

Stormwater Management Plan

Resource Recovery and Recycling Facility

At

**24 Davis Road
WETHERILL PARK**



For

**Crossmuller Construction
2 Wella Way
SOMERSBY NSW 2250**

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2. INTRODUCTION AND BACKGROUND

2.1. Project Overview

ECLIPSE Consulting Engineers has been commissioned by Crossmuller Construction on behalf of Bettergrow Pty Ltd (the Proponent) to prepare a Stormwater Management Plan for the modification of a resource recovery and recycling facility at 24 Davis Road, Wetherill Park, NSW (the Site).

The Proponent is seeking to construct and operate a resource recovery centre at the Site which would process the following volumes of waste:

- 100,000 tonnes per year of hydro-excavation drilling muds and fluids for storage, separation, and consolidation.
- 150,000 tonnes per year of general solid waste, including VENM, ENM, soils, gravels, aggregates, street sweepings, clean timber, asphalt waste, cured concrete, rail ballast, and C&D waste.
- 70,000 tonnes per year of garden organics and mixed food and garden organics.
- 30,000 tonnes of food organics.

The Proponent currently operates waste and resource recovery operations in multiple locations throughout New South Wales and Queensland. The proposed development is expected to extend the Proponent's operations as well as aid the New South Wales Government in diverting waste from landfill by providing the required processing infrastructure.

2.2. Site Description

The Site is described as Lot 18 in DP 249417. The Site is located within an existing industrial precinct described as the Wetherill Park Industrial Area within the Fairfield City Local Government Area. The area is zoned as IN1 – General Industrial under the Fairfield City Local Environment Plan 2013. The location of the Site is shown in Figure 2.1, below.

The Site was previously occupied by an asphalt batching plant operated by Emoleum Australia Ltd, a division of Mobil Australia, which ceased operations in 2004.

The Site is bound by Prospect Park and Prospect Reservoir to the north, Davis Road to the south, several small industrial developments on Arnott Place to the east and a recycling industrial development to the west. The Site slopes from north to south with an approximate average grade of 5%. Council stormwater drainage exists in Davis Road and is the preferred discharge point for stormwater for the Site.

The total area of the Site is 20,282 m². The proposed development's pavement and roof area come to 18,258 m², or 90.0% of the total area of the Site.



Figure 2.1: Site Location (Nearmap, August 2020)

2.3. Proposed Development

The pre-development site had three distinct levelled areas on the existing Site, including an upper, middle, and lower level, which are connected by an internal roadway on the western side of the Site. The vegetated batters and retaining walls between the levels along with most of the existing hardstand and roadways are to be retained. These segregated platforms have dictated the intended Site layout which proposed three distinct areas of operation. The areas of operation include:

- External parking, office area, food and garden organics processing facility and food de-packing building on upper level.
- Processed material storage and truck loading bays on middle level.
- Receiving, storage and processing shed and office on lower level.
- The lower, middle, and upper levels consist of multiple warehouse structures. The total roof area of these structures is 12,859 m².

Figure 2.2, below, shows the overall architectural plan for the proposed development.

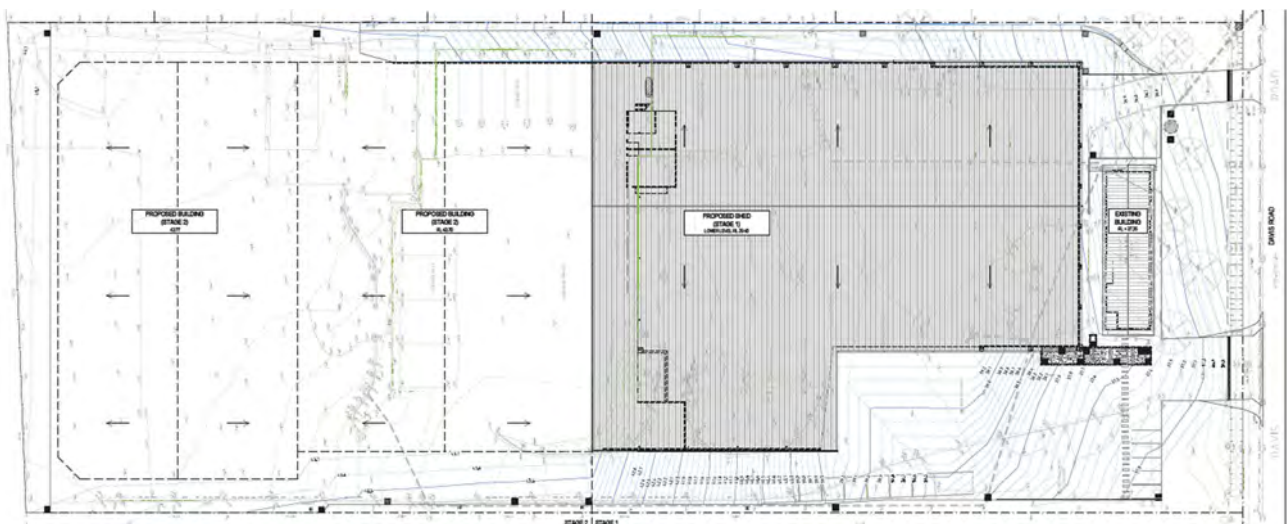


Figure 2.2: Proposed Development Site Layout

3. EXISTING SURFACE WATER ENVIRONMENT

3.1. Surrounding Land Uses

The Site is in the Wetherill Park industrial estate, with surrounding land uses being predominantly commercial and industrial. Adjacent industrial developments include chemical manufacturing plants, petroleum product production plants and resource recovery centres. The Prospect Nature Reserve lies directly to the north of the Site.

3.2. Existing Landform

The Site has an area of 20,282 m², with an average grade of 5% from north to south. However, the Site is divided into three platforms with distinct elevations, each of which is made up of a relatively flat area of hardstand from the Site's previous use.

The northern boundary of the Site contains the highest point on the development. As the development falls towards the south, the southern street frontage at Davis Road is the lowest point and is relatively flat along Davis Road with slight fall to the east. Within the catchment of the surrounding area, Davis Road acts as an overland flow path for upstream developments.

3.3. Surface Hydrology

3.3.1. Local Hydrology

The existing stormwater network within the Davis Road reserve conveys stormwater eastward from the southern end of the development, discharging into a concrete channel flowing north-east adjacent the Wetherill Park industrial estate. This channel acts as the primary stormwater collector for the industrial estate. The channel discharges into Prospect Creek near Widemere Road, approximately 1 km east of the Site.

A satellite image showing the concrete channel relative to the location of the Site is shown in Figure 3.1 below.



Figure 3.1: Satellite View of Concrete Channel Local to the Site (Nearmap August 2020)

3.3.2. Regional Hydrology

The Site falls within the lower reaches of the Georges River catchment. This catchment covers an area of approximately 960 km², beginning in Appin, approximately 60 km south-west of Sydney, discharging in Botany Bay. The Site is approximately 500 m south of Prospect Creek and 800 m south of Prospect Reservoir. Prospect Creek is one of the primary tributaries of the Georges River catchment and is also a major source of Sydney's urban water supply. Operated by the Sydney Catchment Authority (SCA), the Prospect Reservoir is a major source to Sydney Water's urban water supply. The concrete channel which the Site reports to joins Prospect Creek downstream of the Prospect Reservoir.

4. LEGISLATION, POLICY AND GUIDELINES

4.1. Introduction

Several government policies, guidelines and legislation requirements relating to stormwater quality are applicable to the proposed development on the Site. The relevant policies, guidelines and legislative requirements are summarised below.

4.2. Policies and Guidelines

4.2.1. Erosion and Sediment Control

In New South Wales, the most relevant and comprehensive guideline for the design of stormwater and sedimentation controls is contained in *Managing Urban Stormwater Volume 1 – the Blue Book* (Landcom, 2004). The principles of surface water control, including the design of erosion and sediment control structures, have been adopted where applicable in this Stormwater Management Plan. Further information on the erosion and sedimentation controls provided for this Site can be found in Section 5.3.

4.2.2. Fairfield City Council Guidelines

Fairfield City Council (Council) City Wide Development Control Plan (DCP) (2013) provides stormwater controls for Industrial Developments in Chapter 9. The following controls are outlined in this section of the DCP:

- **9.5.2 On Site Detention:** The development must not increase the risk of downstream flooding, erosion or unstable waterways or a reduction of the capacity of Council's drainage network. Relevant controls are provided in Chapter 4 of Council's Stormwater Management Policy.
- **9.5.3 Water Conservation:** Reduce the consumption of potable water through capture and reuse of rainwater. Relevant controls are provided in Chapter 5 of Council's Stormwater Management Policy.
- **9.5.4 Water Quality Improvement:** Minimise the potential impacts of the development and associated activities on the water quality of local creeks. Relevant controls are provided in Chapter 6 of Council's Stormwater Management Policy.

Council's Stormwater Management Policy outlines the following controls for stormwater management:

- **Chapter 4 On Site Detention Systems:** On site detention is not required within the Wetherill Park Industrial Area. The Site is located within the Wetherill Park Industrial Area.
- **Chapter 5 Water Conservation:** Ensure that 80% of the roof area of the development is to drain to tanks that have a capacity of 3,000 L per 100 m² of roof area of the development. The tanks are to be connected to all non-potable uses including flushing toilets, irrigation, wash down and laundry.
- **Chapter 6 Water Quality Improvements:** The following stormwater pollutant reduction targets must be met by developments within the Wetherill Park Industrial Area:
 - Gross Pollutants: 90%
 - Total Suspended Solids: 80%
 - Total Phosphorus: 55%
 - Total Nitrogen: 40%

Flood risk management is discussed in Council's DCP Chapter 11 – Flood Risk Management. This has been prepared by Council in response to the New South Wales Government Floodplain Development Manual (2005). Schedule 6 – Other Floodplains is applicable to the Site and has been addressed in this Stormwater Management Plan.

5. STORMWATER IMPACTS AND PROPOSED MANAGEMENT MEASURE

5.1. Introduction

This Stormwater Management Plan describes the design features used to manage the use and discharge of stormwater throughout the lifespan of the facility. The plan has considered required containment and treatment practices and aims to maximise the Site's on-site water reuse potential.

5.2. Proposed Stormwater Management System

The proposed stormwater management strategy has been detailed on drawings C01 to C12 of the engineering plans provided in Appendix A. The adopted stormwater management design is summarised as follows:

- A portion of roof water runoff is to be directed by downpipes to above-ground rainwater harvesting tanks which have been sized to meet the Site's reuse demand for non-potable water. One rainwater harvesting tank has been proposed to provide a reuse volume of 5000 L. The harvested volume from a portion of the warehouse roof is to be internally reused through amenities connections with tank overflows reporting to the stormwater system. The remainder of the roof water collected is to be directed to the stormwater system.
- Surface water runoff from the hardstand areas and roof areas not connected to the rainwater tanks is to be conveyed by a new stormwater network near the eastern and western boundaries of the Site. The network carries stormwater towards the south in a gravity-driven pipe network. Stormwater is to be discharged to a sandfilter formed from the structure of a weighbridge pit used on the Site by the previous occupants.
- Discharges from the sandfilter are directed to the south-eastern corner of the Site to a proprietary treatment device. A SPEL Ecoceptor 6000 series is proposed as the proprietary treatment device, which has been designed and sized to effectively meet the requirements of the Site.
- From the proprietary treatment device, the existing outlet connection point of stormwater into Fairfield City Council's stormwater system along Davis Road will be maintained.

5.2.1. On-Site Stormwater Detention

As discussed in Section 4, the Site is not subject to requirements of the provision of detention of stormwater, along with all developments within the Wetherill Park Industrial Area.

Regardless of these requirements, a qualitative review of the Site's catchment has been undertaken to predict the effects on stormwater discharge of the proposed development. Table 5.1 below records the pre- and post-development catchments for the Site.

Catchment	Total Impervious Area	Total Impervious Fraction
Pre-Development	16,281 m ²	80%
Post-Development	18,258 m ²	90%

Table 5.1: Catchment Analysis for Pre- and Post-Development Catchment

The proposed development will increase the impervious fraction of the Site by approximately 11%. This increase is likely to increase the runoff generated by the Site in large rainfall events by around 11%. It is expected that devices designed to capture and reuse rainwater may cause a minor reduction in runoff from the Site.

5.2.2. Stormwater Quality

To minimise impacts on the downstream watercourse ecology and health, stormwater treatment devices have been incorporated into the design of the development. The performance of the proposed stormwater management strategy has been assessed against an equivalent design of the proposed development with no stormwater treatment measures. This has been conducted using MUSIC 6, conceptual stormwater modelling software.

The Site catchment has been divided into sub-catchments based on surface type to effectively simulate the proposed treatment measures along the treatment train. The MUSIC model layout is shown in Figure 5.1 below. In developing a MUSIC model, rainfall, and evaporation records in the vicinity of the Site were obtained from available data provided by the Bureau of Meteorology.

