

CIVIL DA REPORT

182-198 Victoria Road and 28-30 Faversham Street, Marrickville Mixed Use Development

Prepared for Toga Wicks Park Developments Pty Ltd

Submission Date: 7/11/2019

181392

Structural Civil Traffic Facade Consulting

Engineers

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1.0 Introduction

Taylor Thomson Whitting (TTW) has been appointed by Toga Wicks Park Developments Pty Ltd to prepare a concept Civil Report to support the Development Application for the proposed works at 182-198 Victoria Road and 28-30 Faversham Street, Marrickville.

1.1 The Site

The site has been divided into "Site A" being 182-198 Victoria Road, and "Site B" Being 28-30 Faversham Street. This report is primarily focussed on Site A.



Figure 1 Sites A and B

The Site A is bounded by Victoria Road to the west, Wicks Park to the south and industrial development to the north and east. The Local Government Area (LGA) is Inner West Council and was previously part of Marrickville Council. The existing site has an area of approximately 7,262m² and is approximately 98% impermeable.



Figure 2 Aerial Image (SIX maps)



Figure 3 Property Boundary and Map View (SIX maps)

1.2 Relevant Documents

- Marrickville DCP 2011
- Turner Architects Drawings (7/02/2019)
- NSW MUSIC Modelling Guidelines 2015
- Culvert Drawings from Sydney Water (1942 1952)
- True North Survey Drawings (01/09/2016)
- Sydney Water email outlining PSD and OSD (27/11/18)
- Marrickville Valley Floodplain Risk Management Study and Plan, Cardno 6/9/2017

2.0 Proposed Development

The existing structures on site will be demolished to make way for the new development.

The proposed development is a multi-storey mixed development with underground parking, retail, apartments and communal garden areas. Part of this development includes the construction of a new stormwater system that will capture and convey rainfall into a culvert owned by Sydney Water. Figure 4 shows the ground floor plan floor plan of the proposed development.

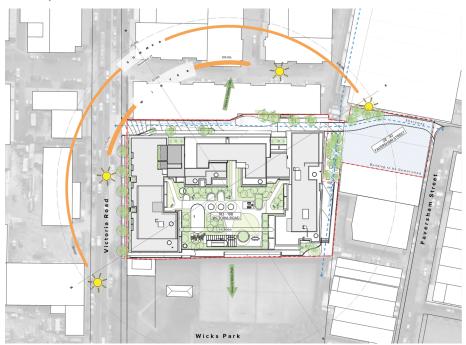




Figure 4 Ground Floor Plan (Turner)

3.0 Stormwater

Stormwater from the ground level will be collected on site and conveyed via a gravity fed underground piped system to discharge to the existing box culvert at the south-west corner of the site. The box culvert is owned by Sydney Water. Sydney Water has indicated they will accept a direct connection to the culvert (refer correspondence in Appendix A). Stormwater will be managed to meet Sydney Waters requirements for permissible site discharge and water quality. The site has been modelled as 100% impervious despite the permeable garden areas. This is a conservative assumption.

3.1 On Site Detention

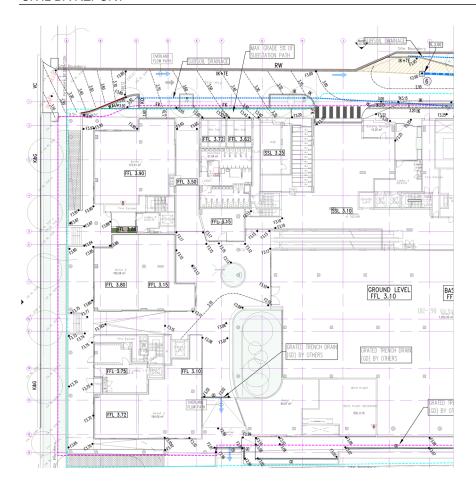
The DCP (section 2.25.3.2 – C5) stipulates that OSD is exempt for this site if stormwater discharges directly into Sydney Water Corporation trunk drainage.

- C5 OSD will be required for all developments except for:
 - Extensions where the proposed extended roof or paved area is less than 40m².
 - Sites that discharge directly to the Cooks River or into a major Sydney Water Corporation controlled trunk drainage system.

However, Jeya Jeyadevan of Sydney Water has advised that the site requires On-Site Detention (OSD) with a volume of at least 108m³ and Permissible Site Discharge (PSD) of 259 L/s (refer to appendix A). The volume of the OSD tank and PSD was based on a 100% impervious site area of 7,262m².

The site was modelled in DRAINS to simulate stormwater flow and design the OSD tank. Due to the site's constraints, 2 separate OSD tanks are required. OSD 1 will be 85m³ with an orifice of 240mm and discharge into OSD 2. OSD 2 will be 35m³ with an orifice of 350mm and discharge into the existing box culvert on the south-west corner of the site. Figure 5 shows the stormwater concept design. The combination of OSD tanks will meet the PSD requirement set by Sydney Water and the combined OSD volume is greater than required (more conservative).

OSD1 is the receiving point for rainwater from the building roofs and level 1 courtyard. The rainwater from OSD1 discharges via the rainwater tank on level B1 to OSD2. Stormwater from the driveway, through site link and other areas on the ground level discharge directly to OSD2.



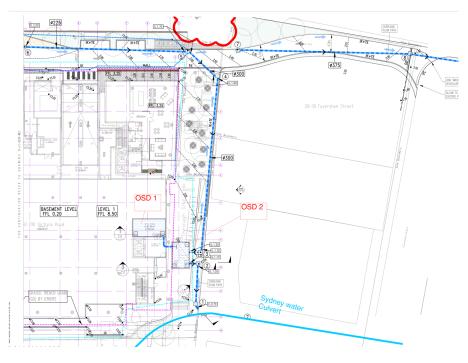


Figure 5 Stormwater arrangement plan

Table 1 below shows the discharge rates of the existing site compared to that of the proposed site for a range of storms. The proposed site meets the discharge requirements

Table 1 Site Discharge Rates

Storm E (AEP)	Event	Existing site	Proposed Site	Requirement
1%	4	465 l/s	251 l/s	259l/s
50%		188 l/s	132 l/s	N/A

The DCP (section 2.25.3.14 – C35) gives a minimum freeboard of 200mm above the OSD operating level to habitable floor areas.

2.25.3.14 Freeboard

C35 Freeboard for floor levels above top water level (TWL) of OSD storages is required for buildings near OSD storages, of at least 0.2 metres above the maximum spillway operating level for habitable areas.

The maximum water level of OSD 2 is at RL2.90m during the 1% AEP storm and the surface level is at RL3.10m. The adjacent area has 200mm freeboard to the OSD. There is an overland flow route from OSD 2 that flows away from buildings and towards Wicks Park. The DRAINS model shows no surcharge from OSD 2 during the 1% AEP storm.

OSD 1 is located within the building envelope and has a maximum water level of RL5.10m during the 1% AEP storm. An overflow pipe is designed to be 0.2m above the maximum water level. The overflow pipe has an invert level of IL5.30m. This pipe discharges to OSD1 which can safely overflow. The DRAINS model shows no surcharge from OSD 1 during the 1% AEP storm

3.2 Water Quality

MUSIC was used to model the pollutant loads within the stormwater leaving the proposed site. The site was split into 2 types of catchments, roof and road, both were considered to be 100% impermeable. The treatment train consists of litter baskets placed in pits and 15 x Stormwater360 StormFilter cartridges (or equivalent) placed in the OSD 2.

The water quality requirements for this site have been given by Sydney Water (refer appendix A) and section 2.17.4 of the Marrickville DCP and are compared to the MUSIC model results in Table 2.

Table 2 MUSIC modelling results

Pollutant	Sydney Water Target (% reduction)	Marrickville DCP Target (% reduction)	Proposed Site (% reduction)
Gross Pollutants	90	90	99
Total Suspended Solids	85	85	86
Total Phosphorous	65	60	69
Total Nitrogen	45	45	46

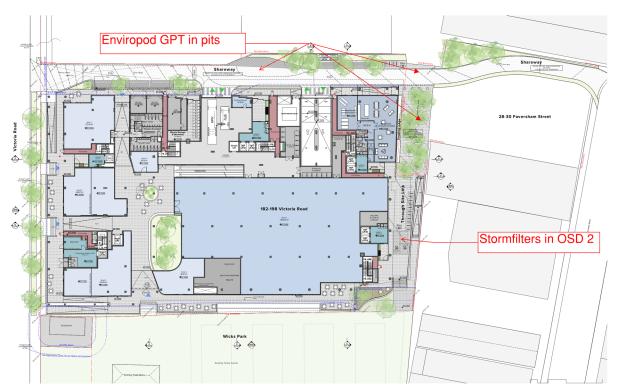


Figure 6 Stormwater treatment train

4.0 Flood Management

The proposed site is located within the Marrickville flood plain as can be seen in Figure 7. The red hatching represents flood liable land. The site is likely to be affected by the 100-year flood associated with local overland flooding. The site is not within the Cooks River Flood Planning Area shown as blue on the MDCP 2011 Flood Planning Area Map.



Figure 7 Extract from Inner West Council MDCP 2011 Flood Planning Area Map

4.1 Flood Modelling

The Marrickville Valley flood model was provided by Council to determine the flood impact of the site. The existing conditions model was modified to better represent the site more accurately. Boundaries representing the buildings were adjusted based on the site survey and aerial photography.

To review the impact of the proposed development on the flood regime, a preliminary site grading was added to the model, along with the proposed building footprints as well as the proposed through site link to Faversham Street.

4.2 Flood Modelling Results

The below figures provide a summary of the flood modelling results



Figure 8 Existing Conditions 1% AEP (100-year ARI) Flood Map



Figure 9 Proposed Developed Conditions 1% AEP (100-year ARI) Flood Map

Flood Hazard mapping for the site under both existing and proposed conditions is shown below. Modelling results indicate that the post-development site is affected by low hazard flooding during the 1% AEP event.

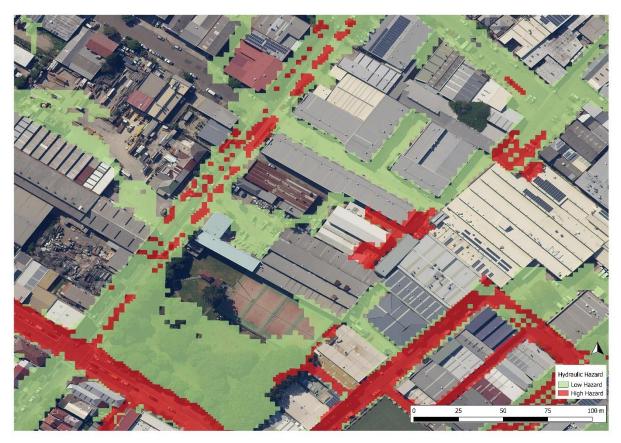


Figure 10 Existing Hazard Conditions 1% AEP (100-year ARI) Flood Map

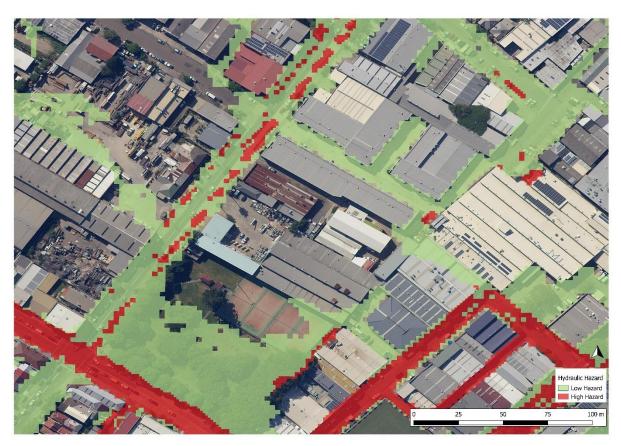


Figure 11 Proposed Hazard Conditions 1% AEP (100-year ARI) Flood Map

The impact of the development on flood behaviour was determined based on the results of the flood modelling. This is shown in Figure 12.



