	STANDARD KERB & GUTTER, LAYBACKS & DISH CROSSING SHEET 1 OF 2	PLAN No: SD1003/1

NOTE:
LINTEL NOT PROPOSED AS PIT
IN ON VEHICULAR CROSSING.



DRAWN:		APPROVED:
M.WARDA	KERB INLET PIT SHEET 1 OF 3	PLAN No: SD2001/1



KERB ONLY INTEGRATED WITH PAVEMENT SLAB (IK)
SCALE 1:10

THIS DRAWING HAS BEEN PREPARED USING COLOUR

FILENAME: Z:\path\211227\council\C132.dwg - USER: encodes - Plot File Created: Jul 10, 2024 - 11:09am

P1	ISSUED FOR SSDA	SF	LA	10.07.24	
REV	DESCRIPTION	CHK	DR	DATE	REV

ARCHITECT:
JACKSON TEECE

ENGINEER:
TTW Structural Civil Traffic Façade
612 9439 7288 Level 6, 73 Miller Street, North Sydney, NSW 2060

PROJECT:
SUMMITCARE PENRITH
366 JAMISON ROAD, JAMISONTOWN NSW 2750

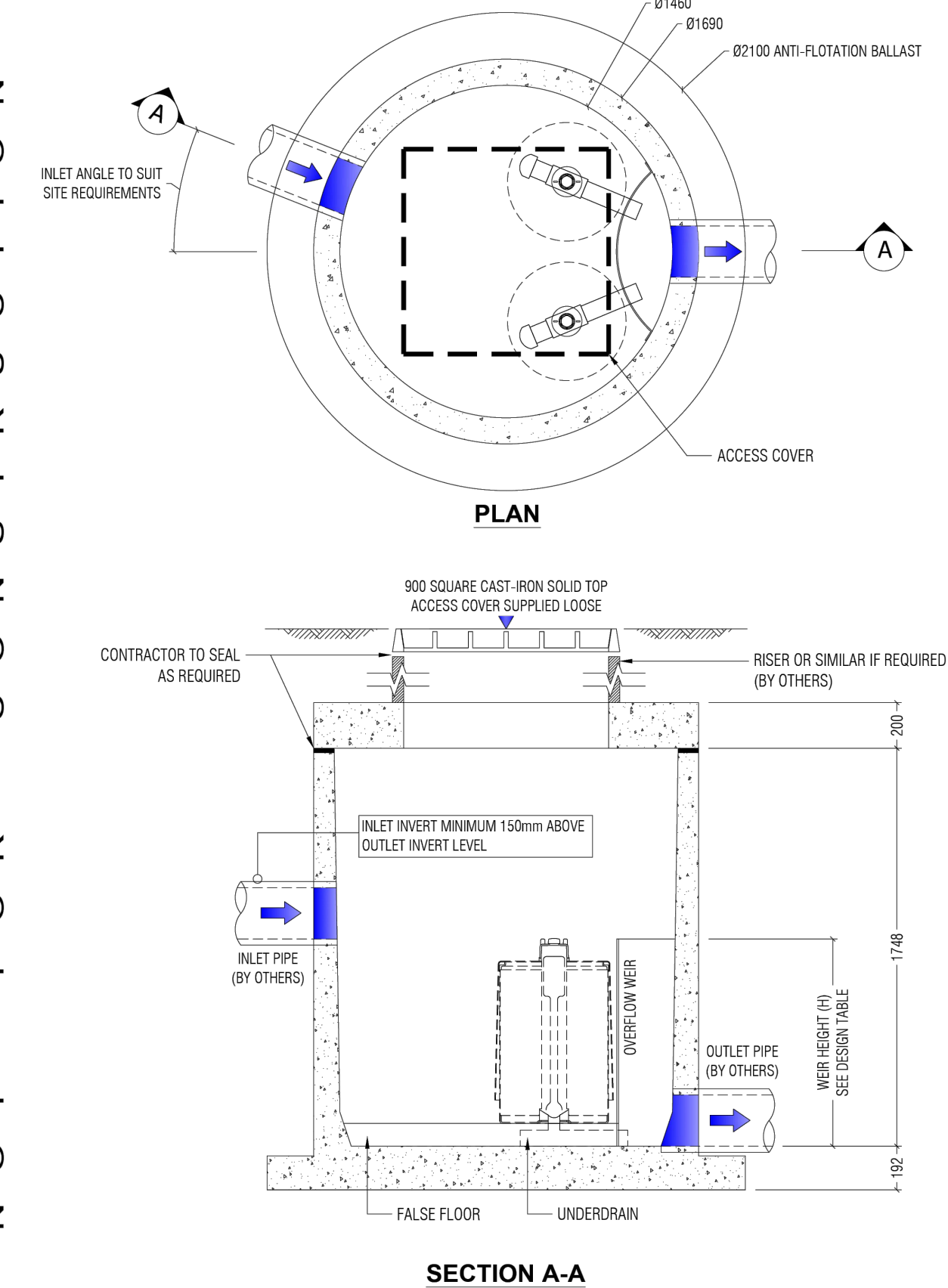
DRAWING NAME:
TYPICAL DETAILS, SHEET 3

SCALE : A1	DRAWN BY	AUTHORISED BY
NTS	LA	CR
PROJECT No	DRAWING No	REVISION
211227	C132	P1
Plot File Created: Jul 10, 2024 - 11:09am		

FILENAME: Z:\p04212127\p04 C133.dwg - USER: encodes - Plot File Created: Jul 10, 2024 - 11:16am

NOT TO SCALE

LAST MODIFIED: 09-11-18



PIT TYPE D

STORMFILTER DESIGN TABLE

- STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CERTIFYING ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S).
- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF-CLEANING. RADIAL MEDIA DEPTH SHALL BE 178mm.

CARTRIDGE NAME / SIPHON HEIGHT (mm)	690	460	310
CARTRIDGE PHYSICAL HEIGHT (mm)	840	600	600
TYPICAL WEIR HEIGHT [H] (mm)	920	690	540
CARTRIDGE FLOW RATE FOR ZPG MEDIA (L/s)	1.6	1.1	0.7