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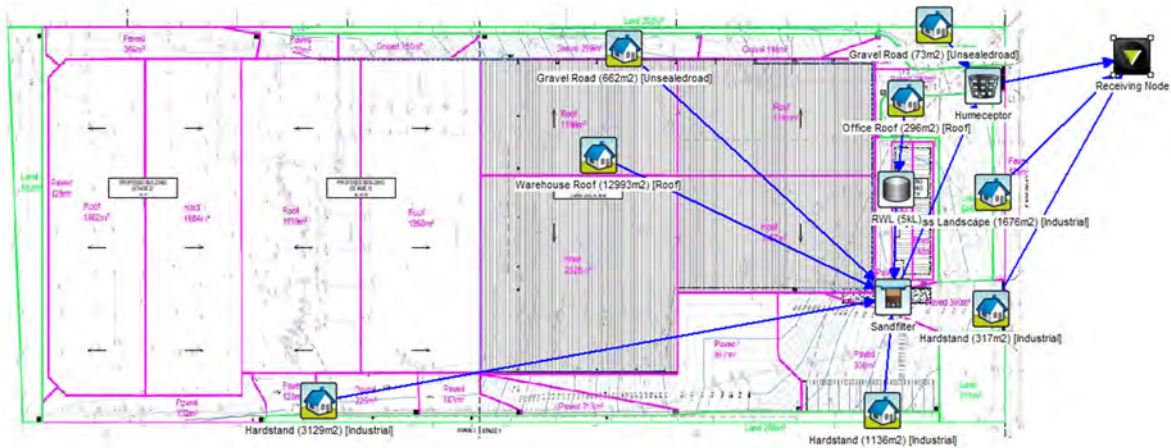


Figure 5.1: MUSIC Model Schematic

To develop a model that could comprehensively assess the performance of the proposed stormwater management plan, a 6-minute pluviograph rainfall data template from the Bureau of Meteorology rainfall station 067006 located in Fairfield has been used. The records provided are for a 12-year period between 1961 and 1973.

Monthly areal potential evapotranspiration (PET) rates for the Site were established from PET data provided by the Climate Atlas of Australia (BOM). These are shown in Table 5.2 below.

Month	Areal Potential Evapotranspiration (mm/month)
January	160.89
February	120.12
March	106.95
April	72.90
May	48.98
June	36.90
July	38.13
August	54.87
September	72.00
October	115.01
November	135.90
December	145.08

Table 5.2: Monthly Evapotranspiration Data for Fairfield

Pollutant source load data has been obtained from default quantities recommended by in *Draft NSW MUSIC Modelling Guidelines*. These parameters are shown in Tables 5.3 to 5.7.

Parameter	Value
Soil Storage Capacity	54 mm
Initial Storage	25% of capacity
Field Capacity	51 mm
Infiltration Capacity Coefficient -a	180
Infiltration Capacity Coefficient -b	3

Table 5.3: Pervious Area Properties

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Parameter	Value
Initial Depth	10 mm
Daily Recharge Rate	25%
Daily Baseflow Rate	25%
Daily Deep Seepage Rate	0%

Table 5.4: Ground Water Properties

Total Suspended Solids	Sealed Road	Unsealed Road	Roof	Landscaping
Baseflow Concentration Parameters				
Mean (log mg/L)	1.200	1.200	1.100	1.200
Std Dev (log mg/L)	0.170	0.170	0.170	0.170
Storm Flow Concentration Parameters				
Mean (log mg/L)	2.430	3.000	1.300	2.150
Std Dev (log mg/L)	0.320	0.320	0.320	0.320

Table 5.5: Concentration Parameters for Total Suspended Solids

Total Phosphorus	Sealed Road	Unsealed Road	Roof	Landscaping
Baseflow Concentration Parameters				
Mean (log mg/L)	-0.850	-0.850	-0.820	-0.850
Std Dev (log mg/L)	0.190	0.190	0.190	0.190
Storm Flow Concentration Parameters				
Mean (log mg/L)	-0.300	-0.300	-0.890	-0.600
Std Dev (log mg/L)	0.250	0.250	0.250	0.250

Table 5.6: Concentration Parameters for Total Phosphorus

Total Nitrogen	Sealed Road	Unsealed Road	Roof	Landscaping
Baseflow Concentration Parameters				
Mean (log mg/L)	0.110	0.110	0.320	0.110
Std Dev (log mg/L)	0.120	0.120	0.120	0.120
Storm Flow Concentration Parameters				
Mean (log mg/L)	0.340	0.340	0.300	0.300
0.190	0.190	0.190	0.190	0.190

Table 5.7: Concentration Parameters for Total Nitrogen

The following stormwater treatment devices have been incorporated into the proposed stormwater treatment train for the proposed development for the Site:

- **Sandfilter:** The sandfilter provides media-based filtration. The media consists of highly permeable sand which effectively removes suspended solids and nutrients. The basin has been designed to allow for 600 mm of extended detention, at which points overflows are directed to the outlet sump.
- **Humeceptor:** Stormwater is lastly directed to a proprietary Ecoceptor device. The Ecoceptor is an underground fibreglass stormwater treatment solution that traps pollutants, sediments, and light liquids. The Ecoceptor 6000 series can store up to 11500L of pollutants.

The results calculated by the MUSIC model are shown in Table 5.8. These results represent the pollutant load and removal efficiency for the proposed development.

Parameter	Source Load	Residual Load	% Reduction
Total Suspended Solids (kg/yr)	1590	258	83.8
Total Phosphorus (kg/yr)	2.87	0.703	75.5
Total Nitrogen (kg/yr)	29.8	13.7	54
Gross Pollutants (kg/yr)	377	13.8	96.3

Table 5.8: Pollutant Removal Efficiency Results

As summarised in Table 5.8, the proposed treatment train will effectively reduce all residual pollutant loads by the target quantities specified by Fairfield City Council. Further to this, the development is not expected to result in changes to the downstream hydrologic flow regime and as such is not expected to result in additional nutrient enrichment within downstream water bodies.

5.3. Sediment and Erosion Control Measures

The soils across the Site have been largely stripped of their topsoil and covered with either unsealed stabilised gravel, AC bitumen or concrete from the Site's previous use as an asphalt plant. The development proposes to utilise these existing areas which are broken up into three distinct levels or pads. Slopes are gentle across the Site due to terracing/retaining walls installed by the previous Site occupants.

5.3.1. Construction Phase

The construction of the facility proposes minor alterations to the existing site levels to accommodate the new stormwater system to be installed. In general, the existing levels of the Site are to be retained, minimising the required bulk earthworks during construction. As a result, the potential for significant amounts of sediment to leave the Site during construction works are expected to be minimal. Despite this, an Erosion and Sediment Control Plan has been prepared to minimise erosion during construction activities.

Drawing C02 outlines the erosion and sediment control measures to be implemented during the construction phase of the proposed development. This plan has been prepared in accordance with *Managing Urban Stormwater Volume 1 – Blue Book*. The principles include:

- Minimising the amount of soil disturbance by retaining existing surface levels and staging construction.
- Capture and treatment of sediment-laden surface runoff from disturbed areas by installation of downslope sediment controls.

5.3.2. Operational Phase

Once the construction activities on the Site have been finalised, the potential for significant erosion across the Site is considered negligible as the entirety of the Site is to be sealed or appropriately landscaped, however there is potential for sediment generation from vehicle movement. The proposed stormwater management system includes treatment measures to minimise sediment leaving the site as outlined in this Section.

6. SITE WATER BALANCE

6.1. Introduction

This Section outlines the water usage requirements of the proposed development and the water management strategies adopted. The design aims to minimise the use of potable water sources by taking advantage of rainwater harvesting measures by collecting roof runoff in rainwater tanks. The modelling of rainwater reuse and availability has been undertaken as part of the water quality modelling in MUSIC described in Section 5.2.

6.2. Water Balance Sources and Systems

One water balance system has been modelled for the Site. This system is connected to the rainwater tank connected to the existing office building. Water captured from this source is to be used for flushing toilets and irrigating landscape areas as required. The rainwater harvesting tanks are expected to be supplemented by a standard potable water source when the tanks are empty. During rainwater events that cause the tank to exceed capacity, additional rainwater is directed to the stormwater system as described in Section 5.

6.3. Water Balance Model

6.3.1. Rainfall Reuse

The following reuse rates have been adopted to determine average daily demand for the proposed development:

- Toilets: 0.1 kL/day – 4 toilets have been designed (0.4 kL/day total)

6.3.2. Results

The above inputs were used to perform a site water balance. It has been determined that by providing 5 kL of rainwater storage, the reuse demands of the proposed development will be met 58.73% of the time. Excess water from the rainwater tanks is to be disposed of by connection to the downstream stormwater system.

6.4. Recommendations

It is recommended that water usage is monitored once operations commence on the Site to ensure reuse measure are operating as expected. This will also enable the water balance model to be updated and/or calibrated after 12 months of operation to gain a better understanding of water usage throughout the Site and where both operational and environmental improvements can be made.

7. FLOOD IMPACT ASSESSMENT

A qualitative flood impact assessment has been undertaken to satisfy the flooding requirements of the SEARs. The assessment was based on a review of the Wetherill Park Overland Flood Study.

The subject Site is marginally affected by the probable maximum flood (PMF) and 1% AEP flood extent. The extent from Council's mapping is shown below in Figures 7.1 and 7.2.

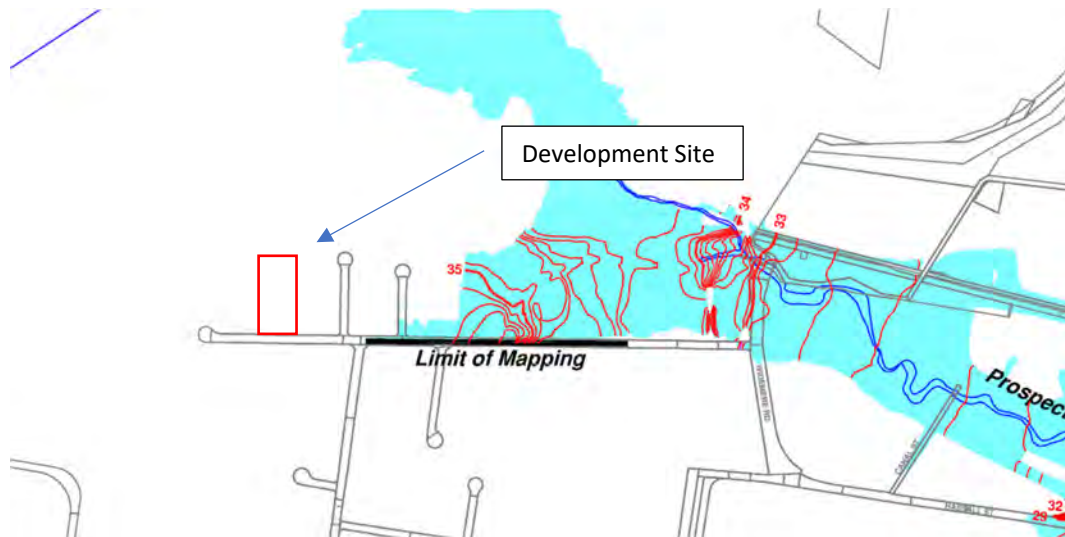


Figure 7.1: Modelled Flood Extents in the PMF Event

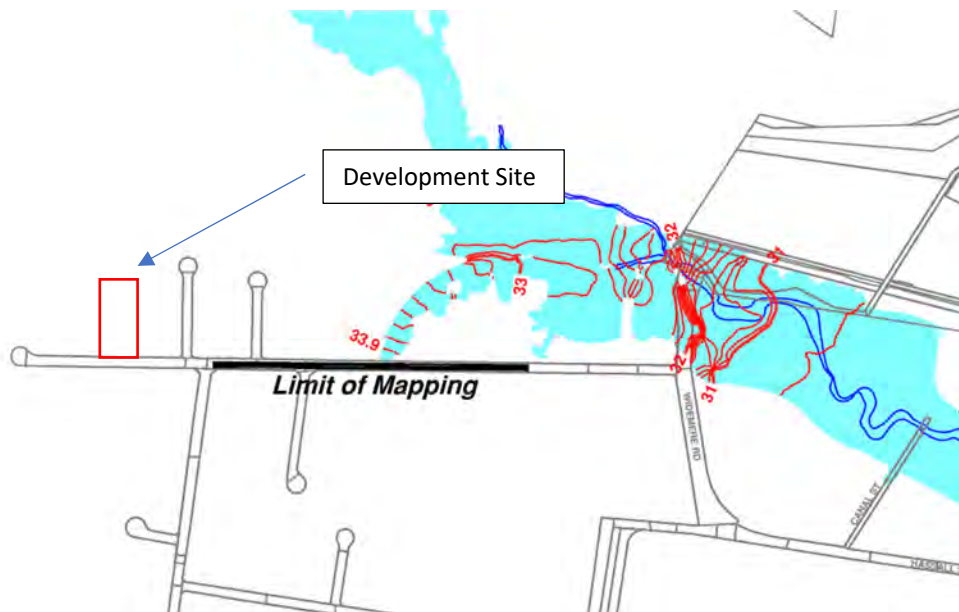


Figure 7.2: Modelled Flood Extents in the 1% AEP Event

A *Flood Information Sheet* has previously been provided by Fairfield City Council in February 2016. The local flood levels for the Site in the PMF, 100-year ARI and 20-year ARI have been provided in Table 7.1. The extent of flooding is shown in Figure 7.3. The full information sheet has been included in Appendix B.