Figure 12 Flood impact map

4.3 Flood Controls

The development involves filling some flood affected land. The DCP (section 2.22.5) outlines the requirements for filling land within the Flood Planning Area:

Controls for filling of land within the Flood Planning Area

- C21 Development consent will not be granted to filling of flood ways or high flood hazard areas. Consideration will only be given to granting development consent to the filling of other flood liable land where:
 - Flood levels are not increased by more than 100mm by the proposed filling.
 - Downstream velocities are not increased by more than 10% by the proposed filling.
 - iii. Proposed filling does not redistribute flows by more than 15%.
 - The potential for cumulative effects of possible filling proposals in that area is minimal.
 - The development potential of surrounding properties is not adversely affected by the filling proposal.
 - The flood liability of buildings on surrounding properties is not increased.
 - vii. The filling creates no local drainage flow/runoff problems.

The development has the following impact on surrounding flood levels:

- Flood levels on Victoria Road are reduced by a small amount (less than 40mm).
- Limited increase in flood levels of less than 40mm on Faversham street immediately downstream of the proposed through site link and in the laneway adjacent the bowling club.
- There is no negative impact on surrounding properties.
- Flood levels in the eastern corner of the site are reduced by up to 850mm. This is a local impact that does not extend far into the property to the north.

Overall, the impact on flooding is minimal.

4.4 Flood Planning Levels

The Marrickville DCP 2011 (section 2.22.5) outlines the requirements for Flood Planning Levels:

Controls for new residential development

- C5 Floor levels (Flood Planning Levels) of habitable rooms must be a minimum of 500mm above the standard flood level at that location. For areas of minor overland flow (a depth of 300mm or less or overland flow of 2cum/sec or less) a lower freeboard of 300mm may be considered on its merits.
- C6 Any portion of buildings below the Flood Planning Level) must be constructed from flood compatible materials (See Schedule 1).
- C7 Flood free access must be provided where practicable.

The flood depth on Victoria Road is greater than 300mm and as such the residential areas fronting Victoria Road have been provided with a 500mm freeboard to the 1% AEP flood level.

The driveway adjoining Victoria Road has been designed with a crest of 3.80mAHD, giving 300mm freeboard to the 1% AEP flood level. In this location the flood depth is limited to 300mm. The driveway crest protects the loading dock and driveway from flooding.

Controls for underground garages

C25 Freeboard protection of 500mm must be provided above the standard flood within the internal driveway prior to descending into the underground garage.

Entry to the basement has a crest of 3.20m AHD to give 500mm freeboard to the flood level in the north eastern corner of the site (near the through site link) of 2.70mAHD.

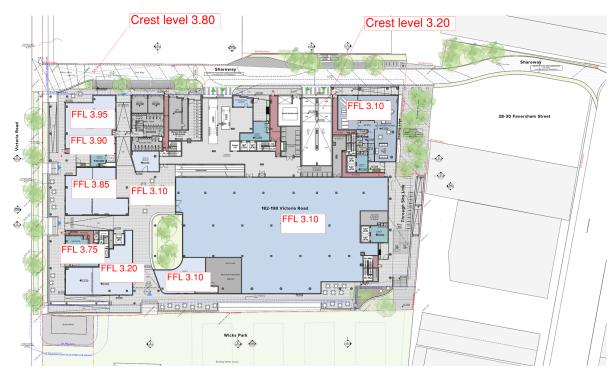


Figure 13 Flood Planning Levels

The DCP notes: "Flood free access must be provided where practicable". The streets around the site are flood affected, so there is no flood free access available in this sense. The proposed building and portions of Wicks Park are not flood affected. Site users should remain in place in a flood event and wait for flood waters to recede. TTW have prepared a Flood Emergency Management Plan for the site in accordance with Marrickville Council DCP, attached as Appendix C.

5.0 Construction Phase Stormwater Management

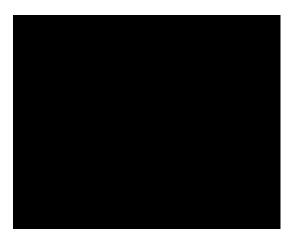
During the construction phase of the project, an erosion and sediment control plan will be implemented to prevent sediment laden stormwater from entering the council drainage network. A conceptual Erosion and Sediment control plan will be included in the civil drawing set and is in accordance with the "Blue Book" - Managing Urban Stormwater: Soils and Construction (Landcom NSW). The controls include

- Sediment fences;
- · Vehicle shaker grid and wash down; and
- Sand bags or geotextile filter surrounding pits.

6.0 Conclusion

The proposed Site A development at 182 – 198 Victoria Road and 28-30 Faversham Street, Marrickville consists of a mixed development with underground parking, retail spaces and residential apartments.

- The proposed development is protected from flood by a crest on the driveway and a raised platform along Victoria Road. The Flood Planning level varies from RL3.95m on the northern side of the development to RL3.70m on the southern side of the development. The proposed site is compliant with Flood Planning Levels as per section 2.22 of the Marrickville DCP 2011.
- 2 separate OSD tanks are proposed with an effective volume of 120m³ and an orifice size of 240mm for OSD 1 and 350mm for OSD 2. There will be no increase to current discharge rates for storm events ranging from 50% to 1% AEP and stormwater will discharge to an existing box culvert owned by Sydney Water. Sydney Water have been contacted and will accept this connection on the basis the stormwater detention and quality requirements are met.
- Water quality targets can be meet with Stormwater Enviropods placed in pits and 15x Stormwater360 Storm Filters in the OSD tank 2.



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Appendix A

OSD and PSD Requirements

From: Stormwater < Stormwater @sydneywater.com.au>

Sent: Tuesday, 27 November 2018 8:29 AM

To: Jimmy Soo < Jimmy.Soo@jhaengineers.com.au>

Cc: Diego Montelver e < Diego. Montelver e@jhaengineers.com.au>

Subject: RE: Wicks Park Mixed Used Development - OSD requirement or Direct Connection

Jimmy,

With reference to your email dated 26 November 2018 regarding the proposed development at 182 – 198 Victoria Road, Marrickville.

Following are the general requirements for any development at this location. These are only general requirements and specific requirements can only be provided, once you lodge the Section 73 application to Sydney Water, upon obtaining the DA approval for your development.

Building Over and Adjacent to Stormwater Assets

- No building or permanent structure is to be proposed over the stormwater channel / pipe or within 1m from
 the outside wall of the stormwater asset or within Sydney Water easement whichever is larger. Permanent
 structures include (but are not limited to) basement car park, hanging balcony, roof eves, hanging stairs,
 stormwater pits, stormwater pipes, elevated driveway, basement access or similar structures. This clearance
 requirement would apply for unlimited depth and height.
- The applicant is required to submit the elevation drawings with the stormwater channel/pipe, to ensure
 that the proposed buildings and permanent structures are 1m away from the outside face of the
 stormwater channel and away from any Sydney Water easement.

Locating the Exact Position of the Stormwater Channel

Exact position of the stormwater channel/ pipe is to be identified using the pot holes or any other acceptable survey method. Location of the easement position should not be used as location of the stormwater channel/ Pipe.

On Site Detention Requirements

Sydney Water's On Site Detention requirements are based on its policy and guidelines as published on our website. According to this policy and guidelines, On Site Detention requirements would apply any development at this location, if you choose to make direct stormwater connection to Sydney Water's stormwater system.

On Site Detention requirements for the 7,262 square meters site at this location is as follows and would only apply if you make direct stormwater connection to Sydney Water's stormwater system:

On Site Detention 108 cubic meter

Permissible Site Discharge 259 L/s

The approval for the On Site Detention would only be given as part of the Section 73 application for this development and part of the stormwater connection approval. The On Site Detention is to be designed according to the above values and submitted to Sydney Water for approval with the stormwater connection details. The following details are to be included in your submission for On Site Detention approval:

- Location of the On Site Detention in relation to the development
- Location of the On Site Detention in relation to overall stormwater network of the property
- Plan and Elevation of the On Site Detention tank with all dimensions
- Orifice plate calculation

Direct Stormwater Connection to Sydney Water's stormwater system

Sydney Water would not object to any direct stormwater connection to Sydney Water's stormwater system from this development provided it complies with Sydney Water's connection requirements which include On Site Detention requirements and Water Quality requirements.

Discharged Stormwater Quality Targets

Stormwater run-off from the site should be of appropriate quality before discharged into a Sydney Water stormwater asset or system. Developments must demonstrate stormwater quality improvement measures that meet the following specified stormwater pollutant reductions:

Pollutant	Pollutant load reduction objective (%)
Gross Pollutants (>5mm)	90
Total Suspended Solids	85
Total Phosphorus	65
Total Nitrogen	45

You may use our tool, through the website below, to determine whether your development is Deemed to Comply. In some cases though, we may request an eWater MUSIC model before approving your connection.

https://stormwater.flowmatters.com.au/ /#/

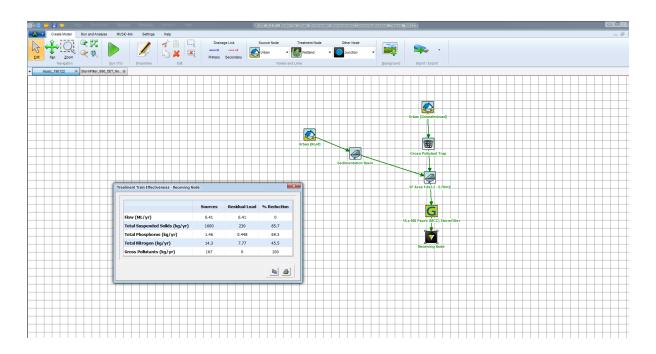
Best Regards

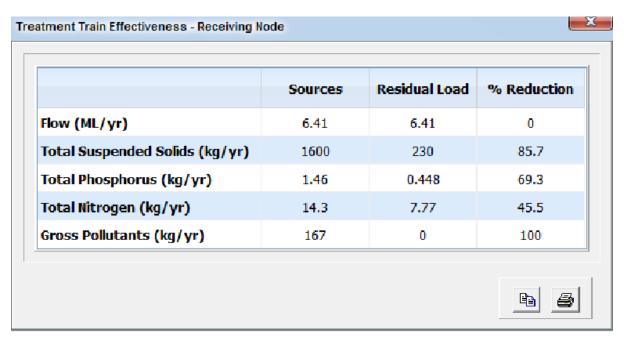


Jeya Jeyadevan | Senior Capability Assessor Liveable City Solutions | Sydney Water Level 7, 1 Smith St Parramatta NSW 2150 PO Box 399 Parramatta NSW 2124 T 8849 6118 | Mobile 0409 318 827 | Email jeya.jeyadevan@sydneywater.com.au sydneywater.com.au

Appendix B

MUSIC Model





Appendix C

Flood Response Management Plan



Flood Evacuation Management Plan

182-198 Victoria Road Marrickville

Prepared for Toga Wicks Park Developments Pty Ltd 7/11/2019

181392

Structural Civil Traffic Facade

Consulting Engineers

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1.0 Introduction

Taylor Thomson Whitting (TTW) have prepared a Flood Evacuation Management Plan (FEMP) for the proposed development at 182-198 Victoria Road Marrickville ("Site"). The Site is located within the Marrickville Valley Catchment and is bounded by Victoria Road to the west, Wicks Park to the south and industrial development to the north and east.

This FEMP has been prepared as part of a Development Application for the Site. As parts of the site lie below the probable maximum flood (PMF) level, TTW has prepared this site-specific FEMP to be developed and implemented as part of the proposal.

The purpose of this FEMP is to summarise the flood risks within the site, identify preparation measures required, and to provide an action plan with steps to be completed during a flood event.

The proposed development is the construction of a multi-storey mixed development with underground parking, retail, apartments and communal garden areas.

Evacuation of retail and carparking areas may be required during extreme flood events such as the PMF. Due to the possible presence of local community members or other visitors not familiar with site flood affectation, it is important to ensure building staff are adequately trained for evacuation and that adequate flood warning systems are in place during these extreme flood events.

2.0 Flood Behaviour

Finished floor levels on the ground floor of the building have been designed to ensure that there is a 500mm freeboard above the 1% AEP event (1 in 100 year flood event) in accordance with Council's and the State Government's flood management policies, which will ensure that flood waters will not enter the site in a 1% AEP event.

Probable Maximum Flood (PMF) affectation for the site has been extracted from the Marrickville Valley Floodplain Risk Management Study and Plan Model produced by Cardno in September 2017. Peak Flood Levels and depths around the site are shown below.