CARTRIDGE FLOW RATE FOR PSORB MEDIA (L/s)	0.9	0.46	0.39

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
NUMBER OF CARTRIDGES REQ'D	2		
SIPHON HEIGHT (310 / 460 / 690)			
MEDIA TYPE (ZPG / PSORB)			
WATER QUALITY FLOW RATE (L/S)			
HYDRAULIC CAPACITY (L/S)	90		
PIPE DATA:	I.L.	MATERIAL	DIAMETER
INLET PIPE #1			
INLET PIPE #2			
INLET PIPE #3			
OUTLET PIPE			
PRECAST MANHOLE WEIGHT	4100kg		
PRECAST LID WEIGHT	1100kg		

GENERAL NOTES

- PRECAST STRUCTURE SUPPLIED WITH CORE HOLES TO SUIT OUTER DIAMETER OF NOMINATED PIPE SIZE / MATERIAL.
- PRECAST STRUCTURE SHALL MEET W80 WHEEL LOAD RATING ASSUMING A MAXIMUM EARTH COVER OF 2.0m AND A GROUND WATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. CERTIFYING ENGINEER TO CONFIRM ACTUAL GROUNDWATER ELEVATION. PRECAST STRUCTURE SHALL BE IN ACCORDANCE WITH A33800.
- IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CERTIFYING ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE SYSTEM, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.
- ALL WATER QUALITY TREATMENT DEVICES REQUIRE PERIODIC MAINTENANCE. REFER TO OPERATION AND MAINTENANCE MANUAL FOR GUIDELINES AND ACCESS REQUIREMENTS.
- SITE SPECIFIC PRODUCTION DRAWING WILL BE PROVIDED ON PLACEMENT OF ORDER.
- DRAWING NOT TO SCALE.

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY CERTIFYING ENGINEER.
- CONTRACTOR TO PROVIDE ALL EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING DETAIL PROVIDED SEPARATELY).
- CONTRACTOR TO APPLY SEALANT TO ALL JOINTS AND TO PROVIDE, INSTALL AND GROUT INLET AND OUTLET PIPES.