Flood	Flood Level (mAHD)
Probable Maximum Flood	37.0 – 38.0
100-year ARI	36.4 – 36.9
20-year ARI	36.3 – 36.8

Table 7.1: Local Overland Flood Details

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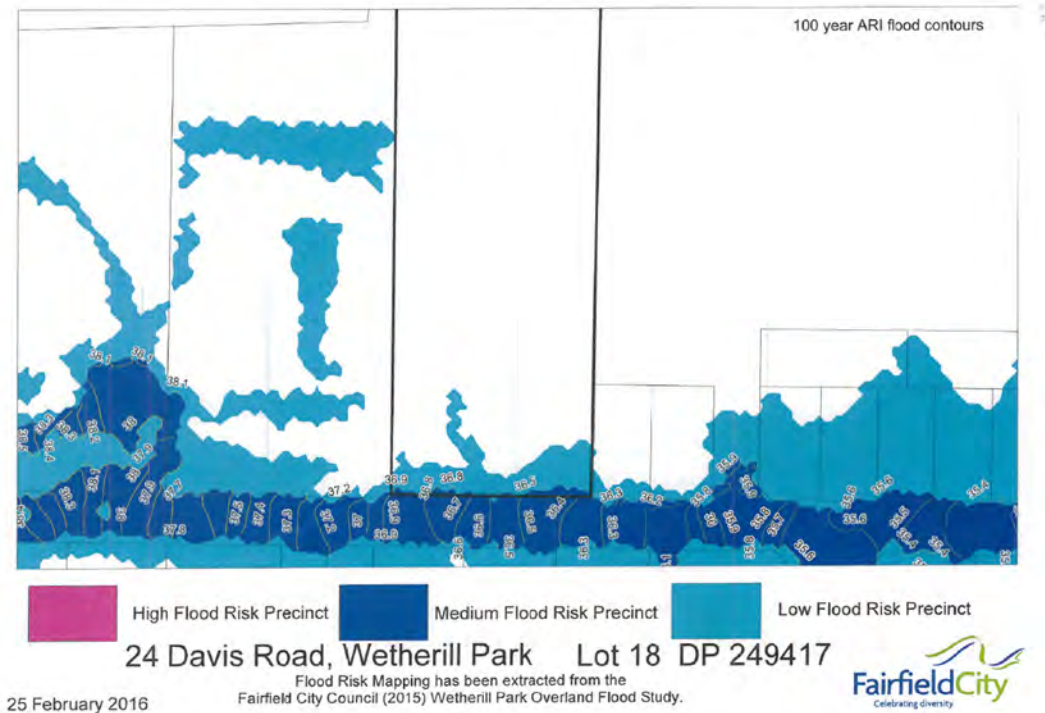


Figure 7.3: Extent of Flooding at Development Site

The flood risk precincts indicated in Figure 7.3 indicate that a small area of the Site frontage is included in a Medium Flood Risk area. This area has been designed to be retained as landscaping. A larger area is impacted by Low Flood Risk. The new concrete hardstand areas are expected to lift this area such that it is not affected by floodwaters. The proposed buildings at the development are not located within the extents of any flood risk area.

The lowest pavement level marked in the proposed civil design is 36.19 mAHD at the south-eastern corner. It is expected that in the 20-year and 100-year ARI flood events, only partial areas of the driveways will be affected by floodwaters. In the probably maximum flood, the existing office building at the south of the Site may be affected by floodwaters. No new structures and most external hardstand areas are expected to be unaffected by all flood events.

As a result, the proposed development complies with the intent of Council's Development Control Plan Chapter 11 – Flood Risk Management.

8. MAINTENANCE PROGRAM

8.1. Introduction

This Section describes the procedures required for the maintenance of the stormwater quality improvement devices discussed in Section 5. Frequent monitoring and maintenance of the devices will be critical in ensuring the stormwater quality management system functions as designed.

8.2. Monitoring and Maintenance Activities

8.2.1. Maintenance Timeframes

A summary of key indicators to be monitored and the maintenance actions required are provided for each stormwater quality improvements device in Table 8.1. In general, it is recommended that all listed inspections be carried out at three-monthly intervals for the first year of operation. Any major problems encountered during this time should be documented and communicated to the owner of the device to seek appropriate action. It is also recommended that inspections take place as soon as possible after heavy rainfall or major storm events. All inspection and maintenance records must be kept on-site for inspection by the approval authority if necessary. Alterations to this proposed maintenance activity should be adopted to ensure regular monitoring practices remain in place for the life of the development.

8.2.2. Maintenance Summary

A summary of the items to be considered during monitoring with the associated consequences and recommended actions to be taken are provided in Table 8.1. These items have been separated into general considerations and device-specific monitoring. The general items would be visually apparent during day-to-day activities.

Item to be Monitored	Monitoring Task	Purpose of Monitoring	Maintenance Action
GENERAL			
Sediment Build Up	<p>Check for excessive build-up of sediment in stormwater system including pits and pipes.</p> <p>If sediment build up is noted, identify source.</p>	<p>If sediment accumulates in stormwater pits and pipes, capacity reduction can occur.</p> <p>Excessive build-up of sediments in gross pollutant traps can reduce the effectiveness of the devices over time.</p> <p>Erosion and sedimentation of stored waste material may contribute to increased transport of pollutants.</p>	<p>Once sediment source has been identified and stabilised, remove accumulated sediment by flushing the system and/or emptying the gross pollutant trap.</p>
Erosion or Scour	<p>Check for erosion and scour around the structures.</p> <p>If scour is noted check for source of scour.</p>	<p>Erosion impairs filtration systems by preventing uniform distribution of flow through the system.</p> <p>If left untreated, small concentrations of erosion can quickly spread over large areas becoming costly to repair.</p>	<p>Once source of damage is identified and rectified, fill in any holes with appropriate filter media.</p> <p>Provide energy dissipation if required.</p>
Litter (Anthropogenic)	<p>Check for litter in and around treatment areas and structures.</p>	<p>Litter can potentially block inlet and outlet structures resulting in flooding, as well as detract from the system's visual amenity.</p>	<p>Address source of litter with appropriate action.</p> <p>Remove litter</p>

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Item to be Monitored	Monitoring Task	Purpose of Monitoring	Maintenance Action
Litter (Organic)	Check for litter in and around treatment areas.	Organic litter can provide an additional source of nutrients to the filtration systems. Accumulated organic matter can also create offensive odours and can reduce percolation of water into the filter media.	Identify and address sources of organic litter with appropriate action. Remove litter.
Inlet and Outlet Pits	Ensure inflow areas and grates over pits are clear of litter and are in good/safe condition. Check for dislodged or damaged pit covers and ensure safety and general structural integrity.	If pits become blocked it is likely to greatly reduce the proposed stormwater management system. Dislodged or damaged pit covers can be a safety hazard.	Remove debris and repair any structural damage as required.
DEVICES			
Ecoceptor	Ensure the settlement collection chamber is not full. Cheque for dislodged or damaged covers and ensure general structural integrity of the device. Maintenance is generally to be in accordance with the manufacturer's instructions and procedures.	If the trash collection chamber becomes full, the GPT will be unable to collect further gross pollutants from stormwater runoff. Dislodged or damaged pit covers can be a safety hazard.	Contact the appropriate authority to organise a vacuum truck to clean the unit. Contact the appropriate authority to repair any structural damage.
Rainwater Tanks	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly. Regularly check the structural integrity of the tanks. Check for any accumulated litter, sediment, or debris on or within the tanks.	If any of the fixtures are not operating correctly, it is likely that sediment and debris will accumulate in the tank and reduce water quality. If the tank is not structurally sound, it is likely to fail. The sudden release of water will potentially cause property damage.	Remove any litter, settlement, or debris from the devices. Repair or replace any damaged components. If any accumulation is found within the tank, drain, and flush the tank with potable water.
Sandfilter	Monitor ponding and its duration compared to design infiltration period. Remove deposited sediment and debris from the sand level and inlet/outlet areas. Regularly check the structural integrity of hydraulic structures.	Failure of the sandfilter to perform as designed may result in local overflows and/or sediment and nutrient deposits downstream.	Inspect sand level for erosion and scour. Replace sand and inspect drainage as appropriate.

Table 8.1: Monitoring and Maintenance Procedures

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APPENDIX A – CIVIL ENGINEERING DRAWINGS

PROPOSED RECOVERY AND RECYCLING FACILITY

24 Davis Rd, Wetherill Park

STORMWATER / CIVIL WORKS FOR CONSTRUCTION - STAGE 1



GENERAL NOTES

- G1. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL DRAWINGS AND SPECIFICATIONS AND OTHER WRITTEN INSTRUCTIONS THAT MAY BE ISSUED.
- G2. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING FROM THE DRAWINGS. REFER ARCHITECTS DRAWINGS FOR ALL DIMENSIONS.
- G3. REFER ANY DISCREPANCY TO THE ENGINEER/ARCHITECT.
- G4. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE APPROPRIATE SAA SPECIFICATIONS OR CODE AND WITH THE REQUIREMENTS OF THE RELEVANT LOCAL AUTHORITY.
- G5. THE ALIGNMENT AND LEVEL OF ALL SERVICES SHOWN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL CONFIRM THE POSITION AND LEVEL OF ALL SERVICES PRIOR TO COMMENCEMENT OF CONSTRUCTION. ANY DAMAGE TO SERVICES SHALL BE RECTIFIED AT THE CONTRACTORS EXPENSE.
- G6. NO WORKS ARE TO COMMENCE UNTIL THE REQUIRED TREE REMOVAL PERMITS HAVE BEEN GRANTED BY RELEVANT LOCAL AUTHORITY AND THE APPROPRIATE NOTICE OF INTENTION TO COMMENCE GIVEN.
- G7. ALL SERVICES, OR CONDUITS FOR SERVING SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF PAVEMENT CONSTRUCTION.
- G8. SUBSOL DRAINAGE, COMPRISING 100mm AGRICULTURE PIPE IN GEO STOCKING TO BE PLACED AS SHOWN AND AS MAY BE DIRECTED BY THE SUPERINTENDENT. SUBSOL DRAINAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE RELEVANT LOCAL AUTHORITY CONSTRUCTION SPECIFICATION.
- G9. NO WORK IS PERMITTED WITHIN ADJOINING PROPERTIES WITHOUT WRITTEN PERMISSION FROM THE OWNERS OR RESPONSIBLE AUTHORITY.

DRAINAGE NOTES

- D1. ALL DRAINAGE OUTLET LEVELS SHALL BE MINIMUM ON SITE, PRIOR TO CONSTRUCTION COMMENCING.
- D2. ALL PIPES WITHIN THE PROPERTY TO BE 100mm 100 DA UPVC @ 1% MIN. GRADE. UNO.
- D3. ALL FITS WITHIN THE PROPERTY ARE TO BE FITTED WITH WELLOCK OR APPROVED EQUIVALENT GRATES.
- D4. LIGHT DUTY FOR LANDSCAPED AREAS.
- D5. HEAVY DUTY WHERE SUBJECTED TO VEHICULAR TRAFFIC.
- D6. FITS WITHIN THE PROPERTY MAY BE CONSTRUCTED AS:
 - 1) PRECAST STORMWATER FITS
 - 2) CAST IN SITU MASS CONCRETE
 - 3) CEMENT RENDERED 20mm BRICKWORK
- D7. SUBJECT TO THE RELEVANT LOCAL AUTHORITY CONSTRUCTION SPECIFICATION.
- D8. ENSURE ALL GRATES TO FITS ARE SET BELOW FINISHED SURFACE LEVEL WITHIN THE PROPERTY. TOP OF FIT IS AS APPROXIMATE ONLY AND MAY BE VARIED SUBJECT TO APPROVAL OF THE ENGINEER. ALL INVERT LEVELS ARE TO BE ACHIEVED.
- D9. ANY PIPES BENEATH RELEVANT LOCAL AUTHORITY ROAD TO BE RUBBER RING JOINTED RCP. UNO.
- D10. ALL FITS IN ROADWAYS ARE TO BE FITTED WITH HEAVY DUTY GRATES WITH LOCKING BOLTS AND CONTINUOUS HINGE.
- D11. PROVIDE STEP RINGS TO STORMWATER FITS GREATER THAN 1200mm DEPTH.
- D12. TRENCH BACK FILL IN ROADWAYS SHALL COMPRISE SHARPLY CLEAN GRANULAR BACK FILL IN ACCORDANCE WITH THE RELEVANT LOCAL AUTHORITY SPECIFICATION TO NON TRAFFICABLE AREAS TO BE COMPACTED BY ROLLING AND TAMPING USING A FLAT PLATE VIBRATOR.
- D13. WHERE A HIGH ENERGY DISCHARGE (HED) PIT IS PROVIDED ALL PIPES ARE TO BE CONNECTED TO THE HED PIT. UNO.
- D14. DOWN PIPES SHALL BE A MINIMUM OF 200mm SW GRADE UPVC OR 100mm COLORED GALVANIZED STEEL UNO.
- D15. COLOREDD OR ZINCALUMINE STEEL BOX GUTTERS SHALL BE A MINIMUM OF 650mm X 150mm DEEP.
- D16. LAYERS GUTTERS SHALL BE A MINIMUM OF 125mm X 100mm DEEP (OR OF EQUIVALENT AREA) GALVANIZED OR ZINCALUMINE STEEL. UNO.
- D17. SUBSOL DRAINAGE SHALL BE PROVIDED TO ALL RETAINING WALLS & EMBANKMENTS, WITH THE LINES FEEDING INTO THE STORMWATER DRAINAGE SYSTEM. UNO.