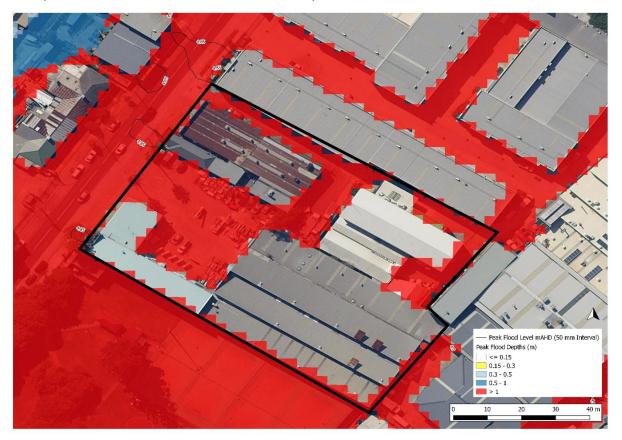


Figure 1: PMF Flood Level/Extent
Source: Marrickville Valley Floodplain Risk Management Study and Plan, Inner West Council 2017

Flood Modelling* indicates that during the PMF event, flood levels will overtop the proposed finished floor levels along Victoria Road and inundated the ground floor to unsafe depths. Accordingly, and consistent with Inner West Council's Marrickville Development Control Plan (DCP) 2011 a site Flood Emergency Response Plan has been prepared for utilisation in the case of a PMF event.

*Note Council has supplied TTW with the Marrickville Valley Flood Model in order to undertake this assessment, but TTW was unable to replicate Council's original PMF Modelling results. Future coordination with Council may be required to assess PMF flood behaviour for the area under post development conditions.

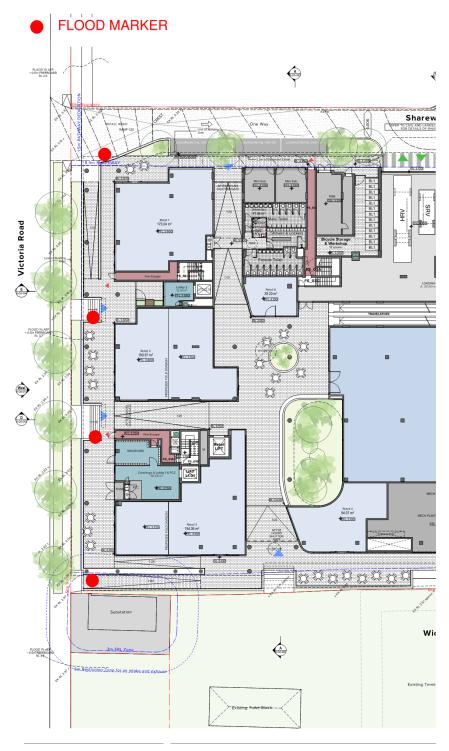


Figure 2: Flood Level Senor System Western Ground Floor

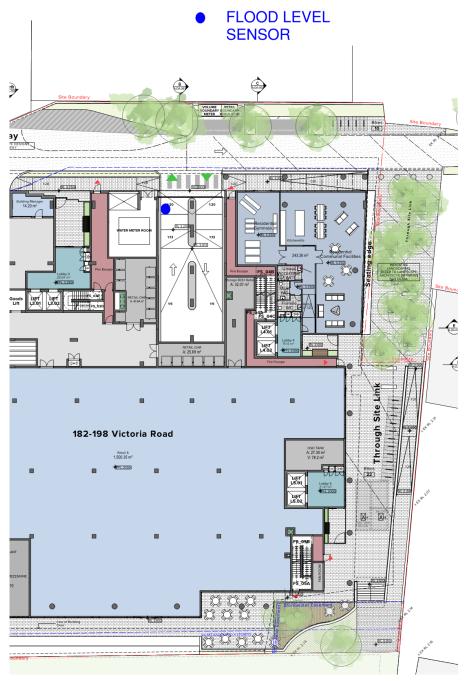


Figure 3: Flood Level Senor System Eastern Ground Floor

TTW recommends that evacuation in place is appropriate for the site; and that in the event that inundation of the basement carparking and ground floor levels occurs that all persons within those areas be evacuated to Level 01 of the building where the finished floor level of 8.5 mAHD is well in excess of the peak PMF level of 4.8 mAHD.

Inundation of the ground floor and basement carpark levels will occur only during an extreme flood event which produces flow depths greater than 500 mm above the 1 in 100-year flood event. PMF flood modelling indicates that initial inundation of ground floor levels will occur 15-20 minutes before depths of 400 mm (and high hazard flooding) begin to impact on the site.

3.0 Preparation for Flood Response

3.1 Education

Community awareness of flooding is a significant issue within the floodplain due to the infrequency of severe floods and the anticipated depths of these floods in a PMF event.

3.1.1 Staff

As part of the preparation for a flood event, the staff managing the reception and concierge service will be made aware of the flood risk and their obligation to evacuate the basement car park and ground floor levels when inundation begins to occur. Inductions will be held to educate staff on their role during a flood event. Staff to keep record of resident briefings.

3.1.2 Residents and the General Community

Residents are to be made aware of the flood risk and the response requirement during a PMF flood event which creates overland flow depths in excess of the ground finished floor levels. As part of this procedure, evacuation drills should be conducted regularly to ensure residents are aware of the procedures for sheltering on Level 01.

As local community members and other visitors may utilise the retail element of the site it is important for appropriate evacuation signage and emergency warning system to be put in place.

3.2 Evacuation Drills

It is recommended that evacuation drills be held at a minimum of once yearly to ensure all residents and staff are aware of and familiar with their flood response actions, the sound of the alert and occupancy warning system, and the location of the assembly point.

All staff will be trained in the flood response procedures with mandatory drills recommended to be conducted once a year.

3.3 Flood Emergency Kit

A Flood Emergency Kit should be prepared prior to a flood event taking place and regularly checked to ensure that supplies within the kit are sufficient and in working condition. This check could occur after the evacuation drill takes place to provide a regular schedule. The Kit should include:

- Radio with spare batteries;
- Torch with spare batteries;
- First aid kit and other medicines;
- Candles and waterproof matches;
- Waterproof bags;
- A copy of the Site's Emergency Management Plan; and
- Emergency contact numbers.

This Emergency Kit should be stored in a waterproof container and is the responsibility of the First Aid Officer.

4.0 Coordination of Flood Response Warnings and Orders

The Building Manager under the direction of the Incident Controller will decide when to issue Flood Response Warnings and Orders for the site.

It is recommended that:

- Flood markers be provided at entry points into the building on Victoria Road, in order to provide an indication of ponding floodwaters approaching the finished floor level; and
- A water level sensor device be provided at the entry point into the basement carpark, in order to provide early flood warning when flood waters approach the basement crest level.

Proposed locations for both measures are shown in Figures 2 and 3.

During heavy rain it will be the responsibility of the Building Manager and the Incident Controller to monitor ponding floodwaters against the flood markers and to make the decision on when to evacuate the ground floor if necessary. The early warning system installed at the entry point to the carpark will be connected to the reception and concierge service and the Incident Controller will need to distribute these warnings to all persons within the basement carparks.

The Incident Controller will initiate a flood response and occupant warning through a Public Address (PA) system including continuous bell that can alert visitors, residents and staff in the event of an emergency.

Flood Response Plan			
Alarm Condition	Recommended actions		
Local Councils or Bureau of Meteorology issues an alert, advice or warning.	Building staff to observe ponding levels against markers on Victoria Road.		
Ponding floodwaters rise to 100 mm below finished floor levels on Victoria Road. Flood Water level sensor sends alert	Incident Controller to confirm the ponding is approaching overtopping level.		
High flooding level when depth of ponding begins to encroach on finished floor levels on western building frontage (Victoria Road side), or on carpark entry points.	Send an alert and warning message over the PA system confirming a major flood event. Announce that water will soon inundate the building.		
	Immediately commence evacuation of all persons within Basement Carpark Levels 1 and 2 and Ground Floor, evacuating them to Level 01 systematically to available areas (breezeway and covered areas of communal gardens).		
	Confirm any remaining people in the basement carparks and ground level have been evacuated.		

Alert will remain in place for approximately 2 hours or such time that the ponding depth recedes	Confirm that there is no ponding within the building. Once floodwater subsides below finished floor level, ground floor and basement carparks to be inspected by the incident controller. Once it has been confirmed that the water level has reduced to a level that will not produce inundation for a period of at least 2 hours and if determined safe the incident controller may announce that all persons can return to ground floor and basement carpark.
4) Flooded areas are to remain off limits until ponding is cleared. The directions of police and SES are to be followed at all times.	