STORMFILTER CARTRIDGE DETAIL

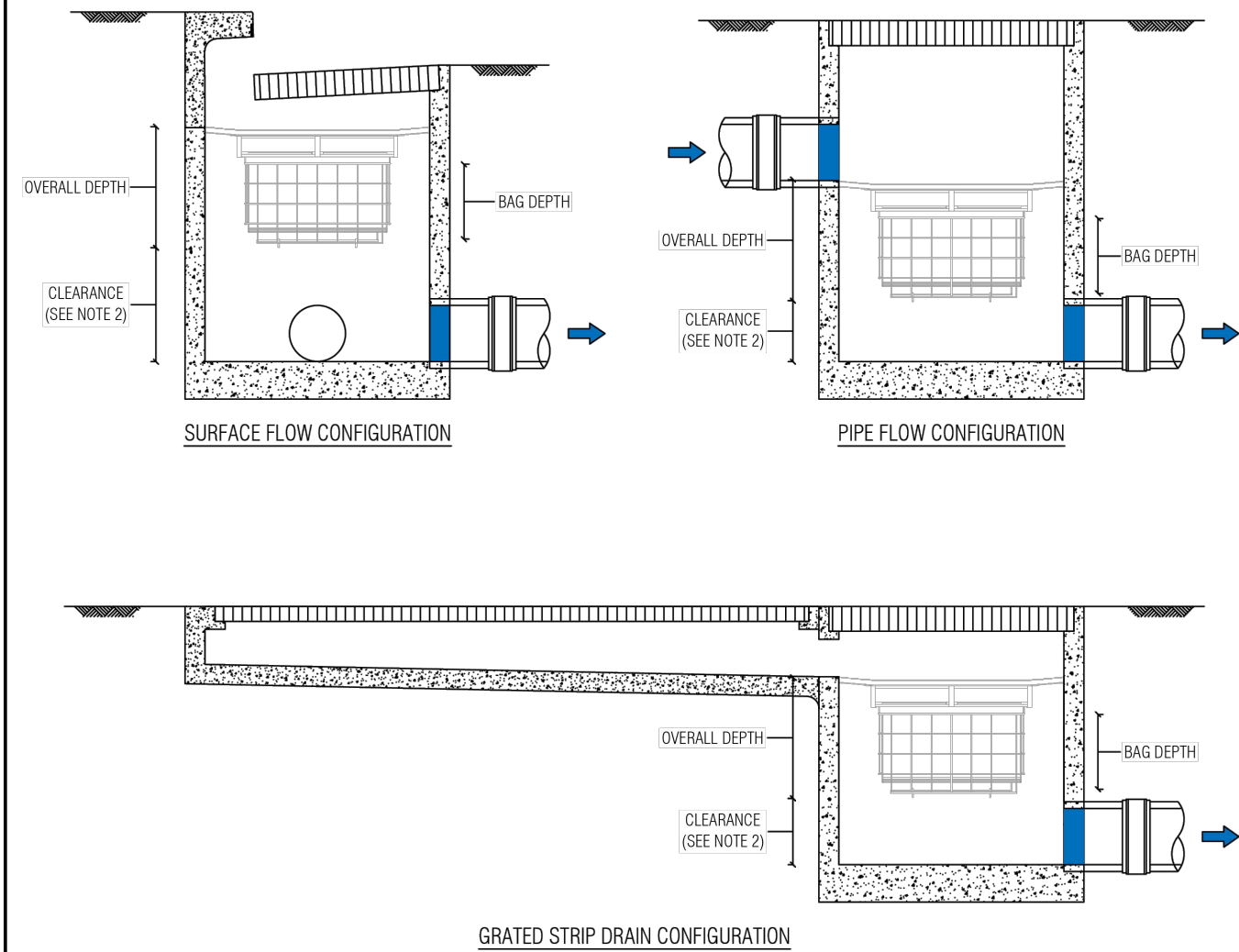
OCEAN PROTECT

PHONE: 1300 354 722 www.oceanprotect.com.au

OCEAN PROTECT
2 CARTRIDGE STORMFILTER SYSTEM
DN1460 MANHOLE
SPECIFICATION DRAWING

OSD
9
690
PSORB
0.9

LAST MODIFIED: 18-03-19



PLAN ID	MAXIMUM PIT PLAN DIMENSIONS
S	450mm x 450mm
M	600mm x 600mm
L	900mm x 900mm
XL	1200mm x 1200mm