EARTHWORKS NOTES

- E1. THE EARTHWORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT GEO TECHNICAL REPORT.
- E2. THE SITE OF THE WORKS SHALL BE PREPARED BY STRIPPING ALL EXISTING TOPSOIL, FILL AND VEGETATION.
- E3. SUBGRADE SHALL BE COMPACTED UNTIL A DRY DENSITY HAS BEEN ACHIEVED OF NOT LESS THAN 100% OF THE STANDARD MAXIMUM DRY DENSITY WHEN TESTED IN ACCORDANCE WITH AS 1289 TESTS E.1.1, OR E.1.2.
- E4. THE EXPOSED SUBGRADE SHOULD BE PROOF ROLLED TO DETECT ANY SOFT OR WET AREAS WHICH SHOULD BE LOCALLY EXCAVATED AND BACK FILLED WITH SELECTED MATERIAL.
- E5. THE BACK FILLING MATERIAL SHALL BE IMPORTED GRANULAR FILL OF LOW PLASTICITY, PREFERABLY CRUSHED SANDSTONE, AND TO BE PLACED IN LAYERS NOT EXCEEDING 150mm THICKNESS AND COMPACTED TO 98% STANDARD DRY DENSITY AT A MOISTURE CONTENT WITHIN 2% OF OPTIMUM.
- E6. SITE WORKS ARE TO BE BATTERED TO ADJACENT PROPERTY LEVELS.
- E7. STORMWATER MUST NOT BE CONCENTRATED ON TO AN ADJACENT PROPERTY.
- E8. AT NO TIME DURING OR AFTER CONSTRUCTION IS STORMWATER TO BE PONDED ON ADJOINING PROPERTIES.
- E9. THE SITE SHALL BE GRADED AND DRAINED SO THAT STORMWATER WILL BE DIRECTED AWAY FROM THE BUILDING PLATFORM.
- E10. STORMWATER DRAINAGE SHALL BE PROVIDED AND MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION. ALL STORMWATER RUNOFF SHALL BE GRADED AWAY FROM THE SITE WORKS AND DEPOSITED ON A SURFACE CATCHMENTS AND STORMWATER COLLECTION PITS.
- E11. ALL SURFACE CATCHMENTS SHALL BE GRADED AT 1% (1 IN 100) MINIMUM. THE GROUND SHALL GRADE AWAY FROM ANY DWELLING: AT 1% (1 IN 20) FOR THE FIRST METRE. THEN AT 2.5% (1 IN 40).
- E12. WHERE A CUT FILL PLATFORM IS USED THERE SHALL BE A MINIMUM BERM 1000mm WIDE TO THE PERIMETER OF THE SITE WORKS WHICH SHALL BE SUPPORTED BY BATTERS OF 3 IN 1 FILL.
- E13. ANY VERTICAL OR NEAR VERTICAL PERMANENT EXCAVATION (CUT) DEEPER THAN 600mm MATERIAL OTHER THAN ROCK SHALL BE ADEQUATELY RETAINED OR BATTERED TO A MINIMUM OF 3:1.
- E14. WHERE BATTERS CANNOT BE PROVIDED TO SUPPORT THE CUT OR FILL, THEY SHALL BE ADEQUATELY RETAINED.
- E15. RETAINING WALLS ARE TO BE CONSTRUCTED WITH ADEQUATE SUBSOL DRAINAGE.

CONCRETE PAVEMENT

- C1. SUBGRADE SHALL BE PREPARED AS OUTLINED IN EARTHWORKS.
- C2. ANY SUB-BASE MATERIAL SHALL BE COMPACTED AS OUTLINED IN EARTHWORKS.
- C3. CONCRETE SHALL COMPRISE A MIN. COMPRESSIVE STRENGTH OF 32MPa AT 28 DAYS IN ACCORDANCE WITH THE RELEVANT LOCAL AUTHORITY SPECIFICATION. UNO.
- C4. ANY SUB-BASE MATERIAL SHALL BE COMPACTED AS OUTLINED IN EARTHWORKS.
- C5. CONCRETE KERB AND GUTTER SHALL COMPRISE A MINIMUM COMPRESSIVE STRENGTH OF 32MPa UNO.
- C6. CONCRETE WORKS ARE TO BE CURED BY ONE OF THE FOLLOWING MEANS:
 - i) WETTING TWICE DAILY FOR THE FIRST THREE DAYS.
 - ii) USING AN APPROVED CURING COMPOUND FOR A MINIMUM OF 7 DAYS COMMENCING IMMEDIATELY AFTER POURING.

FLEXIBLE PAVEMENT NOTES

- F1. SUBGRADE SHALL BE PREPARED AS OUTLINED IN EARTHWORKS.
- F2. PAVEMENT MATERIAL SHALL CONSIST OF APPROVED OR RIPPED SANDSTONE, NATURAL GRAVEL OR FINE CRUSHED ROCK AS PER THE RELEVANT COUNCIL AUTHORITY SPECIFICATION.
- F3. PAVEMENT MATERIALS SHALL BE SPREAD IN LAYERS NOT EXCEEDING 150mm AND NOT LESS THAN 75mm.
- F4. PAVEMENT MATERIALS SHALL BE SIZED AND OF A STANDARD OUTLINED IN AS1141.
- F5. CRUSHED OR RIPPED SANDSTONE SHALL BE MINUS 75 NOMINAL SIZE DERIVED FROM SOUND, CLEAN SANDSTONE FREE FROM OVERBURDEN, CLAY SEAMS, SHALE AND OTHER DELETERIOUS MATERIAL.
- F6. PAVEMENT MATERIALS SHALL BE COMPACTED BY SUITABLE MEANS TO SATISFY THE FOLLOWING MINIMUM SPECIFICATIONS (AS PER AS1289-2):

EXPOSURE CLASSIFICATION	MINIMUM COVER (mm)
A1	20 MPa
A2	30 MPa
B1	60 MPa
B2	80 MPa
C	100 MPa

- F7. TESTING FOR EACH LAYER SHALL BE UNDERTAKEN BY A N.A.T.A. REGISTERED LABORATORY IN ACCORDANCE WITH AS1289. AT NOT MORE THAN 50m INTERVALS AND A MINIMUM OF TWO PER LAYER. FURTHER FREQUENCY OF TESTING SHALL BE NO LESS THAN THAT REQUIRED BY AS1978.

PAVED AREAS NOTES

- A1. SUBGRADE SHALL BE PREPARED AS OUTLINED IN EARTHWORKS.
- A2. ALL PAVERS ARE TO BE PLACED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATION.
- A3. TRAFFICABLE AREAS:
 - SUB-BASE TO BE 150mm COMPACTED THICKNESS DIGTS.
 - SUB-BASE TO BE SUITABLY COMPACTED TO MEDIUM DENSITY 98% MOD.
 - SUB-BASE TO EXTEND AT LEAST 200mm BEYOND PAVED SURFACE.
 - PAVERS TO BE 80mm THICK INTERLOCKING PAVERS ON 50mm SAND BEDDING.
- A4. NON TRAFFICABLE AREAS:
 - SUB-BASE AS PER TRAFFICABLE AREAS.
 - PAVERS TO BE 60mm INTERLOCKING PAVERS ON 50mm SAND BEDDING. UNO.

EROSION AND SEDIMENT NOTES

- B1. THIS PLAN TO BE READ IN CONJUNCTION WITH EROSION AND SEDIMENT CONTROL DETAILS AS ATTACHED.
- B2. THE CONTRACTOR SHALL IMPLEMENT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS NECESSARY AND TO THE SATISFACTION OF THE RELEVANT LOCAL AUTHORITY PRIOR TO THE COMMENCEMENT OF AND DURING CONSTRUCTION. NO DISTURBANCE TO THE SITE SHALL BE PERMITTED OTHER THAN IN THE IMMEDIATE AREA OF THE WORKS AND NO MATERIAL SHALL BE REMOVED FROM THE SITE WITHOUT THE RELEVANT LOCAL AUTHORITY APPROVAL. ALL EROSION AND SEDIMENT CONTROL DEVICES TO BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH STANDARDS OUTLINED IN NSW DEPARTMENT OF HOUSING'S 'MANAGING URBAN STORMWATER - SOLIDS AND CONSTRUCTIONS':
 - B3. TOPSOIL SHALL BE STORED AND STOCKPILED OUTSIDE HAZARD AREAS SUCH AS DRAINAGE LINES. THIS TOPSOIL SHALL BE RESPREAD LATER ON AREAS TO BE REVEGETATED AND STABILISED ONLY. (I.E. ALL FOOTPATHS, BATTERS, SITE REGARDING AREAS, BASINS AND CATCHDRAINS). TOPSOIL SHALL NOT BE RESPREAD ON ANY OTHER AREAS UNLESS SPECIFICALLY INSTRUCTED BY THE SUPERINTENDENT. IF THEY ARE TO REMAIN FOR LONGER THAN ONE MONTH STOCKPILES SHALL BE PROTECTED FROM EROSION BY COVERING THEM WITH A MULCH AND HYDROSEEDING AND, IF NECESSARY, BY LOCATING BARRIERS OR DRAINS DOWNSTREAM OF A STOCKPILE TO RETARD SILT LAZEN RUNOFF.
 - B4. THE CONTRACTOR SHALL REGULARLY MAINTAIN ALL EROSION AND SEDIMENT CONTROL DEVICES AND REMOVE ACCUMULATED SILT FROM SUCH DEVICES. SUCH THAT MORE THAN 60% OF THEIR CAPACITY IS LOST. ALL SILT IS TO BE PLACED OUTSIDE THE LIMIT OF WORKS. THE PERIOD FOR MAINTAINING THESE DEVICES SHALL BE AT LEAST UNTIL ALL DISTURBED AREAS ARE REVEGETATED AND FURTHER AS MAY BE DIRECTED BY THE SUPERINTENDENT OR COUNCIL.
 - B5. LAY TURF STRIP (MIN 300mm WIDE) ON 100mm TOPSOIL BEHIND ALL KERB WITH 1000mm RETURNS EVERY 600mm AND AROUND STRUCTURES IMMEDIATELY AFTER BACKFILLING AS PER THE RELEVANT LOCAL AUTHORITY SPECIFICATION.
 - B6. THE CONTRACTOR SHALL GRASS SEED ALL DISTURBED AREAS WITH AN APPROVED MIX AS SOON AS PRACTICABLE AFTER COMPLETION OF EARTHWORKS AND REGRAVING.
 - B7. VEGETATION TRAFFIC SHALL BE CONTROLLED DURING CONSTRUCTION CONFINING ACCESS WHERE POSSIBLE TO NOMINATED STABILISED ACCESS POINTS.
 - B8. WHEN ANY DEVICES ARE TO BE HANDED OVER TO COUNCIL THEY SHALL BE IN CLEAN AND STABLE CONDITION.
 - B9. THE CONTRACTOR SHALL IMPLEMENT DUST CONTROL BY REGULAR WETTING DOWN (BUT NOT SATURATING) DISTURBED AREA.
 - B10. PROVIDE AND MAINTAIN SILT TRAPS AROUND ALL SURFACE INLET PITS UNTIL CATCHMENT IS REVEGETATED OR PAVED.
 - B11. REVEGETATE ALL TRENCHES IMMEDIATELY UPON COMPLETION OF BACKFILLING.
 - B12. ALL DRAINAGE PIPE INLETS TO BE CAPPED UNTIL:
 - DOWNPIPS CONNECTED
 - FITS CONSTRUCTED AND PROTECTED WITH SILT BARRIER

CONCRETE STRUCTURES NOTES

- S1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VAIRED BY THE CONTRACT DOCUMENTS. CONCRETE COMPONENTS AND QUALITY SHALL BE AS FOLLOWS UNO.:
- S2.

ELEMENT	SLUMP	MAX SIZE AGG. mm	CEMENT TYPE	FC AT 28 DAYS MPa	ADMIXTURE
FOOTINGS	80	20	A	25	-
PIERS & CAPS	80	20	A	25	-
SLABS ON GROUND	80	20	A	32	-
SUSPENDED SLABS	80	20	A	32	-
PITS	80	20	A	25	-

- S3. MINIMUM CLEAR CONCRETE COVER TO REINFORCEMENT INCLUDING TIES AND STRIPS SHALL BE AS FOLLOWS UNO:

EXPOSURE CLASSIFICATION	CONCRETE STRENGTH (FC)				
	20 MPa	25 MPa	32 MPa	40 MPa	>50 MPa
A1	20	20	20	20	20
A2	30	30	25	20	20
B1	60	60	40	30	25
B2	-	-	60	45	35
C	-	-	-	70	50

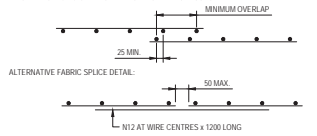
FOR BRACKETED FIGURES REFER TO AS 3600 CURRENT EDITION TABLE 4.10.1.2

- S4. MINIMUM COVER FOR FIRE RESISTANCE LEVEL (RFL) SHALL BE AS FOLLOWS:

RFL	MINIMUM ELEMENT WIDTH OR THICKNESS / MIN COVER (mm)		
	BEAM	SLAB	COLUMN / WALL
60	125 / 30	80 / 20	200 / 20
90	150 / 45	100 / 25	250 / 35
120	200 / 55	120 / 30	300 / 45
180	240 / 70	150 / 45	400 / 60
240	270 / 80	170 / 55	450 / 70

- NOTE: 1. REFER TO AS 3600 CURRENT EDITION FOR REDUCED COVERS @ GREATER ELEMENT THICKNESSES ARE ADAPTED FOR BEAMS & COLUMNS.
2. COVER IS MEASURED TO THE MAIN REINFORCING.