Reviewed & Authorised By TAYLOR THOMSON WHITTING (NSW) PTY LTD

Stephen BrainTechnical Director

WICKS PARK - CIVIL DRAWINGS

SIGNS AND LINE MARKING NOTES **KERBING NOTES** SAFETY IN DESIGN **GENERAL NOTES** STORMWATER DRAINAGE NOTES SITEWORKS LEGEND Pavement marking and sign posting on public roads shall be in Contractor to refer to Appendix B of the Civil Specification for the Civ Includes all kerbs, gutters, dish drains, crossings and edges. . Contractor must verify all dimensions and existing levels on site prior 1 Stormwater Design Criteria : Risk and Solutions Register. accordance with the requirements of the relevant Road Authority. Finished surface level (A) Average Exceedance Probability (AEP) to commencement of works. Any discrepancies to be reported to the The contractor shall obtain these requirements from the Road . All kerbs, gutters, dish drains and crossings to be constructed on 1% for roof drainage to first external pit ____ F22.00 . ___ Finished contour minimum 75mm granular basecourse compacted to minimum 98% 5% for paved and landscaped areas 2. Strip all topsoil from the construction area. All stripped topsoil sho Contractor to be aware existing services are located within the site. Contractor is to provide guide posts, spaced in accordance with modified maximum dry density in accordance with AS 1289 5.2.1. (B) Rainfall intensities be disposed of off-site unless directed otherwise. Location of all services to be verified by the Contractor prior to AS1742.2. They are to be located near all head walls and pipe . Expansion joints (EJ) to be formed from 10mm compressible cork Time of concentration: 5 minutes 3. Make smooth connection with all existing works. commencing works. Contractor to confirm with relevant authority 1% = 249.6 mm/hr filler board for the full depth of the section and cut to profile. F. Compact subgrade under buildings and pavements to minimum 98 regarding measures to be taken to ensure services are protected or Raised pavement markers to be in accordance with AS1742.2 5% = 190.8 mm/hrExpansion joints to be located at drainage pits, on tangent points standard maximum dry density in accordance with AS 1289 5.1.1 procedures are in place to demolish and/or relocate. Where existing pavement marking conflicts with proposed, it is to of curves and elsewhere at 12m centres except for integral kerbs C) Storm Losses -Compaction under buildings to extend 2m minimum beyond building Impervious initial loss = 1.5mm **EXISTING STRUCTURES** where the expansion joints are to match the joint locations in slabs. Initial loss = 33.0mm 5. Lane widths do not include width of gutter. Weakened plane joints to be min 3mm wide and located at 3m Contractor to be aware existing structures may exist within the site. Continuing loss = 1.8mm/hr 5. All work on public property, property which is to become public centres except for integral kerbs where weakened plane joints are to Line marking plan does not define boundaries. o prevent damage to existing structure(s) and/or personnel, site property, or any work which is to come under the control of the Erect temporary sign 'changed traffic conditions ahead' 120m ahead match the joint locations in slabs. Statutory Authority is to be carried out in accordance with the works to be carried out as far as practicably possible from existing . Pipes 300 dia and larger to be reinforced concrete Class "2" Broomed finished to all ramped and vehicular crossings, all other of new work in both directions. requirements of the relevant Authority. The Contractor shall obtain approved spigot and socket with rubber ring joints U.N.O. structure(s). Stormwater pit, flow direction 3. Establish the location of existing utility services and locate new kerbing or dish drains to be steel float finished. . Pipes up to 300 dia shall be sewer grade uPVC with solvent these requirements from the Authority. Where the requirements of and line with 5. In the replacement of kerbs — **EXISTING TREES** signs clear of these installations. Invert level upstream Existing road pavement is to be sawcut 900mm from lip of). The sloped face of the SF median kerbs which adjoin through lanes, | 4. Equivalent strength VCP or FRP pipes may be used subject Contractor to be aware existing trees exist within the site which need requirements of the Authority shall be applicable. gutter. Upon completion of new kerbs, new basecourse and Pipe size and class are to be painted white in lieu of an E3 edge line. The reflective to be protected. To prevent damage to trees and/or personnel, site 6. For all temporary batters refer to geotechnical recommendations. surface is to be laid 900mm wide to match existing materials 5. Precast pits may be used external to the building subject pavement markers normally associated with an E3 edge line are to works to be carried out as far as practicably possible from existing Q=345 L/s | Flow (Litres per second) to approval by Contact administrator be located on the pavement adjacent to the SF kerb. trees. Advice needs to be sought from Arborist and/or Landscape Enlargers, connections and junctions to be manufactured Invert level downstream Existing allotment drainage pipes are to be built into the new 10. Bicycle pavement markings and sign posting to be in accordance REFERENCE DRAWINGS Architect on measures required to protect trees. fittings where pipes are less than 300 dia. kerb with a 100mm dia hole. with Austroads Standards. 7. Where subsoil drains pass under floor slabs and vehicular GROUNDWATER Existing kerbs are to be completely removed where new kerbs . These drawings have been based from, and to be read in conjunction pavements, unslotted uPVC sewer grade pipe is to be used. Contractor to be aware ground water levels are close to existing Intermediate riser with subsoil 8. Grates and covers shall conform with AS 3996-2006, and with the following Consultants drawings. Any conflict to the drawings **BULK EARTHWORKS NOTES** surface level. Temporary de-watering may be required during AS 1428.1 for access requirements. must be notified immediately to the Engineer. drainage line (100 dia) 9. Pipes are to be installed in accordance with AS 3725. All construction works. **CONCRETE FINISHING NOTES** . All bulk earthworks setout from grid lines U.N.O. Flushing point with subsoil bedding to be type H2 U.N.O. Consultant Dwg Title **EXCAVATIONS** All batters at a slope of 1 (H):1 (V) U.N.O. O. Care is to be taken with levels of stormwater lines. Grades drainage line (100 dia) 1. All exposed concrete pavements are to be broomed finished. Deep excavations due to stormwater drainage works is required. shown are not to be reduced without approval. TRUE NORTH SURVEYS 8333DU Excavated material may be used as structural fill provided, 2. All edges of the concrete pavement including keyed and dowelled **DP** Down pipe 11. All stormwater pipes to be 150 dia at 1.0% min fall U.N.O. Contractor to ensure safe working procedures are in place for works. All (i) it complies with the specification requirements for fill material, GA Plans Ground Level 1010-WES-CAD A 12.06.19 joints are to be finished with an edging tool. excavations to be fenced off and batters adequately supported to Subsoil drains to be slotted flexible uPVC U.N.O. (ii) the placement moisture content complies with the Geotechnical 3. Concrete pavements with grades greater than 10 % shall be RP Rodding point 3. Adopt invert levels for pipe installation (grades shown are GA Plans Ground Level 1010-EAS-CAD A 12.06.19 approval of Geotechnical Engineer. Consultants requirements, and allows filling to be placed and heavily broomed finished. Concrete encased stormwater line only nominal). GROUND CONDITIONS proofrolled in accordance with the specification. Where 4. Carborundum to be added to all stair treads and ramped necessary the Contractor must moisture condition the Contractor to be aware of the site geotechnical conditions. crossings U.N.O. PIT SCHEDULE Stormwater line with pipe taper excavated material to meet these requirements. Refer to geotechnical report by (Douglas Partners) for and flow direction -----A Grated inlet pit 600 x 900 Class D galvanised mild 5,6,7 **JOINTING NOTES** 4. Compact fill areas and subgrade to not less than: SURVEY AND SERVICES INFORMATION HAZARDOUS MATERIALS steel grate hinged to frame Vehicular Pavement Jointing Standard dry density Moisture Existing asbestos products & contaminated material may be present on Taper kerb to zero height 1. All vehicular pavements to be jointed as shown on drawings. 900 x 900 Class D cast iron cover site. Contractor to ensure all hazardous materials are identified prior to (AS 1289 5.1.1.) (OMC) Origin of levels : SSM47493 RL 3.159 B Junction pit over 500 mm 2. Keyed construction joints should generally be located at a with concrete infill commencing works. Safe working practises as per relevant authority to Datum of levels : A.H.D. AUSTRALIAN HEIGHT DATUM -----Wheelstop maximum of 6m centres. be adopted and appropriate PPE to be used when handling all Under building slabs on ground: 98% Coordinate system : Local C OSD Surcharge 600 x 600 Class D galvanised mild stee 3. Sawn joints should generally be located at a maximum of 6m Survey prepared by : TRUE NORTH Under roads and carparks: 98% hazardous materials. Refer to geotechnical/environmental report by grate hinged to frame centres or 1.5 x the spacing of keyed joints, where key joint 95% ±2% Landscaped areas: (Douglas Partners) for details. Setout Points : CONTACT THE SURVEYOR spacing is less than 4m, with dowelled expansion joints at -----D OSD Access 900 x 900 Class D cast iron cover CONFINED SPACES - — Dowelled expansion joint maximum of 30m centres. Before placing fill, proof roll exposed subgrade with a 10 tonne Taylor Thomson Whitting does not guarantee that the survey information lacksquarewith concrete infill—Refer C18 4. Provide 10mm wide full depth expansion joints between buildings Contractor to be aware of potential hazards due to working in minimum roller to test subgrade and then remove soft spots ____SJ____Sawn joint shown on these drawings is accurate and will accept no liability for any and all concrete or unit pavers. confined spaces such as stormwater pits, trenches and/or tanks. (areas with more than 3mm movement under roller). Grate size does not necessarily reflect pit size, refer pit inaccuracies in the survey information provided to us from any cause 5. The timing of the saw cut is to be confirmed by the contractor Contractor to provide safe working methods and use appropriate PPE Soft spots to be replaced with **select** fill U.N.O. type details, shown on detail sheets — C10 Keyed construction joint on site. Site conditions will determine how many hours after the when entering confined spaces. Contractor shall place safety barriers around excavations in Final internal pit dimensions are to comply with AS3500 **UNDERGROUND SERVICES - WARNING** concrete pour before the saw cuts are commenced. Refer to the accordance with relevant safety regulations. Weakened plane joint The locations of underground services shown on Taylor Thomson specification for weather conditions and temperatures required. MANUAL HANDLING For interpretation of bulk earthworks foot print line shown on the Whittings drawings have been plotted from diagrams provided by 6. Vehicular pavement jointing as follows. bulk earthworks drawings refer to the bulk earthworks construction Contractor to be aware manual handling may be required during Expansion joint service authorities. This information has been prepared solely for the construction. Contractor to take appropriate measures to ensure manual _____TKJ ____ Tied keyed joint authorities own use and may not necessarily be updated or accurate. 8. Bulk earthwork drawings are not to be used for detailed excavation. handling procedures and assessments are in place prior to commencing 지 지 지 집 지). Refer to Geotechnical Report prepared by — The position of services as recorded by the authority at the time of **── ←** Grass catch drain Douglas Partners installation may not reflect changes in the physical environment WATER POLLUTION < - <--- <--- Overland flow path 29230 Sep 2000 subsequent to installation. Contractor to ensure appropriate measures are taken to Taylor Thomson Whitting does not guarantee that the services prevent pollutants from construction works contaminating the information shown on these drawings shows more than the presence surrounding environment. or absence of services, and will accept no liability for inaccuracies SITE ACCESS/EGRESS in the services information shown from any cause whatsoever. Contractor to be aware site works occur in close proximity to The Contractor must confirm the exact location and extent of footpaths and roadways. Contractor to erect appropriate barriers and J FACE DE BULLDING services prior to construction and notify any conflict with the drawings signage to protect site personnel and public. immediately to the Engineer/Superintendent. **Pedestrian Footpath Jointing** VEHICLE MOVEMENT 1. Expansion joints are to be located where possible at tangent points The contractor is to get approval from the relevant state survey Contractor to supply and comply with traffic management plan and of curves and elsewhere at max 6.0m centres. department, to remove/adjust any survey mark. This includes but is not provide adequate site traffic control including a certified traffic ?. Weakened plane joints are to be located at a max 1.5 x width of marshall to supervise vehicle movements where necessary. limited to; State Survey Marks (SSM), Permanent Marks (PM), cadastral

CIVIL DRAWING LIST Drawing No Drawing Title NOTES & LEGENDS/COVER SHEET C-8200-OVR EROSION AND SEDIMENT CONTROL PLAN C-8208-OVR C-8209-EAS SITEWORKS/STORMWATER PLAN SITEWORKS/STORMWATER PLAN C-8209-WES PAVEMENT & JOINTING PLAN - EAST C-8210-EAS C-8210-WES PAVEMENT & JOINTING PLAN - WEST C-8201-OVR DETAILS SHEET SHEET 1 OF 2 C-8202-OVR DETAILS SHEET SHEET 2 OF 2

A0 0 1 2 3 4 5 6 7 8 9 10





NTS

C-8200-OVR P2

reference marks or any other survey mark which is to be removed or

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

Taylor Thomson Whitting makes no guarantees that the boundary or

and compacted to minimum 98% modified standard dry density in

2. All trench backfill material shall be compacted to the same density

3. All service trenches under vehicular pavements shall be backfilled

98% standard maximum dry density in accordance with AS 1289 5.1.1

with an approved select material and compacted to a minimum

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

received from : CRAIG&RHODES

easement information shown is correct.

SITEWORKS NOTES

accordance with AS 1289 5.2.1.

as the adjacent material.

Eng Draft Date

Eng Draft Date Rev Description

superintendent prior to construction starting.

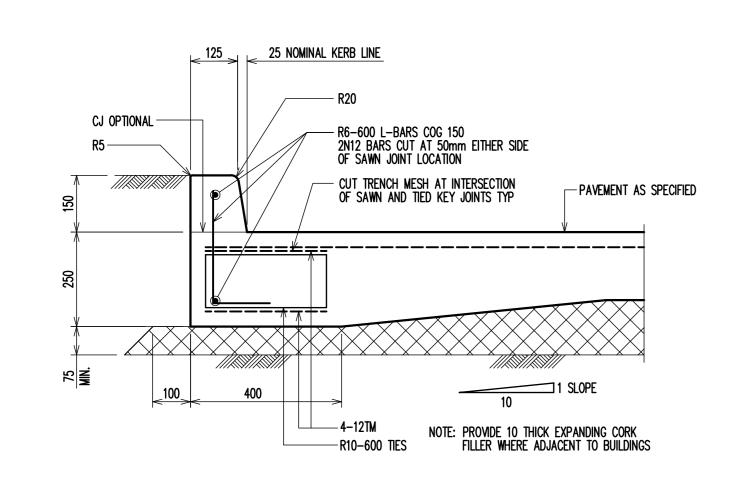
3. Where possible joints should be located to match kerbing and / or

6.0m MAX

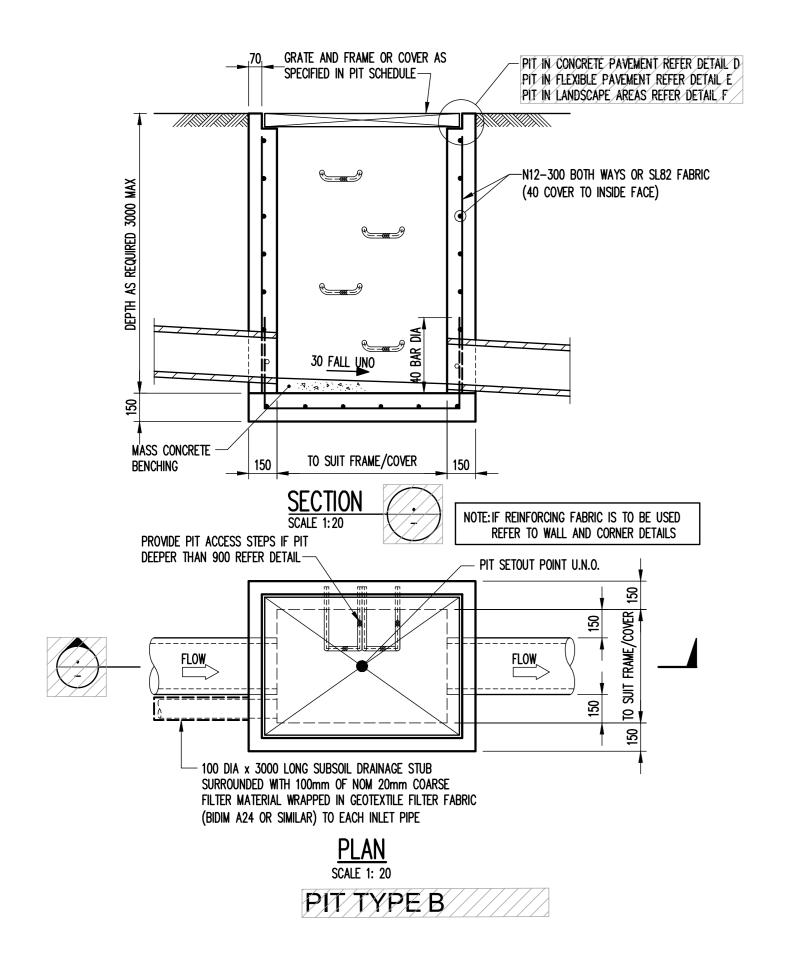
4. All pedestrian footpath jointings as follows (uno).