DEPTH ID	BAG DEPTH	OVERALL DEPTH
1	170	270
2	300	450
3	600	700

PLAN ID	DEPTH ID			
	1	2	3	
	S	■	■	■
	M	■	■	■
L	■	■	■	
XL	■	■	■	

GENERAL NOTES

- THE MINIMUM CLEARANCE DEPENDS ON THE CONFIGURATION (SEE NOTE 2) AND THE LOCAL COUNCIL REQUIREMENTS.
- CLEARANCE FOR ANY PIT WITHOUT AN INLET PIPE (ONLY USED FOR SURFACE FLOW) CAN BE AS LOW AS 50mm. FOR OTHER PITS, THE RECOMMENDED CLEARANCE SHOULD BE GREATER OR EQUAL TO THE PIPE OBVERT SO AS NOT TO INHIBIT HYDRAULIC CAPACITY.
- OCEAN PROTECT PROVIDES TWO FILTRATION BAG TYPES: 200 MICRON BAGS FOR HIGHER WATER QUALITY FILTERING AND A COARSE BAG FOR TARGETING GROSS POLLUTANTS.
- DRAWINGS NOT TO SCALE.

OCEAN PROTECT

PHONE: 1300 354 722 www.oceanprotect.com.au

OCEAN PROTECT
OCEANGUARD
TYPICAL ARRANGEMENTS
SPECIFICATION DRAWING

THIS DRAWING IS COPYRIGHT AND IS THE PROPERTY OF TAYLOR THOMSON WHITTING (NSW) PTY LTD AND MUST NOT BE USED WITHOUT AUTHORISATION. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C101

THIS DRAWING HAS BEEN PREPARED USING COLOUR

P1	ISSUED FOR SSDA	SF	LA	10.07.24	
REV	DESCRIPTION	CHK	DR	DATE	REV DESCRIPTION

ARCHITECT:
JACKSON TEECE

ENGINEER:
TTW Structural Civil Traffic Façade
612 9439 7288 | Level 6, 73 Miller Street, North Sydney, NSW 2060

PROJECT:
SUMMITCARE PENRITH
366 JAMISON ROAD,
JAMISONTOWN NSW 2750

DRAWING NAME:
TYPICAL DETAILS, SHEET 4

SCALE : A1 NTS	DRAWN BY LA	AUTHORISED BY CR
PROJECT No 211227	DRAWING No C133	REVISION P1
Plot File Created: Jul 10, 2024 - 11:16am		