- S5. COVER TO REINFORCEMENT SHALL BE OBTAINED BY THE USE OF APPROVED BAR CHAIRS ALL CHAIRS SHALL BE SPACED AT 100% CTX MAXIMUM.
- S6. ALL CONCRETE SHALL BE MECHANICALLY VIBRATED. VIBRATORS SHALL NOT BE USED TO SPREAD CONCRETE.
- S7. SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES. NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.
- S8. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO APPROVAL OF THE ENGINEER. ALL CONSTRUCTION JOINTS SHALL BE SCABBLED OVER THE WHOLE FACE AND ANY UNSOUND MATERIAL REMOVED.
- S9. REINFORCEMENT IS REPRESENTED DIAGMATICALLY: IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
- S10. SPICES IN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN OR AS APPROVED BY THE ENGINEER. WHERE THE LAP LENGTH IS NOT SHOWN IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT AS SPECIFIED IN AS3600. COCS AND HOES SHALL BE STANDARD UNLESS SHOWN OTHERWISE.
- S11. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE ENGINEER.
- S12. PIPES OR CONDUITS SHALL NOT BE PLACED WITHIN THE CONCRETE COVER TO REINFORCEMENT WITHOUT THE APPROVAL OF THE ENGINEER.
- S14. REINFORCEMENT SYMBOLS:
 - N - DENOTES DEFORMED GRADE 500 NORMAL DUCTILITY REINFORCING BARS TO AS/NZS 4671
 - P - DENOTES 5.0mm RND GRADE 250 NORMAL DUCTILITY REINFORCING BARS TO AS/NZS 4671
 - S - DENOTES DEFORMED GRADE 500 LOW DUCTILITY REINFORCING MESH TO AS/NZS 4671
 - RL - DENOTES DEFORMED GRADE 500 LOW DUCTILITY REINFORCING MESH TO AS/NZS 4671
 - L-TM - DENOTES DEFORMED GRADE 500 LOW DUCTILITY TRENCH MESH TO AS/NZS 4671
- S15. ALL REINFORCING FABRIC SHALL COMPLY WITH AS1332 AND AS1334 AND SHALL BE SUPPLIED IN FLAT SHEETS.
- S16. SPICES IN FABRIC: THE OUTERMOST TRANSVERSE WIRES SHALL BE OVERLAPPED BY AT LEAST THE SPACING OF THESE TRANSVERSE WIRES PLUS 25mm.



MASONRY

- M1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 1700.
- M2. THE DESIGN STRENGTH OF MASONRY SHALL BE AS FOLLOWS U.N.O.:

EXPOSURE CLASSIFICATION TO AS 3600	MASONRY COMPRESSIVE STRENGTH MPa (Fm)	MASONRY SALT RESISTANCE GRADE	DURABILITY CLASSIFICATION OF BUILT IN COMPONENTS	MORTAR MAX COMPRESSIVE STRENGTH MPa	TEMPERATURE (°C)
A1/A2	> 6.3	General Purpose	R3 (Galvanneal)	1.0 : 1.0 : 6.0	2.8
B1	> 6.3	General Purpose	R3 (Galvanneal)	1.0 : 1.0 : 6.0	2.8
B2	> 6.7	Exposure	R4 (Spallless)	1.0 : 0.5 : 4.5	2.8

- M3. ALL MASONRY WALLS SUPPORTING SLABS AND BEAMS SHALL HAVE A PRE-GRASED TWO LAYER GALVANISED STEEL SLIP JOINT BETWEEN CONCRETE AND MASONRY.
- M4. ALL MASONRY WALLS SUPPORTING OR SUPPORTED BY CONCRETE FLOORS SHALL BE PROVIDED WITH VERTICAL JOINTS TO MATCH ANY CONCRETE JOINTS IN THE CONCRETE.
- M5. NON LOAD BEARING WALLS SHALL BE SEPARATED FROM CONCRETE ABOVE BY 20mm THICK CLOSED CELL POLYETHYLENE STRIP.
- M6. MASONRY SHALL BE ARTICULATED IN ACCORDANCE WITH TECHNICAL NOTE 4 FROM THE CEMENT AND CONCRETE ASSOCIATION OF AUSTRALIA. VERTICAL CONSTRUCTION JOINTS SHALL NOT EXCEED 5 METRES MAXIMUM CENTRES. AND 4 METRES MAXIMUM FROM CORNERS IN MASONRY WALLS, AND BETWEEN A NEW EXISTING BRICKWORK.
- M7. MASONRY RETAINING WALLS ARE TO BE BACKFILLED WITH EITHER OF THE FOLLOWING MATERIAL:
 - COARSE GRAINED SOIL WITH LOW SILT CONTENT
 - RESOLUB. SOIL CONTAINING STONES
 - FINE SILTY SAND
 - GRANULAR MATERIALS WITH LOW CLAY CONTENT

BLOCKWORK

- B1. ALL MASONRY WALLS AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3700.
- B2. REINFORCED CONCRETE BLOCKWORK SHALL COMPLY WITH THE FOLLOWING UNO:
 - BLOCKS - GRADE 15 CONFORMING TO AS1500
 - MORTAR - 1 : 1 CEMENT : 0.25 LIME : 3 SAND
 - PROVIDE CLEANOUT HOLES AT BASE OF WALL & ROD COE HOLES TO REMOVE PROTRUDING MORTAR FINIS
 - CORE FILLING - FC - 20MPa, 10 AGG 20 SLUMP +/- 30mm
 - COVER: 55mm MIN. FROM OUTSIDE OF BLOCKWORK.
- B3. BACKFILL TO RETAINING WALLS TO BE FREE DRAINING GRANULAR MATERIAL. UNO. PROVIDE SUBSOL DRAIN BEHIND WALL AND AT WEEP HOLES.
- B4. VERTICAL CONSTRUCTION JOINTS SHALL BE PROVIDED AT 10m MAX. CENTRES.
- B5. NO ADMIXTURES SHALL BE USED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.

STANDARD LINE TYPES AND SYMBOLS:

- PROPOSED KERB & GUTTER
- EXISTING KERB & GUTTER
- PROPOSED BELOW GROUND PIPELINE
- PROPOSED SUSPENDED PIPELINE
- EXISTING PIPELINE
- SUBSOL DRAINAGE LINE
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- PROPOSED JUNCTION OR INLET PIT
- EXISTING JUNCTION OR INLET PIT
- DESIGN CENTRELINE
- EXISTING EDGE OF BITUMEN
- TELECOMMUNICATION CONDUIT
- GAS MAIN
- WATER MAIN
- SEWER MAIN
- UNDERGROUND ELECTRICITY CABLES
- PERMANENT MARK & S.S.M.
- BENCH MARK, SURVEY STATION

FOR CONSTRUCTION

REVISION	DATE	AMENDMENT DESCRIPTION
C	16.12.21	ISSUED FOR CONSTRUCTION
B	22.10.21	ISSUED FOR CONSTRUCTION
A	28.07.21	ISSUED FOR CC APPROVAL

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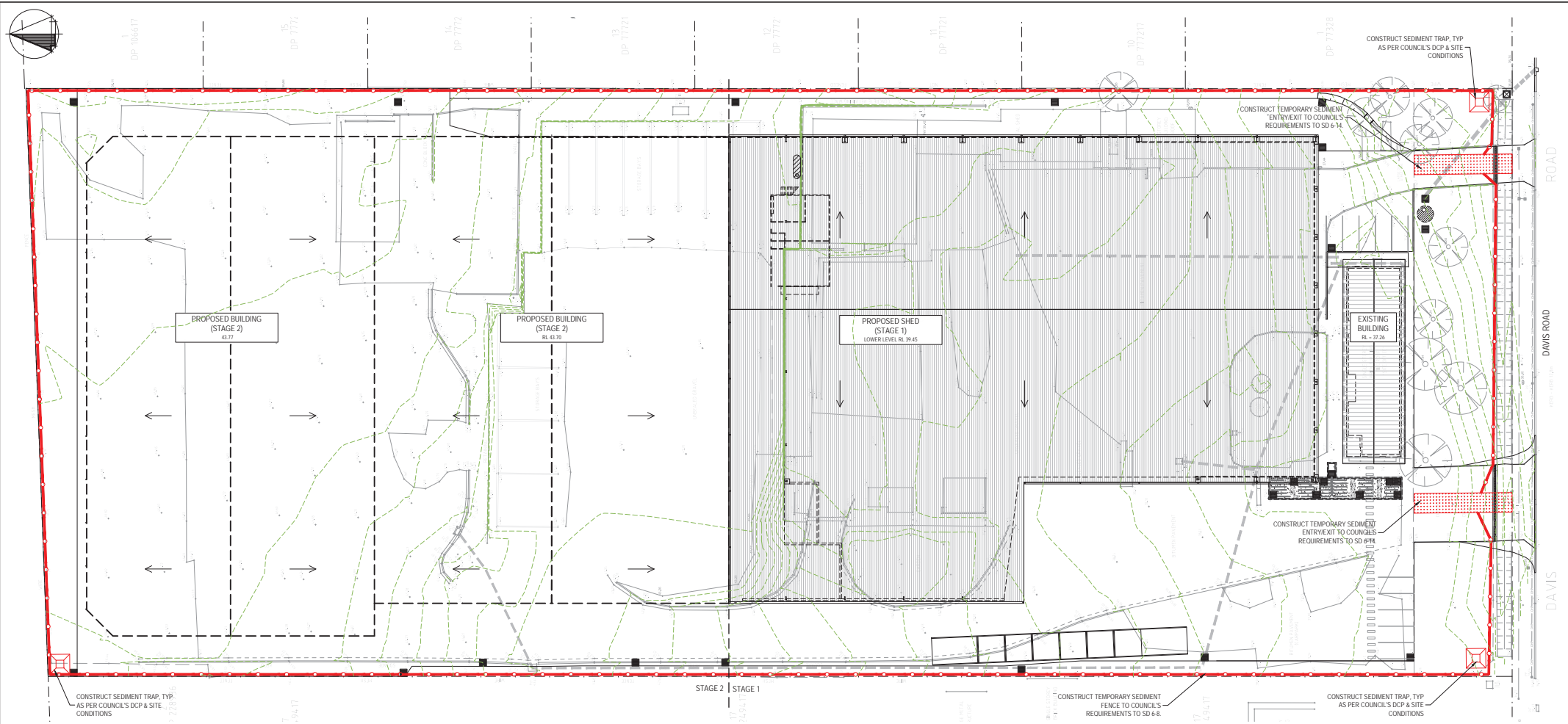
RECOVERY AND RECYCLING FACILITY

24 Davis Rd, Wetherill Park
For BORG Construction

GENERAL NOTES

DESIGN SW/H	DRAWN RCL	DATE AUG 2020	PROJECT No 10067
CHECKED	APPROVED	SCALE	DRG No: C01 - C

A3: UNIVERSAL SIZE



SEDIMENT & EROSION CONTROL PLAN

1:300

— DENOTES SEDIMENT FENCE

FOR CONSTRUCTION

REVISION	DATE	AMENDMENT DESCRIPTION
C	16.12.21	ISSUED FOR CONSTRUCTION
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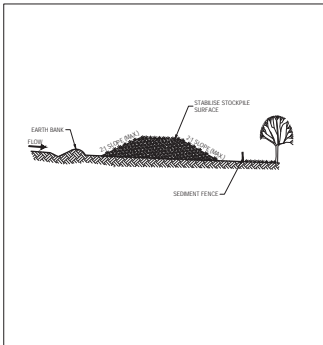
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RECOVERY AND RECYCLING FACILITY
 24 Davis Rd, Wetherill Park
 For BORG Construction

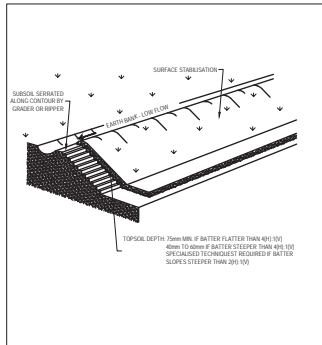
SEDIMENT & EROSION CONTROL PLAN

DESIGN	DRAWN	DATE	PROJECT No.
SIWH	RCL	AUG 2020	10067
CHECKED	APPROVED	SCALE	DRG No.
		1:300	C02 - C



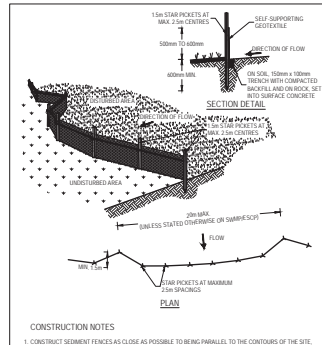
- CONSTRUCTION NOTES**
1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 3) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HIGHWAYS.
 2. CONSTRUCT ON THE CONTOUR AS ON FLAT, ELONGATED MOUNDS.
 3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHOULD BE LESS THAN 1 METRE IN HEIGHT.
 4. WHERE THEY ARE TO BE PLACED FOR MORE THAN 10 DAYS, STABLE, FOLLOWING THE APPROVED ESCP OR OTHER TO REDUCE THE RISK OF SLIP.
 5. CONSTRUCT EARTH BANKS, STANDARD DRAWING S-1 ON THE UPSLOPE, SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES AS STANDARD DRAWING A-14 TO 2 METRE SUBORDINATE.