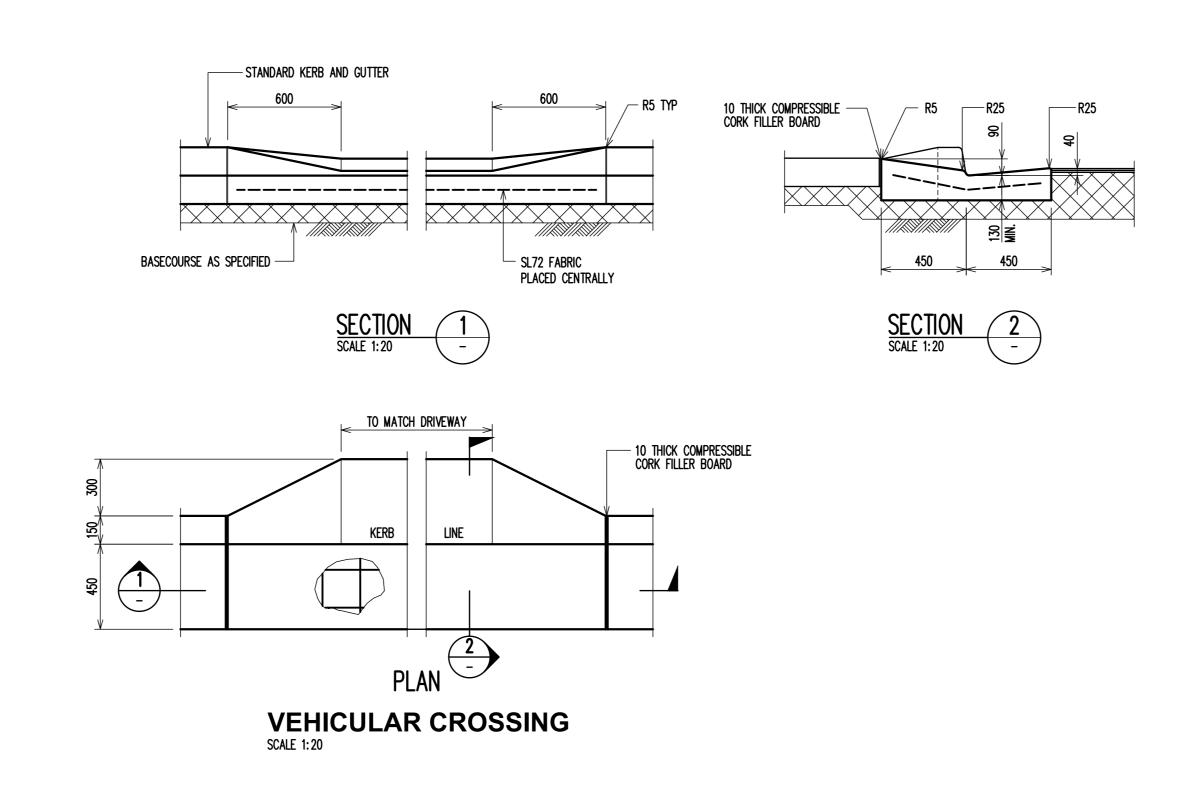
FACE OF KERB

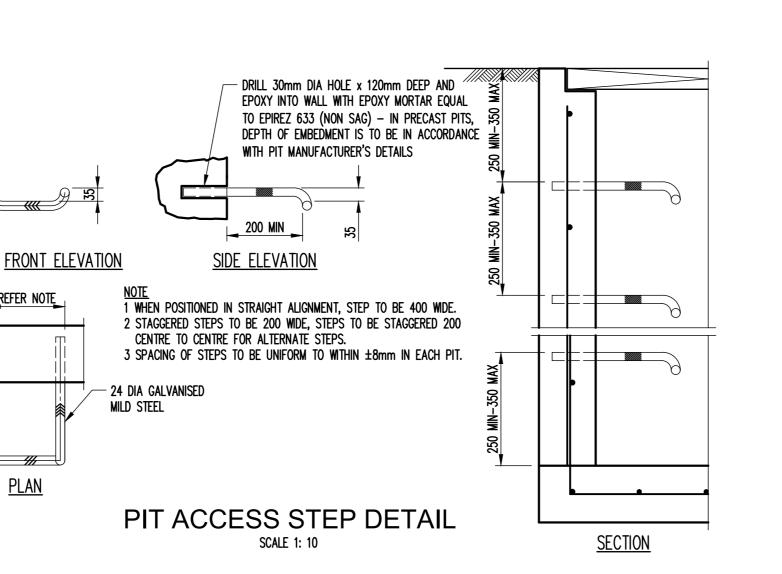
adjacent pavement joints.

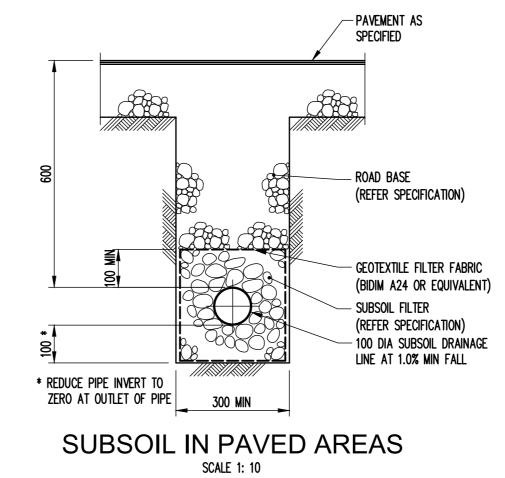


INTEGRAL KERB WITH THICKENED EDGE (IK+TE)









-----_{|4-}------

SUBSOIL IN LANDSCAPED AREAS

SCALE 1: 10

* REDUCE PIPE INVERT TO ZERO AT OUTLET OF PIPE 300 MIN

- GEOTEXTILE FILTER FABRIC

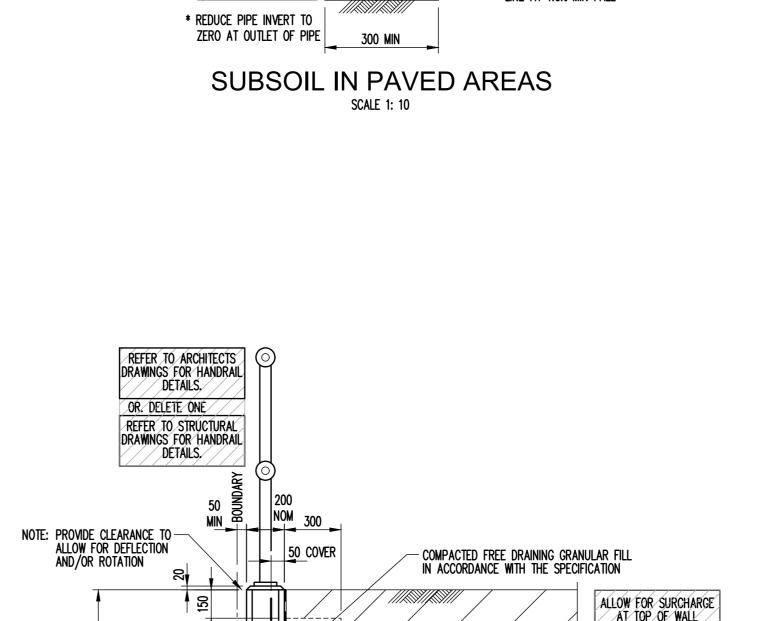
— Geotextile filter fabric (BIDIM A24 OR EQUIVALENT) — Subsoil filter (refer

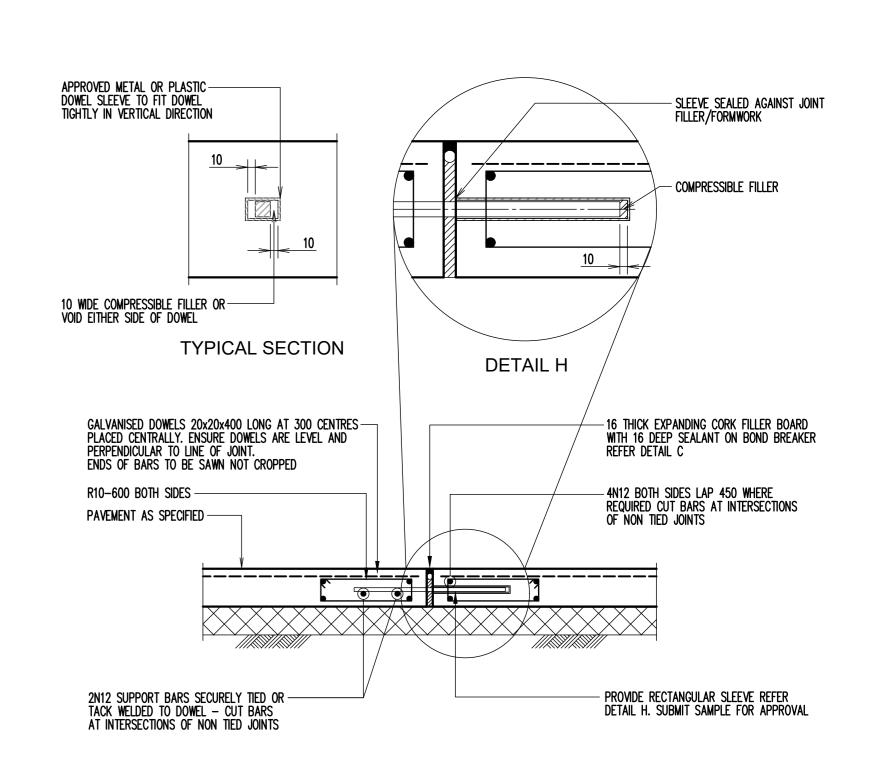
— 100 DIA SUBSOIL DRAINAGE LINE AT 1.0% MIN FALL

— Granular fill (REFER SPECIFICATION)

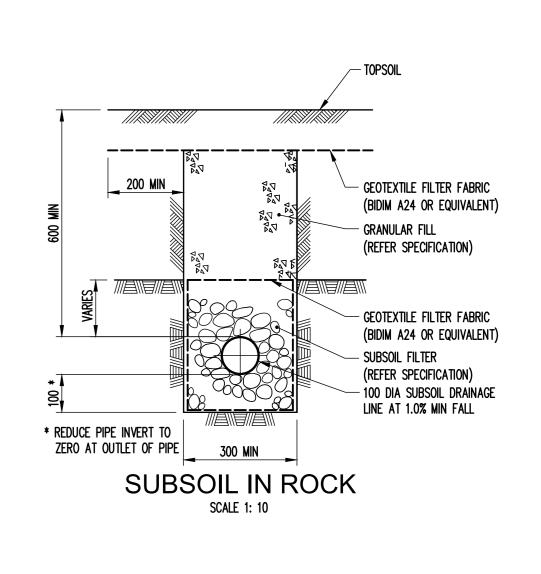
SPECIFICATION)