Appendix B

DRAINS Results

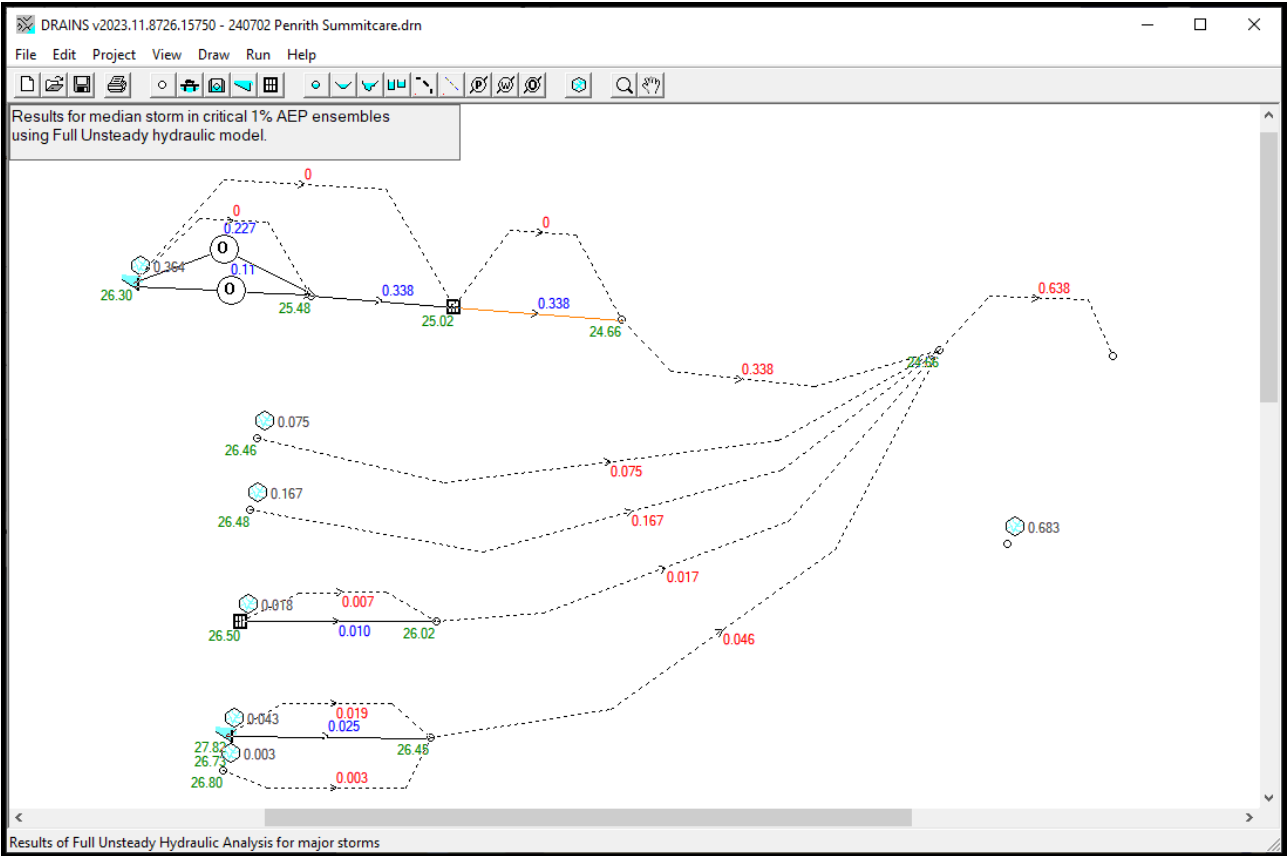


Figure A 1: 1% AEP Results

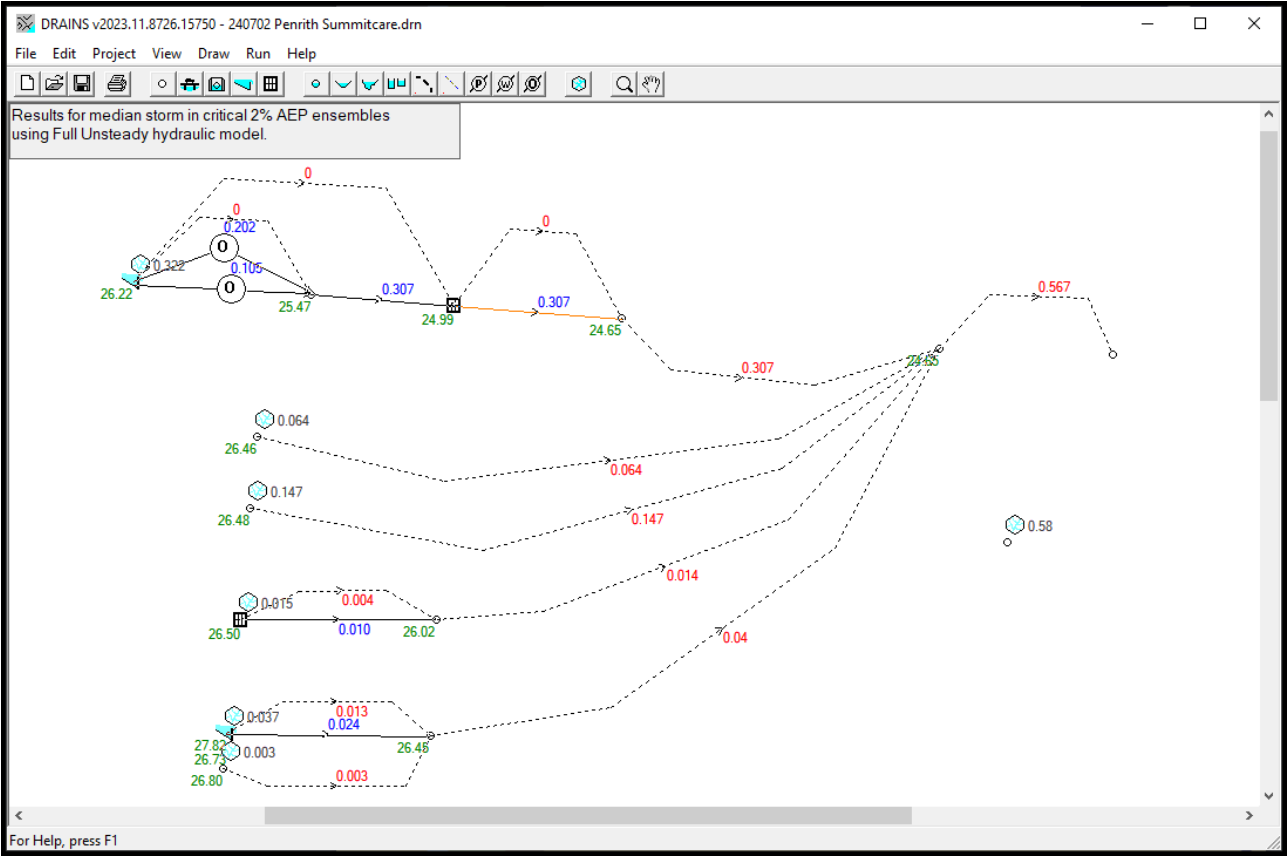


Figure A 2: 2% AEP Results





Appendix C

MUSIC-link Report

MUSIC-link Report

Project Details		Company Details	
Project:	Penrith Summitcare	Company:	Taylor Thomson Whitting Pty Ltd (NSW)
Report Export Date:	28/06/2024	Contact:	
Catchment Name:	240619	Address:	
Catchment Area:	1.113ha	Phone:	
Impervious Area*:	70.19%	Email:	
Rainfall Station:	67113 PENRITH		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1999 - 31/12/2008 11:54:00 PM		
Mean Annual Rainfall:	691mm		
Evapotranspiration:	1158mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.34		
Study Area:	Penrith		
Scenario:	Penrith Development		

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

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: Receiving Node	Reduction	Node Type	Number	Node Type	Number
Flow	9.43%	Sedimentation Basin Node	2	Urban Source Node	6
TSS	87.5%	Swale Node	1		
TP	66.6%	Rain Water Tank Node	1		
TN	51.5%	GPT Node	4		
GP	99.4%	Generic Node	2		