STOCKPILES SD 4-1



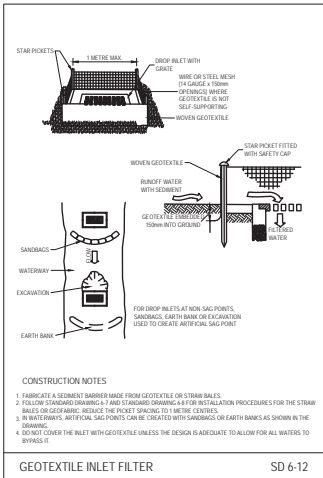
- CONSTRUCTION NOTES**
1. SCARP THE EXISTING SURFACE ALONG THE LINE OF THE CONTOUR TO A DEPTH OF 50mm TO 100mm TO BREAK UP ANY HORIZONTAL SURFACE AND TO PROVIDE A GOOD BOND BETWEEN THE RESIDUAL MATERIAL AND SUBSOIL.
 2. ADDITIONAL LIME OR AGGREGATE AS REQUIRED BY THE ESCP OR SWMP.
 3. 100 TO 200mm DEPTH OF 20mm P F COMPACTED LAYERS COLOR.
 4. WHERE POSSIBLE, REPLACE TOPSOIL TO A DEPTH OF 40 TO 50mm ON LANDS WHERE THE SLOPE EXCEEDS 4% TO 10% AND AT LEAST 75mm ON LOWER GRADIENTS.

REPLACING TOPSOIL SD 4-2



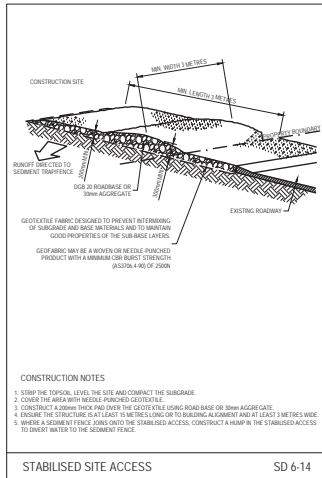
- CONSTRUCTION NOTES**
1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL INTERVALS AS SHOWN IN THE DRAWING TO BREAK THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW CONCENTRATED AT ONE POINT TO 10 LITRES PER SECOND IN THE CASE OF A 10mm RAIN EVENT. (USUALLY 10 SQUARE FEET).
 2. USE A 100mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
 3. USE A 100mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
 4. 150mm DEEP TRENCH ENOUGH ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
 5. 150mm DEEP TRENCH ENOUGH ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
 6. 150mm DEEP TRENCH ENOUGH ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
 7. 150mm DEEP TRENCH ENOUGH ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
 8. 150mm DEEP TRENCH ENOUGH ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
 9. 150mm DEEP TRENCH ENOUGH ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
 10. 150mm DEEP TRENCH ENOUGH ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.

SEDIMENT FENCE SD 6-8



- CONSTRUCTION NOTES**
1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAIN BARS.
 2. FOLLOW STANDARD DRAWING A-14 AND STANDARD DRAWING A-15 FOR INSTALLATION PROCEDURES FOR THE STRAIN BARS OR GEOTEXTILE. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
 3. IN RETAINMENT WALLS, SAND PICKETS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
 4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER SD 6-12



- CONSTRUCTION NOTES**
1. STABILISE THE TOPSOIL LEVEL, THE SITE AND COMPACT THE SUBGRADE.
 2. COVER THE AREA WITH MEDIAL PINKED GEOTEXTILE.
 3. CONSTRUCT A SAND BARRIER OVER THE GEOTEXTILE USING SAND BAGS OR 100mm AGGREGATE.
 4. ENOUGH THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
 5. WHERE A SEDIMENT FENCE IS REQUIRED TO BE STABILISED ACCESS, CONSTRUCT A HAMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS SD 6-14

SEDIMENT AND EROSION CONTROL NOTES

SEDIMENT AND EROSION CONTROL SHALL BE EFFECTIVELY MAINTAINED AT ALL TIMES DURING THE COURSE OF CONSTRUCTION AND SHALL NOT BE REMOVED UNTIL THE SITE HAS BEEN STABILISED OR LANDSCAPED TO THE SUPERINTENDENT'S SATISFACTION.

A SINGLE ALL WEATHER ACCESS WAY WILL BE PROVIDED AT THE FRONT OF THE PROPERTY CONSISTING OF 50-75 AGGREGATE OR SIMILAR MATERIAL AT A MINIMUM THICKNESS OF 150 LAD OVER NEEDLE-PUNCHED GEOTEXTILE FABRIC AND CONSTRUCTED PRIOR TO COMMENCEMENT OF WORKS.

THE CONTRACTOR SHALL ENSURE THAT NO SPOIL OR FILL ENCROACHES UPON ADJACENT AREAS FOR THE DURATION OF WORKS.

THE CONTRACTOR SHALL ENSURE THAT KERB INLETS AND DRAINS RECEIVING STORMWATER SHALL BE PROTECTED AT ALL TIMES DURING DEVELOPMENT. KERB INLET SEDIMENT TRAPS SHALL BE INSTALLED ALONG THE IMMEDIATE VICINITY ALONG THE STREET FRONTAGE.

ALL TOPSOIL STRIPPED FROM THE SITE AND STOCKPILED DOES NOT INTERFERE WITH DRAINAGE LINES AND STORMWATER INLETS AND WILL BE SUITABLY COVERED WITH AN IMPERVIOUS MEMBRANE MATERIAL AND SCREENED BY SEDIMENT FENCING.

SOIL CONSERVATION NOTE:

PRIOR TO COMMENCEMENT OF CONSTRUCTION PROVIDE SEDIMENT FENCE, SEDIMENT TRAP AND WASHOUT AREA TO ENSURE THE CAPTURE OF WATER BORNE MATERIAL GENERATED FROM THE SITE MAINTAIN THE ABOVE DURING THE COURSE OF CONSTRUCTION, AND CLEAR THE SEDIMENT TRAP AFTER EACH STORM.

SEDIMENT TRAP

1000 x 1000 WIDE 500 DEEP PIT, LOCATED AT THE LOWEST POINT TO TRAP SEDIMENT AND IN ACCORDANCE WITH LOCAL COUNCIL'S DCP AND SITE CONDITIONS.

SEDIMENT FENCE

PROVIDE SEDIMENT FENCE ON DOWN SLOPE BOUNDARY AS SHOWN ON PLAN. FABRIC TO BE BURIED BELOW CONTOUR AT LOWER EDGE. REFER TO SD 6-8

BUILDING MATERIAL STOCKPILES

ALL STOCKPILES OF BUILDING MATERIAL SUCH AS SAND AND SOIL MUST BE PROTECTED TO PREVENT SCOUR AND EROSION. THEY SHOULD NEVER BE PLACED IN THE STREET GUTTER WHERE THEY WILL WASH AWAY WITH THE FIRST RAINSTORM. REFER TO SD 4-1

GENERAL NOTES

THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS ARE IN MILLIMETRES & ALL LEVELS ARE IN METRES, UNO (UNLESS NOTED OTHERWISE).

NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.

ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORK.

DURING EXCAVATION WORK THE STRUCTURE SHALL BE MAINTAINED IN A STABLE AND NO PART SHALL BE OVERSTRESSED.

ALL WORK IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS & THE SPECIFICATION.

EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.

ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACK FILLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL COUNCIL.

ALL TRENCH BACK FILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.

ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.

CONTRACTOR TO OBTAIN ALL AUTHORITY APPROVALS UNLESS DIRECTED OTHERWISE.

STORMWATER DRAINAGE

THE STORMWATER DRAINAGE DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH AS/NZS 3500.3 - 2018 "STORMWATER DRAINAGE".

ANY VARIATIONS TO THE NOMINATED LEVELS SHALL BE REFERRED TO ENGINEER IMMEDIATELY.

ANY VARIATIONS TO SPECIFIED PRODUCTS OR DETAILS SHALL BE REFERRED TO THE ENGINEER FOR APPROVAL.

DOWN PIPES SHALL BE A MINIMUM OF D100 SW GRADE UPVC OR 100X100 COLORBOND/ZINCALUME STEEL, UNO.

BOX COLORBOND OR ZINCALUME STEEL GUTTERS SHALL BE A MINIMUM OF 450 WIDE X 150 DEEP.

EAVES GUTTERS SHALL BE A MINIMUM OF 125 WIDE X 100 DEEP (OR OF EQUIVALENT AREA) COLORBOND OR ZINCALUME STEEL.

SUBSOIL DRAINAGE SHALL BE PROVIDED TO ALL RETAINING WALLS & EMBANKMENTS, WITH THE LINES FEEDING INTO THE STORMWATER DRAINAGE SYSTEM.

WASHOUT AREA

TO BE 1800 x 1800 ALLOCATED FOR THE WASHING OF TOOL & EQUIPMENT.



FOR CONSTRUCTION

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C	16.12.21	ISSUED FOR CONSTRUCTION
B	22.10.21	ISSUED FOR CONSTRUCTION
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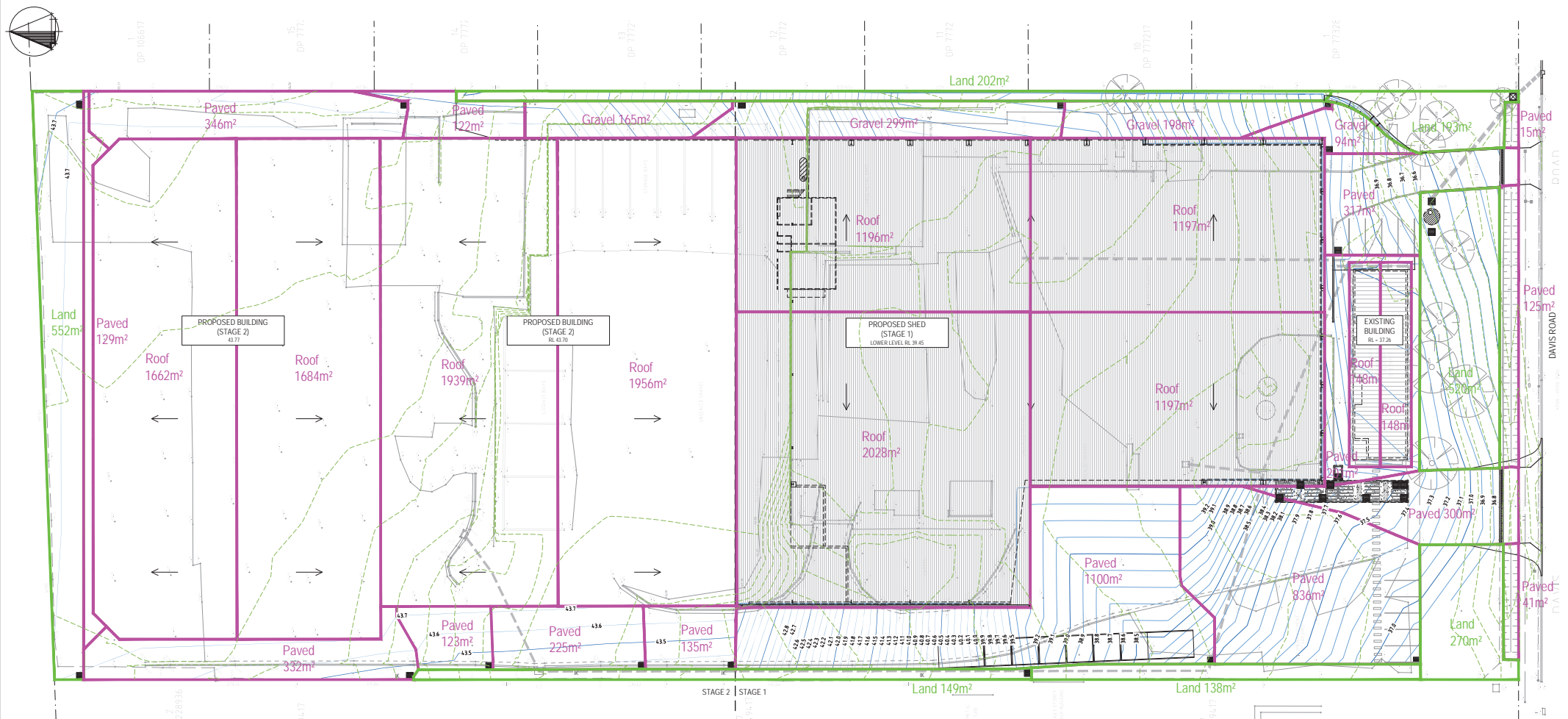
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RECOVERY AND RECYCLING FACILITY
24 Davis Rd, Wetherill Park
For BORG Construction

SEDIMENT & EROSION CONTROL DETAILS

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			C03 - C

A3 OVERALL SIZE



STORMWATER CATCHMENT AREA PLAN

1:300

- DENOTES STORMWATER CATCHMENT AREA BOUNDARY (IMPERVIOUS)
 - DENOTES STORMWATER CATCHMENT AREA BOUNDARY (PERVIOUS)
- TOTAL SITE AREA = 20,262 m²
- ROOF AREA = 13,155 m²
- PAVED AREA = 5,103 m²
- LANDSCAPE AREA = 2,024 m²
- DENOTES EXISTING SURVEY CONTOUR
 - DENOTES NEW SURFACE LEVEL CONTOUR (MAJOR)
 - DENOTES NEW SURFACE LEVEL CONTOUR (MINOR)