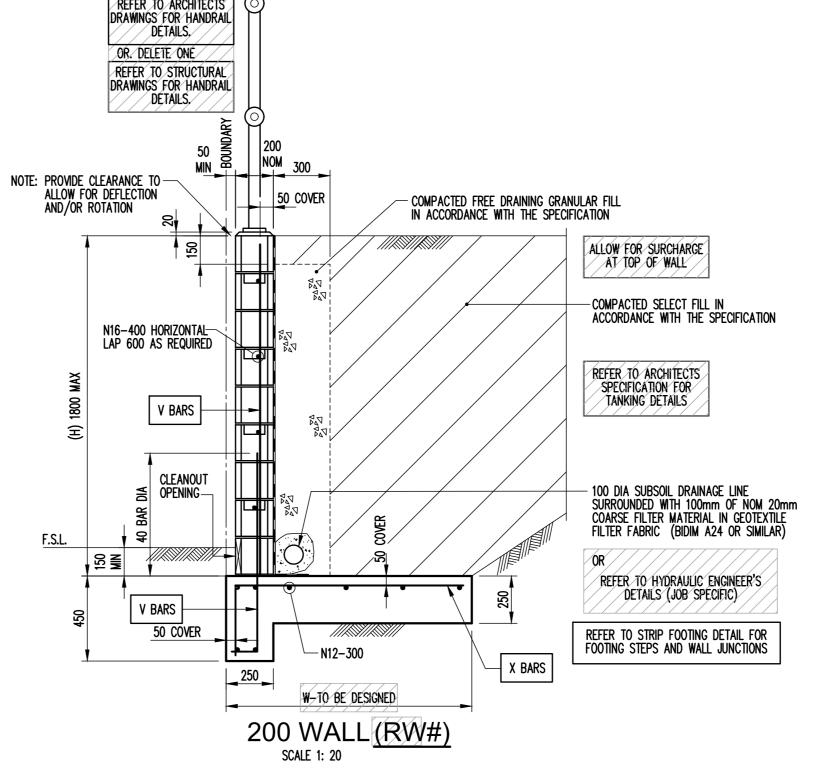
(BIDIM A24 OR EQUIVALENT)

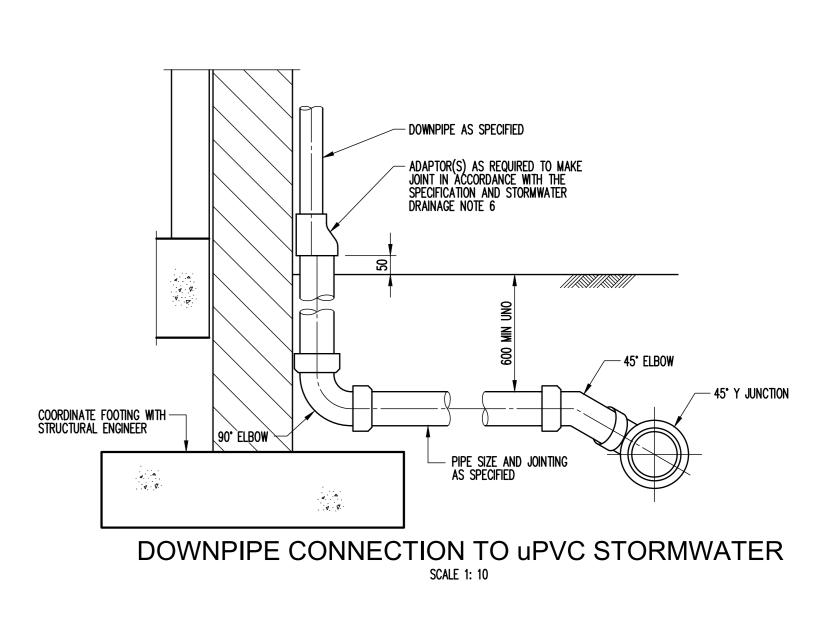


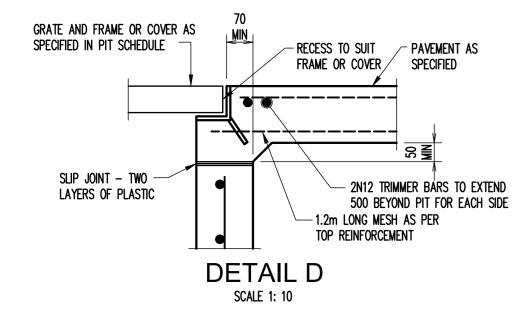


DOWELLED EXPANSION JOINT TYPE A (DEJA)



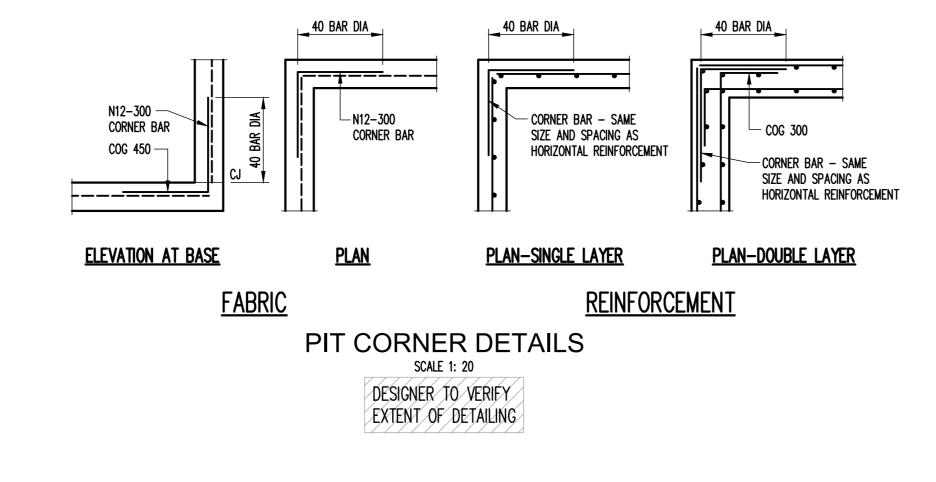






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AL MB 05.11.19

TH PM 19.07.19

Eng Draft Date Rev Description

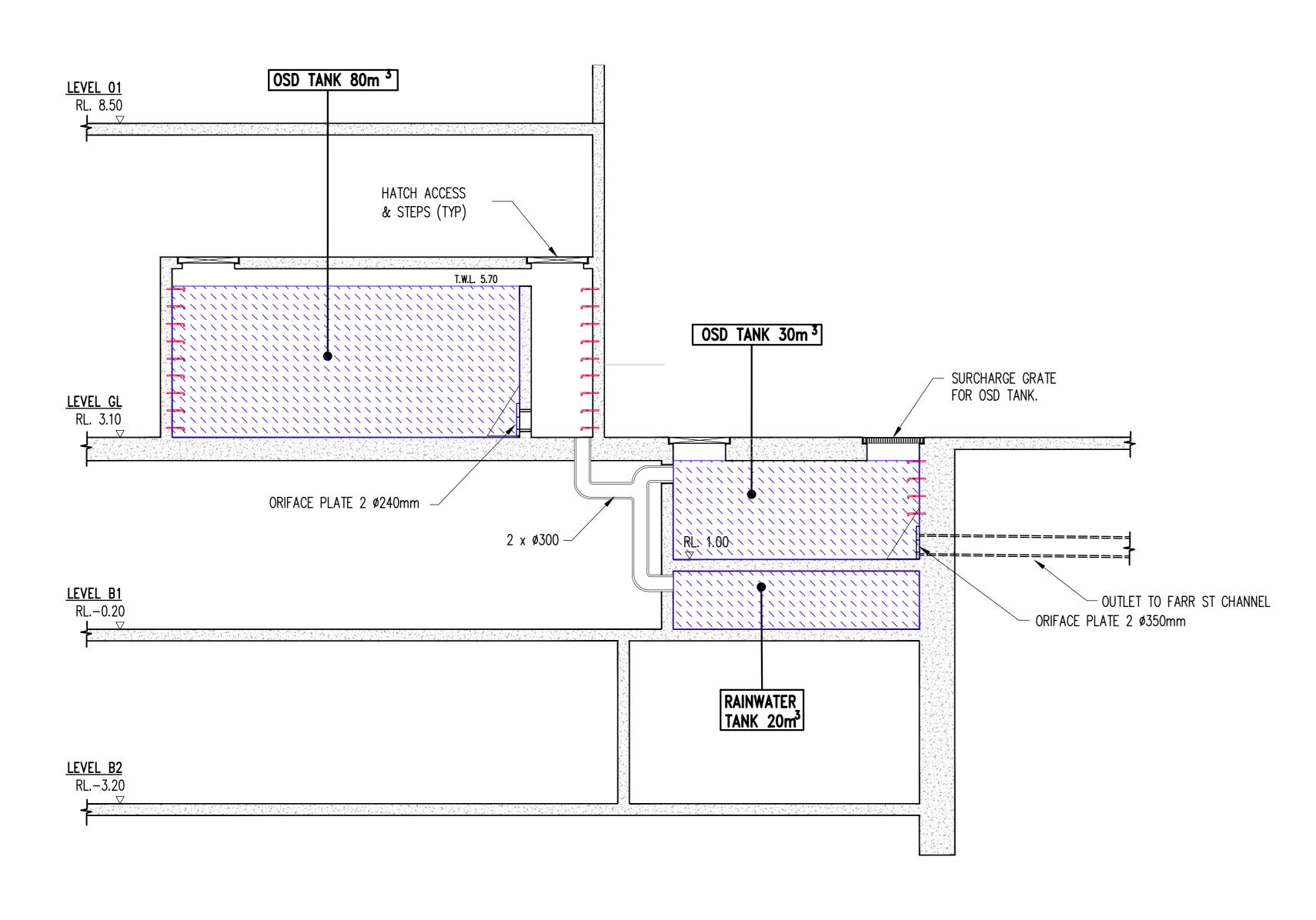
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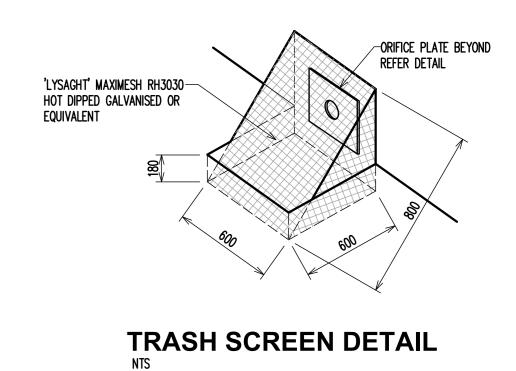
P1 FOR DESIGN DEVELOPMENT

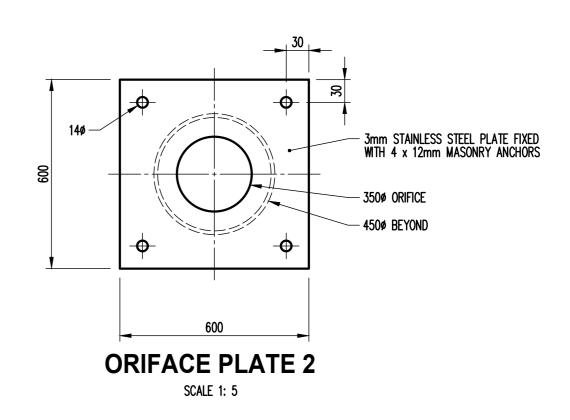
Rev Description

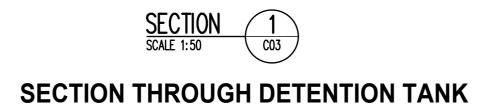
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

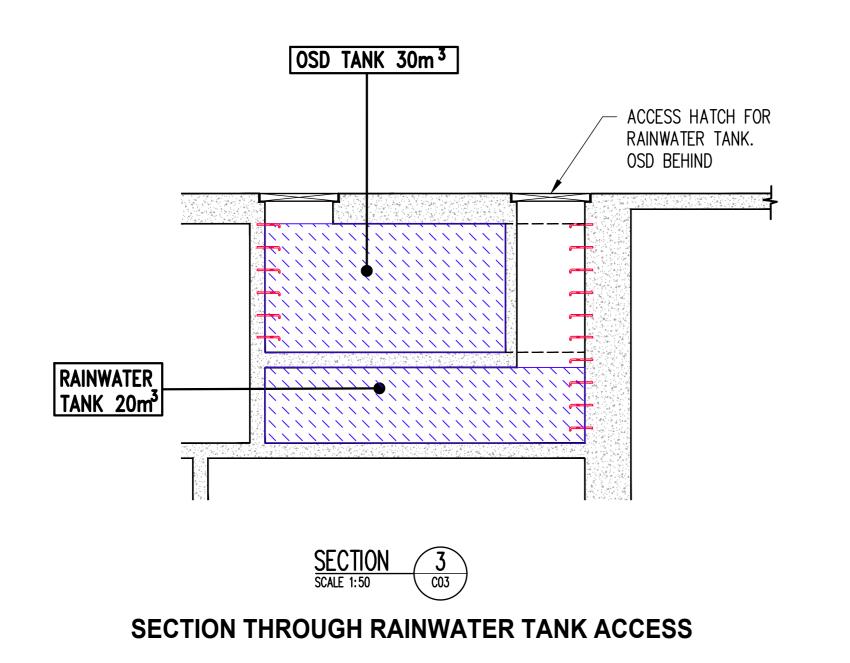


- 3mm Stainless Steel Plate Fixed With 4 x 12mm Masonry Anchors **ORIFACE PLATE 1** SCALE 1: 5