Comments

Proprietary devices used

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
GPT	1 x OceanGuard	Hi-flow bypass rate (cum/sec)	None	99	0.02
GPT	1 x OceanGuard	Hi-flow bypass rate (cum/sec)	None	99	0.02
GPT	1 x OceanGuard	Hi-flow bypass rate (cum/sec)	None	99	0.02
GPT	2 x OceanGuard	Hi-flow bypass rate (cum/sec)	None	99	0.04
Rain	Rainwater Tank	% Reuse Demand Met	80	None	100
Receiving	Receiving Node	% Load Reduction	None	None	9.43
Receiving	Receiving Node	GP % Load Reduction	90	None	99.4
Receiving	Receiving Node	TN % Load Reduction	45	None	51.5
Receiving	Receiving Node	TP % Load Reduction	60	None	66.6
Receiving	Receiving Node	TSS % Load Reduction	85	None	87.5
Sedimentation	SF Chamber (5.8 sqm)	High Flow Bypass Out (ML/yr)	None	None	0
Sedimentation	SF Manhole DN1460 (1.6sqm)	High Flow Bypass Out (ML/yr)	None	None	0
Swale	Swale	Bed slope	0.01	0.05	0.01
Urban	Building Roof and Western Driveway	Area Impervious (ha)	None	None	0.543
Urban	Building Roof and Western Driveway	Area Pervious (ha)	None	None	0
Urban	Building Roof and Western Driveway	Total Area (ha)	None	None	0.543
Urban	Eastern Driveway Bypass	Area Impervious (ha)	None	None	0.005
Urban	Eastern Driveway Bypass	Area Pervious (ha)	None	None	0
Urban	Eastern Driveway Bypass	Total Area (ha)	None	None	0.005
Urban	Eastern Landscaping	Area Impervious (ha)	None	None	0.049
Urban	Eastern Landscaping	Area Pervious (ha)	None	None	0.008
Urban	Eastern Landscaping	Total Area (ha)	None	None	0.058
Urban	Northern Landscaping	Area Impervious (ha)	None	None	0.087
Urban	Northern Landscaping	Area Pervious (ha)	None	None	0.208
Urban	Northern Landscaping	Total Area (ha)	None	None	0.296
Urban	Southern Landscaping	Area Impervious (ha)	None	None	0.09
Urban	Southern Landscaping	Area Pervious (ha)	None	None	0.09
Urban	Southern Landscaping	Total Area (ha)	None	None	0.18
Urban	Western Landscaping	Area Impervious (ha)	None	None	0.006
Urban	Western Landscaping	Area Pervious (ha)	None	None	0.024
Urban	Western Landscaping	Total Area (ha)	None	None	0.031

Only certain parameters are reported when they pass validation

Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Sedimentation	SF Chamber (5.8 sqm)	Notional Detention Time (hrs)	8	12	0.0872
Sedimentation	SF Chamber (5.8 sqm)	Total Nitrogen - k (m/yr)	500	500	1
Sedimentation	SF Chamber (5.8 sqm)	Total Phosphorus - k (m/yr)	6000	6000	1
Sedimentation	SF Chamber (5.8 sqm)	Total Suspended Solids - k (m/yr)	8000	8000	1
Sedimentation	SF Manhole DN1460 (1.6sqm)	Notional Detention Time (hrs)	8	12	0.0961
Sedimentation	SF Manhole DN1460 (1.6sqm)	Total Nitrogen - k (m/yr)	500	500	1
Sedimentation	SF Manhole DN1460 (1.6sqm)	Total Phosphorus - k (m/yr)	6000	6000	1
Sedimentation	SF Manhole DN1460 (1.6sqm)	Total Suspended Solids - k (m/yr)	8000	8000	1

Only certain parameters are reported when they pass validation

Appendix D

Council Correspondence

RE: 366 Jamison Road Water Management Plan

Tim Gowing <tim.gowing@penrith.city>

Mon 08/04/2024 4:33 PM

To: Avneet Singh <avneet.singh@ttw.com.au>

Cc: Stephen Fok <stephen.fok@ttw.com.au>

Some people who received this message don't often get email from tim.gowing@penrith.city. [Learn why this is important](#)

[External Email]: Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Avneet,

In relation to stormwater quality and WSUD, the stormwater management plan would need to demonstrate compliance with Council's WSUD Policy and DCP (Chapter C3). The assumptions below in relation to water quality align with Council's WSUD Policy and DCP but there are additional items that must be considered including use of harvested rainwater to meet a minimum of 80% non-potable demands.

The following information should also be provided:

- The Stormwater management report must also demonstrate how the development complies with the SEPP (Biodiversity and Conservation) 2021 Chapter 6 Water Catchments, Division 2 Controls on development generally Section 6.6 Water quality and Council's WSUD Policy.
- A minimum of 80% non-potable water demand is required to be met with harvested rainwater.
- An electronic version of the MUSIC model should be submitted.
- Concept Stormwater plans must be prepared in support of the proposal.
- Operation and Maintenance Manuals for the stormwater treatment measures must also be submitted in support of any proposal.