STORMWATER DRAINAGE STRATEGY

- ALL GUTTERS & DOWNPIPES ARE DESIGNED TO ACCEPT A 1:20 YEAR ARI STORM EVENT.
- BOX GUTTERS & DOWNPIPES ARE DESIGNED TO ACCEPT A 1:100 YEAR ARI STORM EVENT.
- ALL PITS & PIPES ARE DESIGNED TO ACCEPT A 1:20 YEAR ARI STORM EVENT.
- DESIGN RAINFALL INTENSITIES:
 - 1:20 YEAR, 5 MIN = 167 mm/hr
 - 1:100 YEAR, 5 MIN = 217 mm/hr
- ALL PIPES MUST HAVE A MIN. 1.0% FALL UNO.
- ALL STORMWATER RUNOFF IS DIRECTED TO A SOID PRIOR TO EXITING THE SITE.
- SOID'S USED ON THIS SITE INCLUDE:
 - SANDFILTER
 - ECOCEPTOR
 - RAINWATER TANKS

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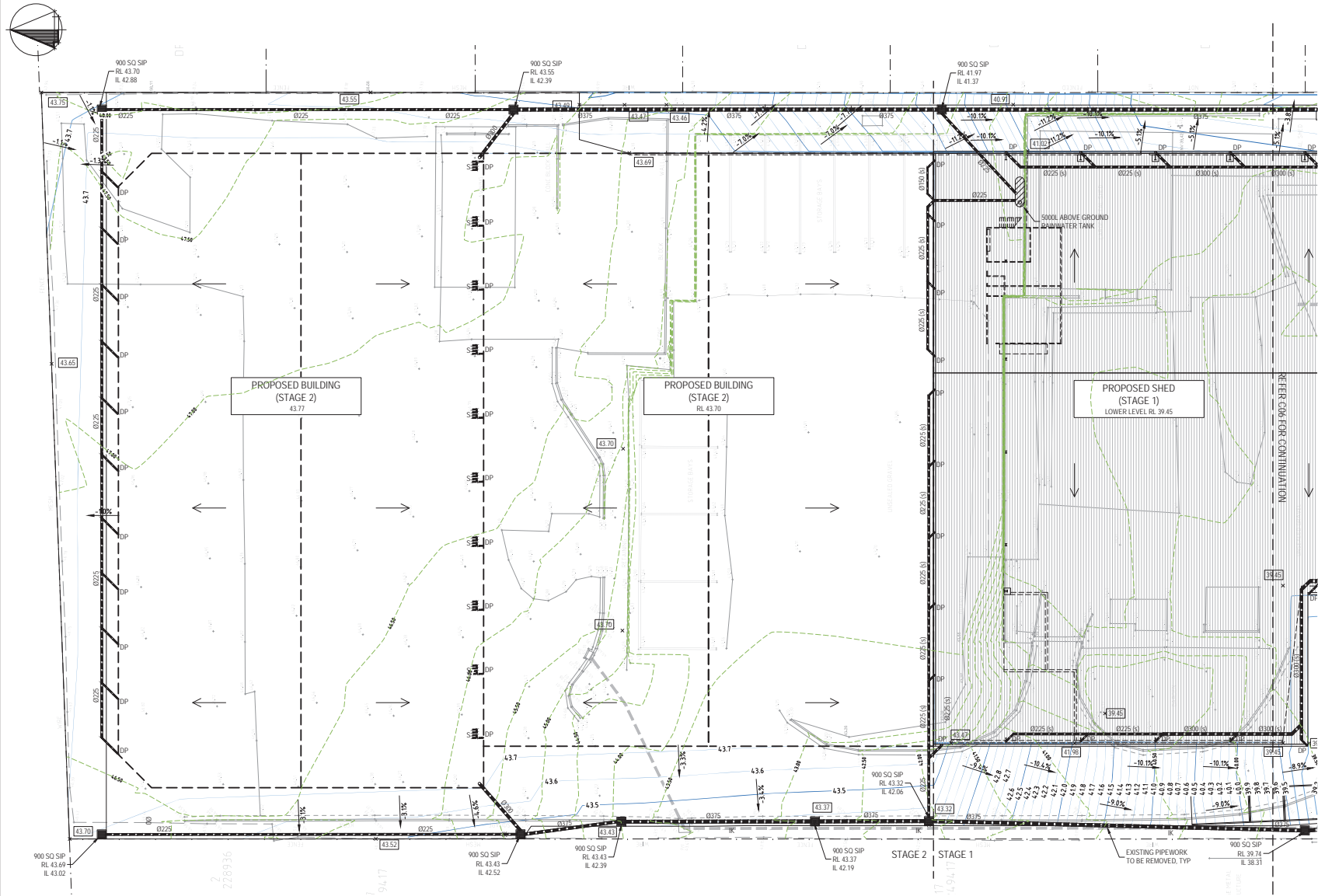
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STORMWATER CATCHMENT AREA PLAN

DESIGN	DATE	PROJECT No.	
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		1:300	C04 - C



STORMWATER DRAINAGE STRATEGY

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 - RAINWATER TANKS

WATER QUALITY DESIGN SUMMARY

A MUSIC MODEL HAS BEEN PREPARED TO DETERMINE THE EFFECTIVENESS OF WATER QUALITY TREATMENT DEVICES.

TREATMENT EFFECTIVENESS SUMMARY				
	SOURCES	RESIDUAL LOAD	REDUCTION %	TARGET %
FLOW (ML/y)	13.6	13.6	0	-
TOTAL SUSPENDED SOLIDS (kg/yr)	1600	264	83.5	80
TOTAL PHOSPHORUS (kg/yr)	2.87	0.703	75.5	55
TOTAL NITROGEN (kg/yr)	29.8	13.7	54.1	40
GROSS POLLUTANTS (kg/yr)	377	13.8	96.3	90

PROPOSED BUILDING (STAGE 2)
RL 43.77

PROPOSED BUILDING (STAGE 2)
RL 43.70

PROPOSED SHED (STAGE 1)
LOWER LEVEL RL 39.45

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STORMWATER DRAINAGE PLAN - SHEET 1 OF 2

1:250

ALL DRAINAGE LINES SHALL BE UPVC (CLASS SH) STORMWATER DRAINAGE PIPE, UNO.

ALL DRAINAGE LINES SHALL BE LAID @ 1% FALL MIN, UNO.

FIRST FLUSH RAINWATER DEVICES TO BE FITTED TO DRAINAGE LINES TO BUILDER'S DETAIL, TYPICAL.

MINIMUM EFFECTIVE EAVES GUTTER SIZE = 24,500 mm² (250 HALF ROUND GUTTER)

MINIMUM EFFECTIVE EAVES GUTTER SLOPE = 1:500

THE FOLLOWING SYMBOLS & ABBREVIATIONS HAVE BEEN USED:

DP = Ø150 DOWN PIPE
SIP = SURFACE INLET PIT (NO LINTEL)
X [100.00] = PROPOSED FINISHED SURFACE LEVEL
[Symbol] = DENOTES DOWNPIPE SPREADER

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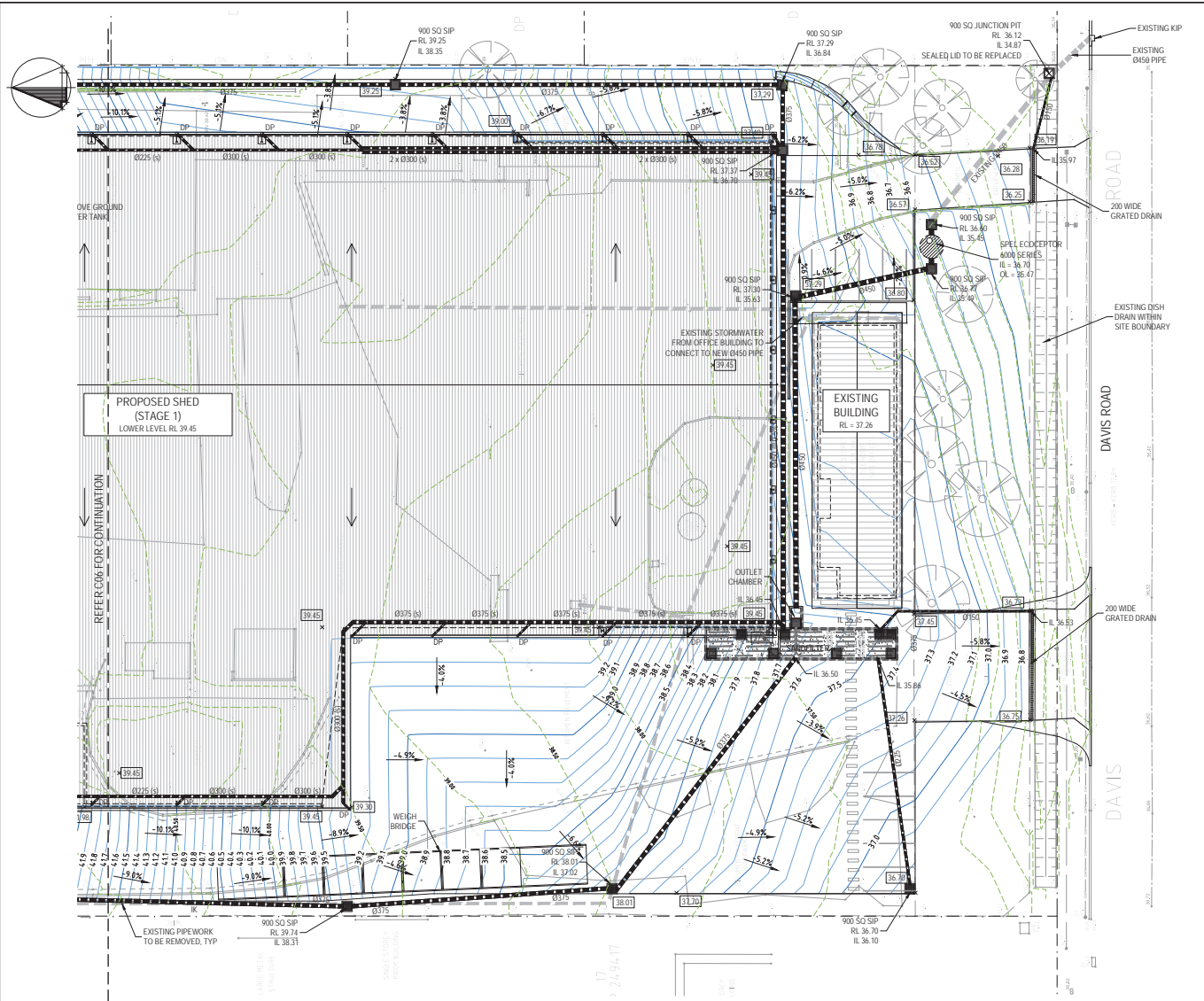
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STORMWATER DRAINAGE PLAN SHEET 1 OF 2

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		1:250	C05 - C



STORMWATER DRAINAGE PLAN - SHEET 2 OF 2
1:250

ALL DRAINAGE LINES SHALL BE UPVC (CLASS SH) STORMWATER DRAINAGE PIPE, UNO.
 ALL DRAINAGE LINES SHALL BE LAID @ 1% FALL MIN. UNO.
 FIRST FLUSH RAINWATER DEVICES TO BE FITTED TO DRAINAGE LINES TO BUILDER'S DETAIL, TYPICAL.
 MINIMUM EFFECTIVE EAVES GUTTER SIZE = 24,500 mm² (250 HALF ROUND GUTTER)
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STORMWATER DRAINAGE STRATEGY

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WATER QUALITY DESIGN SUMMARY
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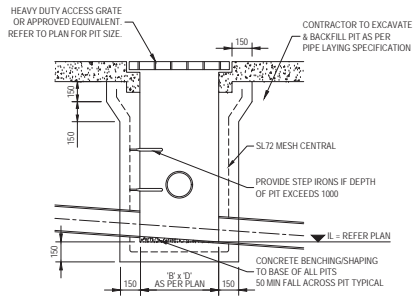
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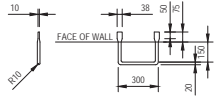
STORMWATER DRAINAGE PLAN SHEET 2 OF 2

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TYPICAL SURFACE INLET PIT DETAIL

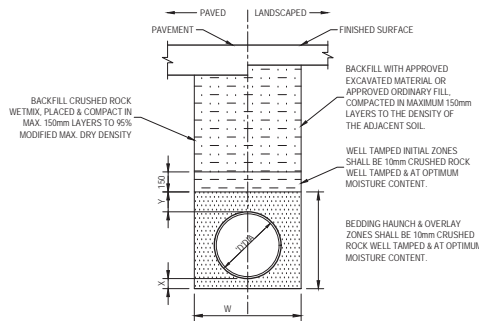
1:20
TYPICAL FOR ALL PITS IN DRIVEWAY/CARPARK AREAS.



STEP IRONS FOR DRAINAGE PITS
NOTE:
1. FIRST RUNC 150mm DOWN FROM TOP, THEN SPACED AT 300 CENTRES.
2. STEP IRON MATERIAL, 20m DIAMETER MILD STEEL, HEAVY GALVANISED.