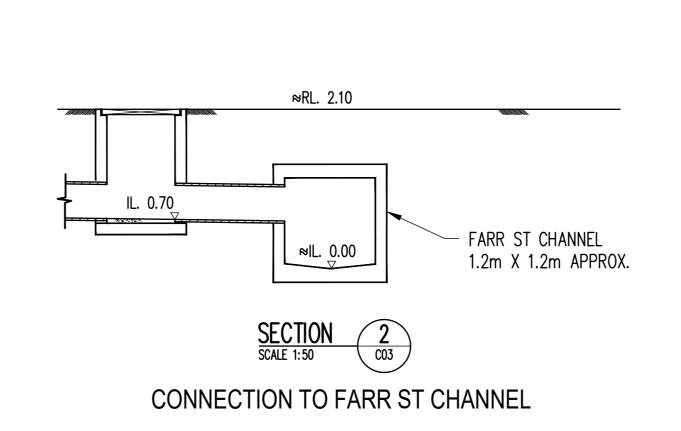


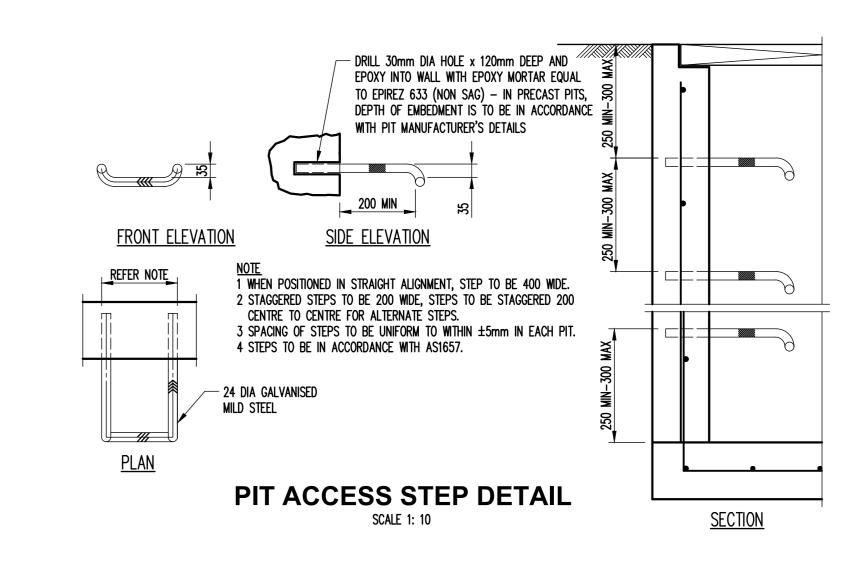






Eng Draft Date





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AL MB 05.11.19

TH PM 19.07.19

Eng Draft Date Rev Description

Eng Draft Date Rev Description

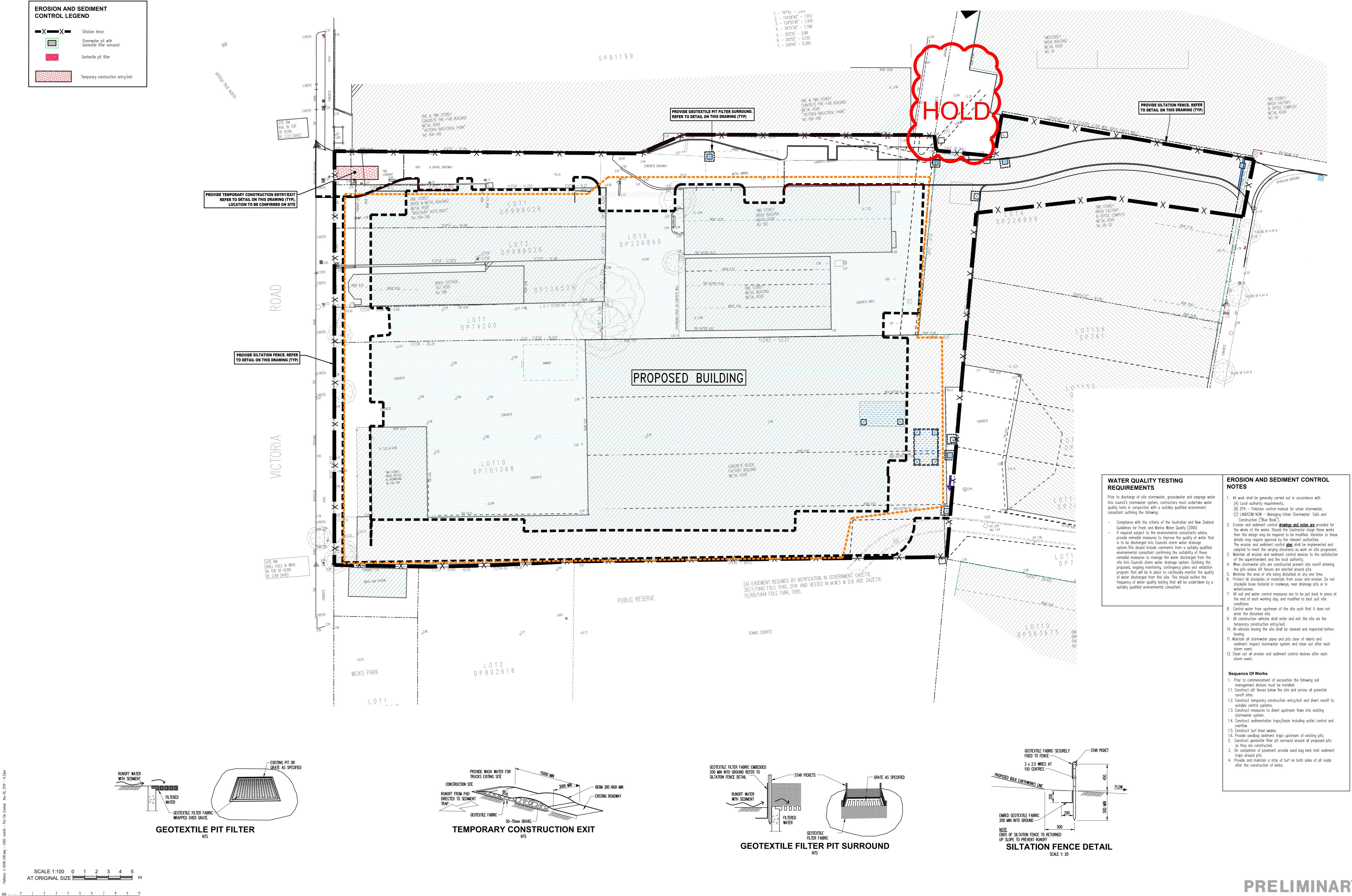
P2 REVISED FOR DESIGN DEVELOPMENT

P1 FOR DESIGN DEVELOPMENT

Rev Description



DETAILS SHEET SHEET 2 OF 2



P2 REVISED FOR DESIGN DEVELOPMENT

P1 FOR DESIGN DEVELOPMENT

Rev Description

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Eng Draft Date

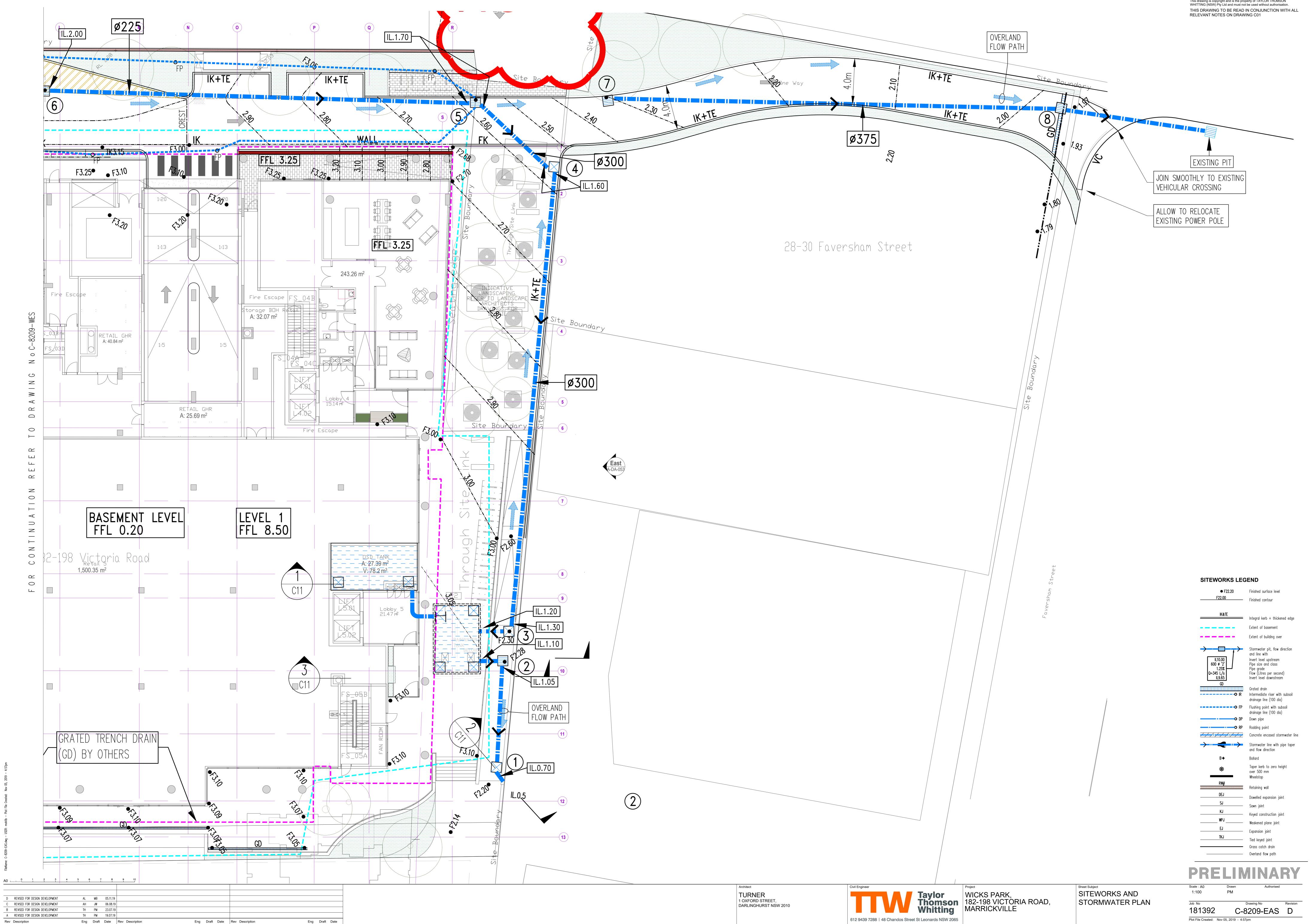
TURNER 1 OXFORD STREET, DARLINGHURST NSW 2010