The stormwater management plans and supporting information shall be prepared in accordance with Council's WSUD Technical Guidelines which are available at the following link.

<https://www.penrithcity.nsw.gov.au/building-development/development/engineering-requirements-for-development-subdivision>

Should you require any further information regarding this matter, please let me know.

Kind regards,

Tim Gowing

**Senior Water Management Officer
Environmental Health and Compliance**

E tim.gowing@penrith.city

T [+61247327933](tel:+61247327933) | F +61247327958 | M [+61421618341](tel:+61421618341)

PO Box 60, PENRITH NSW 2751

www.visitpenrith.com.au

www.penrithcity.nsw.gov.au



Know someone
who is making a
difference in
Penrith?

From: Ranjan Dhungana
Sent: Wednesday, April 3, 2024 3:05 PM
To: Avneet Singh <avneet.singh@ttw.com.au>
Cc: Stephen Fok <stephen.fok@ttw.com.au>
Subject: RE: 366 Jamison Road Water Management Plan

Hi Avneet,

Thanks for sending your enquiry with Penrith City Council.

I confirm that the assumptions made, as mentioned in the email trail, in relation to the design of OSD is in accordance with the [“Stormwater Drainage Guidelines for Building Developments”](#).

Additionally, It is recommended to follow this guideline in the overall design of the stormwater management system.

Please note that the Council’s Water Management Officer will send the comments/confirmation regarding water quality separately.

Should you have any queries, please do not hesitate to contact me.

Kind regards,

Ranjan Dhungana
Development Engineer
Engineering Services

E Ranjan.Dhungana@penrith.city

T [+61247327774](tel:+61247327774) | F | M

PO Box 60, PENRITH NSW 2751

www.visitpenrith.com.au

www.penrithcity.nsw.gov.au



Follow us



Know someone
who is making a
difference in
Penrith?

From: Avneet Singh <avneet.singh@ttw.com.au>
Sent: Wednesday, 3 April 2024 10:48 AM
To: Penrith City Council - RECORDS <council@penrith.city>
Cc: Stephen Fok <stephen.fok@ttw.com.au>
Subject: 366 Jamison Road Water Management Plan

EXTERNAL EMAIL: This email was received from outside the organisation. Use caution when clicking any links or opening attachments.

Dear Penrith City Council,

In line with the Planning Secretary's Environmental Assessment Requirements, we are requesting confirmation of the following assumptions used within the proposed Water Management Plan for 366 Jamison Road, Jamisontown:

- Water Quantity
 - a. OSD design based on:
 - I. No increase in runoff from the site as a result of the development under all durations for all the storms up to and including the 1% AEP event.
 - II. Where the downstream drainage system has limited capacity or may result in increased flooding, the OSD system shall be designed to match the capacity of the downstream system or ensure no increase in flood levels.
 - III. The maximum discharge to the kerb at any single point shall be 25L/s for 10% AEP storm events. Where this cannot be achieved, site drainage will need to be connected to Council underground pipe system or OSD provided.
- Water Quality
 - a. Pollution load reductions:
 - i. 90% reduction in the post development mean annual load total gross pollutant (greater than 5mm)
 - ii. 85% reduction in the post development mean annual load of Total Suspended Solids (TSS)
 - iii. 60% reduction in the post development mean annual load of Total Phosphorus (TP)
 - iv. 45% reduction in the post development mean annual load of Total Nitrogen (TN)
 - v. 90% Free Oils and Grease with no visible discharge.
 - b. Any changes to the flow rate and flow duration within the receiving watercourses as a result of the development shall be limited as far as practicable. Natural flow paths, discharge point and runoff volumes from the site should also be retained and maintained as far as practicable.
 - c. Impervious areas directly connected to the stormwater system shall be minimised. Runoff from impervious areas such as roofs, driveways and rainwater tank overflows shall be directed onto grass and other landscaped areas designed to accept such flows.

Kind Regards,

Avneet



Avneet Singh | Cadet Engineer

+61 2 9439 7288 | | avneet.singh@ttw.com.au

[TTW Engineers](#) | Sydney

Read our latest news [here](#)