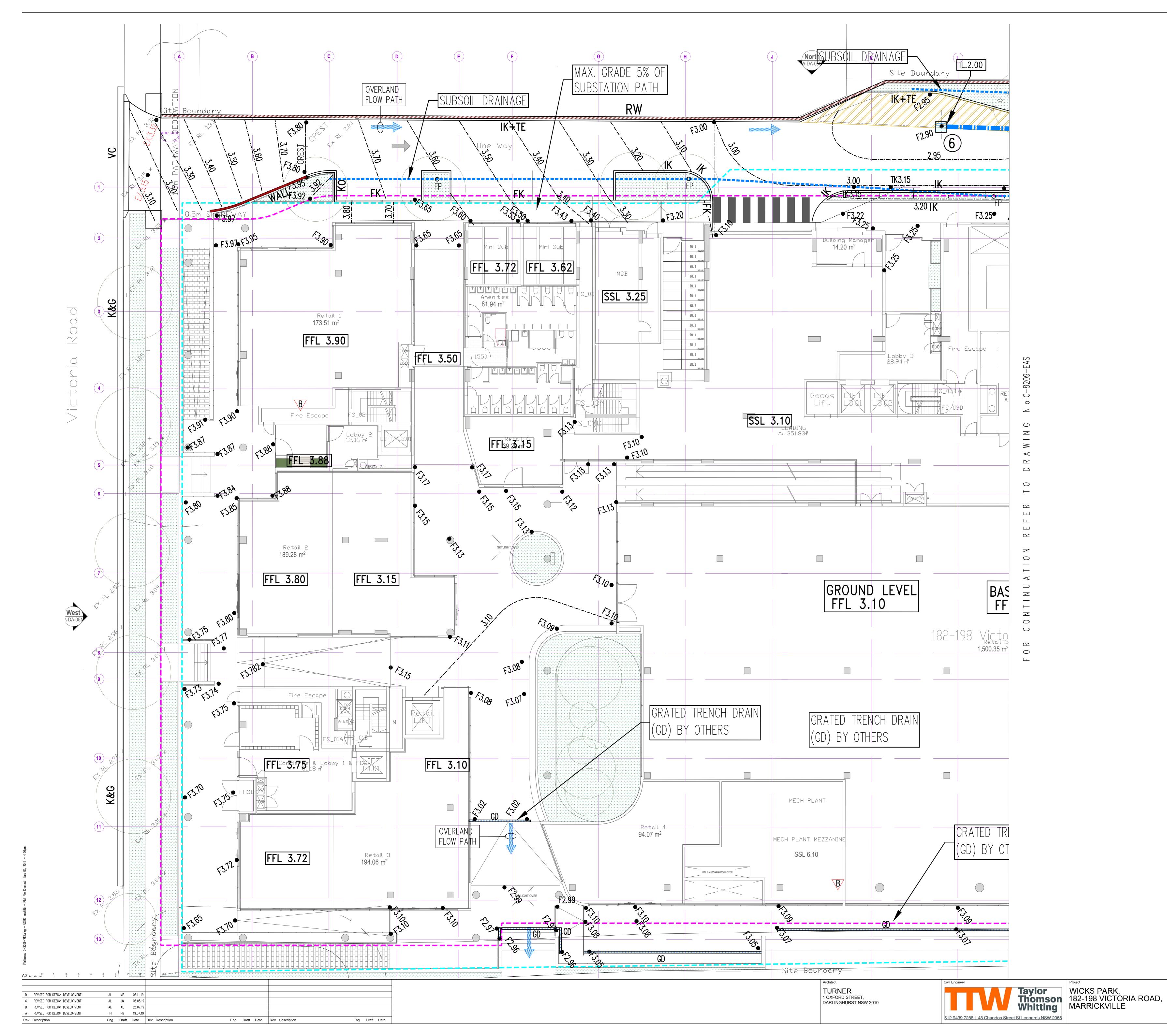
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

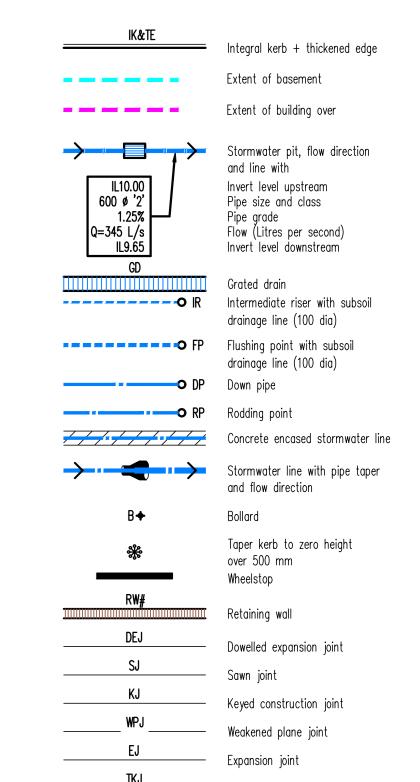
WICKS PARK, 182-198 VICTORIA ROAD, MARRICKVILLE

EROSION AND SEDIMENT CONTROL PLAN 1:200

C-8208-OVR P2 Plot File Created: Nov 05, 2019 - 4:23pm







SITEWORKS LEGEND

PRELIMINARY

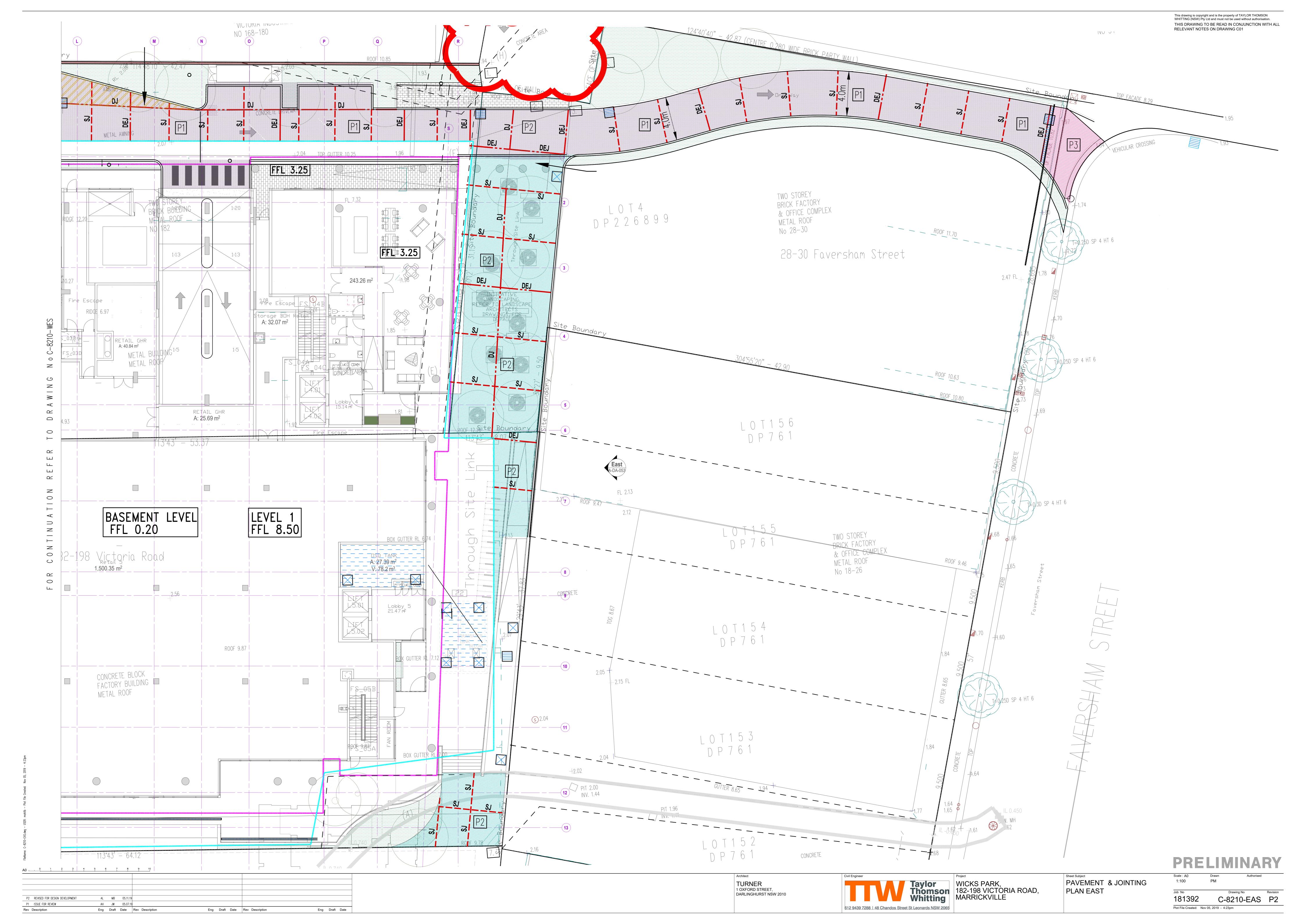
SITEWORKS AND STORMWATER PLAN

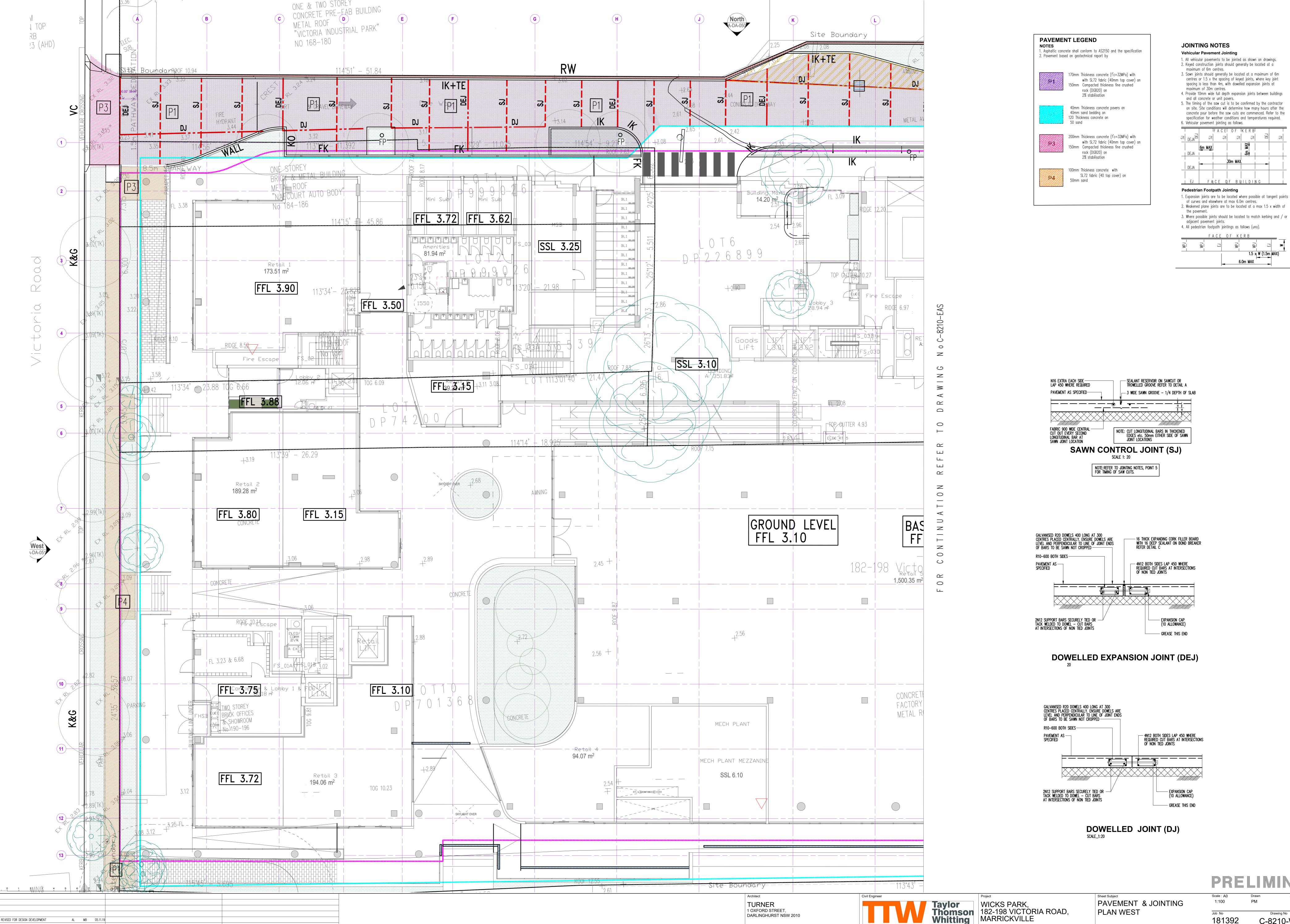
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 Job No
 Drawing No
 Revision

 181392
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 Nov 05, 2019 - 4:56pm





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612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

3.26(TK)

P2 REVISED FOR DESIGN DEVELOPMENT

P1 ISSUE FOR REVIEW

Rev Description

AL MB 05.11.19

AH JW 05.07.19

Eng Draft Date Rev Description

Eng Draft Date Rev Description

Eng Draft Date

PAVEMENT & JOINTING PLAN WEST

C-8210-WES P2

Plot File Created: Nov 05, 2019 - 4:23pm