STEP IRONS FOR DRAINAGE PITS

1:20

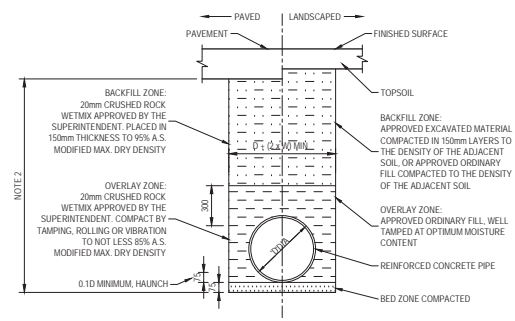


PIPE DIA	W	X	Y
100-150	300	75	75
225-300	600	75	75

UPVC PIPE

TYPICAL PIPE LAYING DETAIL

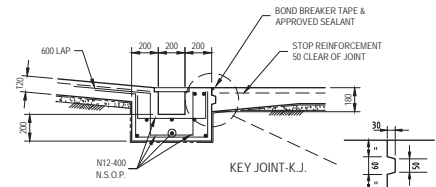
1:20



D	W
150-300	150
375-750	300
+750	600

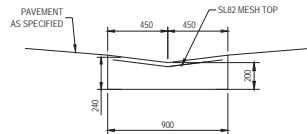
REINFORCED CONCRETE PIPE

NOTE:
1. REFER TO PIPE LAYING SPECIFICATION FOR DETAILS.
2. BACKFILL OVERLAY & BEDDING ZONES 20mm CRUSHED ROCK COMPACT BY TAMPING ROLLING OR VIBRATION TO NOT LESS THAN 85% A.S. STD. MAX. DRY DENSITY.



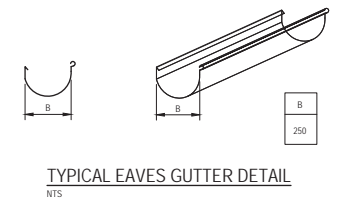
TYPICAL GRATED DRAIN DETAIL

1:20



TYPICAL DISH DRAIN DETAIL

1:20



TYPICAL EAVES GUTTER DETAIL

NTS

SPECIFICATIONS			
GUTTER TYPE	TYPE	TOTAL CROSS SECTION AREA (mm ²)	DOWNPIPE SIZE
250 HALF ROUND	STANDARD	24500	Ø150

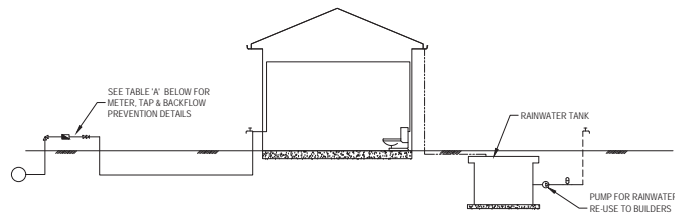
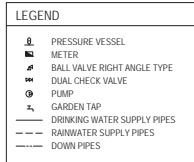


TABLE A			
RAINWATER TANK LOCATION	METER SIZE (mm)	TYPE OF TAP	TYPE OF BACKFLOW PREVENTION
ABOVE GROUND	20	BALL VALVE	DUAL CHECK VALVE (COMBINED WITH METER)
	25	BALL VALVE	DUAL CHECK VALVE
	> 32	BALL VALVE	DUAL CHECK VALVE
BELOW GROUND	20	BALL VALVE	TESTABLE DOUBLE CHECK VALVE
	25	BALL VALVE	TESTABLE DOUBLE CHECK VALVE
	> 32	BALL VALVE	TESTABLE DOUBLE CHECK VALVE



- DIAGRAM NOTES:
DRAWING TO BE READ IN CONJUNCTION WITH SYDNEY WATER PLUMBING REQUIREMENTS
FOR TANKS 10,000 LITRES OR LESS, COUNCIL DEVELOPMENT CONSENT IS NOT REQUIRED, IF THEIR CONDITIONS FOR INSTALLATION ARE FOLLOWED.
FOR TANKS GREATER THAN 10,000 LITRES COUNCIL DEVELOPMENT CONSENT IS GENERALLY REQUIRED.
FOR TANKS MORE THAN 10,000 LITRES APPROVAL IS REQUIRED FOR BUILDING OVER SEWERS.
SYDNEY WATER'S APPROVAL IS REQUIRED FOR ANY TOP UP FROM DRINKING WATER SUPPLY, REGARDLESS OF TANK SIZE. NO DIRECT CONNECTION IS ALLOWED BETWEEN THE DRINKING WATER SUPPLY AND THE RAINWATER TANK SUPPLY.
RAINWATER PIPEWORK IS SHOWN ON THE DIAGRAM AS SUPPLYING EXTERNAL RAINWATER USES.
ANY DESIGNED ACCESS LID INTO RAINWATER RE-USE TANK IS TO HAVE A LOCKABLE LID. IF THE LID IS DESIGNED TO BE ACCESSED BY A MAINTENANCE PERSON, IT MUST BE AT LEAST 600 mm x 900 mm IN SIZE.
MAINS WATER TO BYPASS TO TANK (BY PLUMBER) FOR LOW TANK STORAGE.
- FOR TANKS 10,000 LITRES OR LESS, COUNCIL DEVELOPMENT CONSENT IS NOT REQUIRED, IF THEIR CONDITIONS FOR INSTALLATION ARE FOLLOWED.
 - FOR TANKS GREATER THAN 10,000 LITRES COUNCIL DEVELOPMENT CONSENT IS GENERALLY REQUIRED.
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 - MAINS WATER TO BYPASS TO TANK (BY PLUMBER) FOR LOW TANK STORAGE.

DUAL DRINKING WATER & RAINWATER SUPPLY DIAGRAM

NTS
THE RAINWATER TANK SHALL BE INSTALLED WITH A FIRST FLUSH DEVICE TO SUPPLIERS DETAILS

FOR CONSTRUCTION

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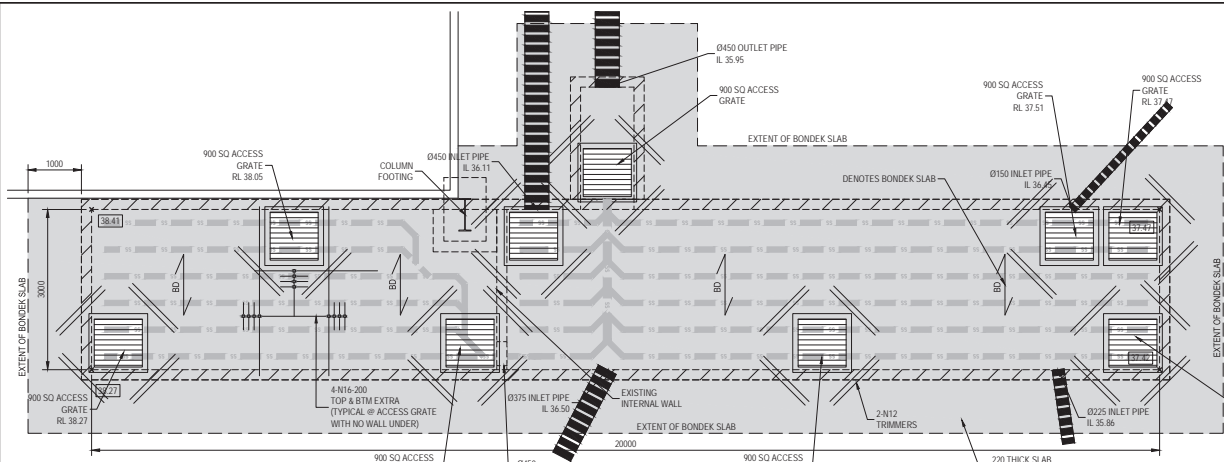
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RECOVERY AND RECYCLING FACILITY

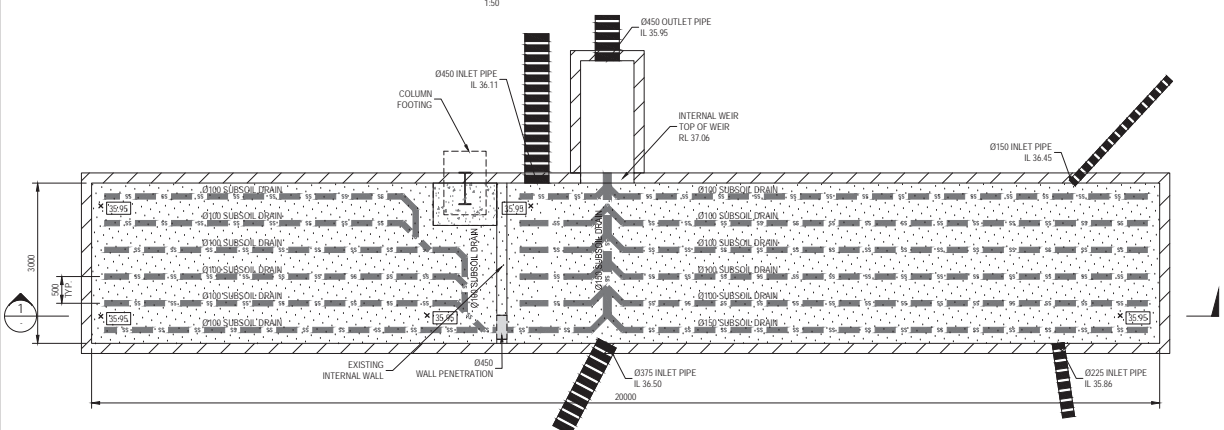
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STORMWATER DETAILS SHEET 1 OF 2

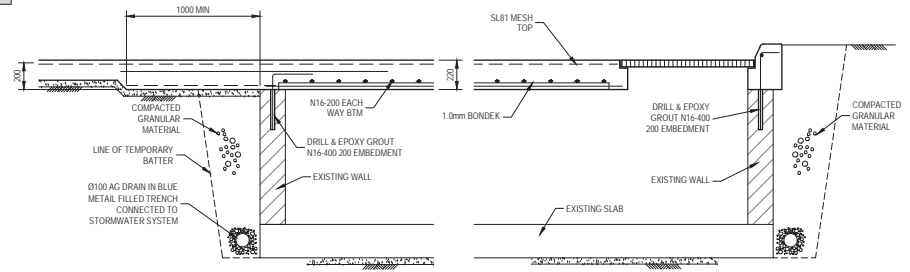
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CHECKED	APPROVED	SCALE	DRG No.
		1:20, 1:50	C08 - C



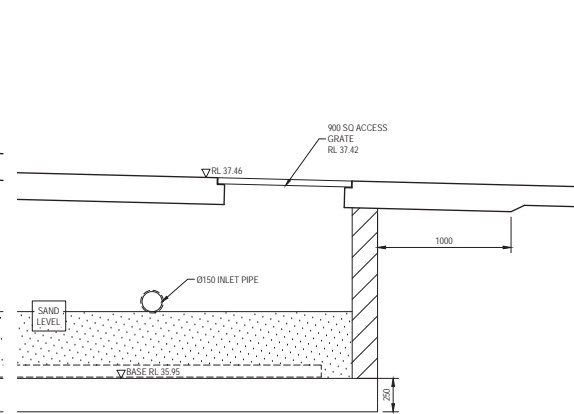
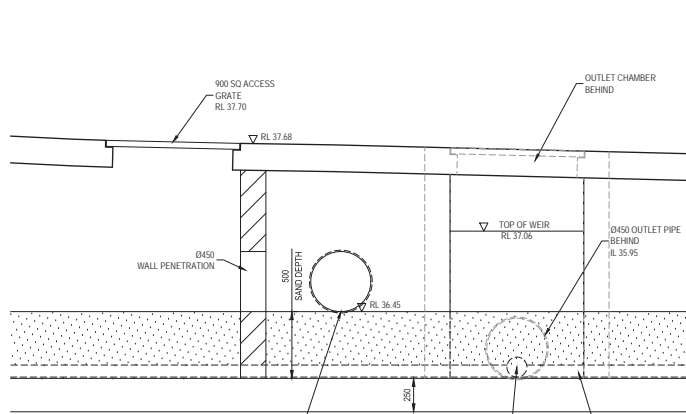
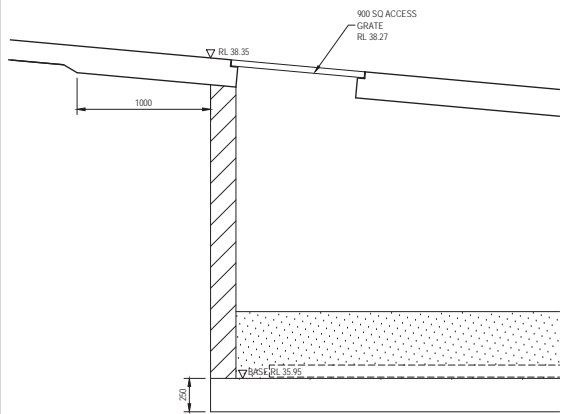
SAND FILTER LID LAYOUT PLAN
1:50



SAND FILTER BASE SLAB LAYOUT PLAN
1:50



TYPICAL SAND FILTER TANK DETAILS
FOR ALL DETENTION TANK LEVELS, SUMPS & HIGH EARLY DISCHARGE CHAMBER DETAILS, REFER TO HYDRAULIC CONSULTANT'S DRAWINGS



SECTION 1
1:20

FOR CONSTRUCTION

REVISION	DATE	AMENDMENT DESCRIPTION
B	16.12.21	ISSUED FOR CONSTRUCTION
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ECLIPSE CONSULTING ENGINEERS

ECLIPSE Consulting Engineers Pty Ltd
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 Norwalk Central
 Baulkham Hills NSW 2153

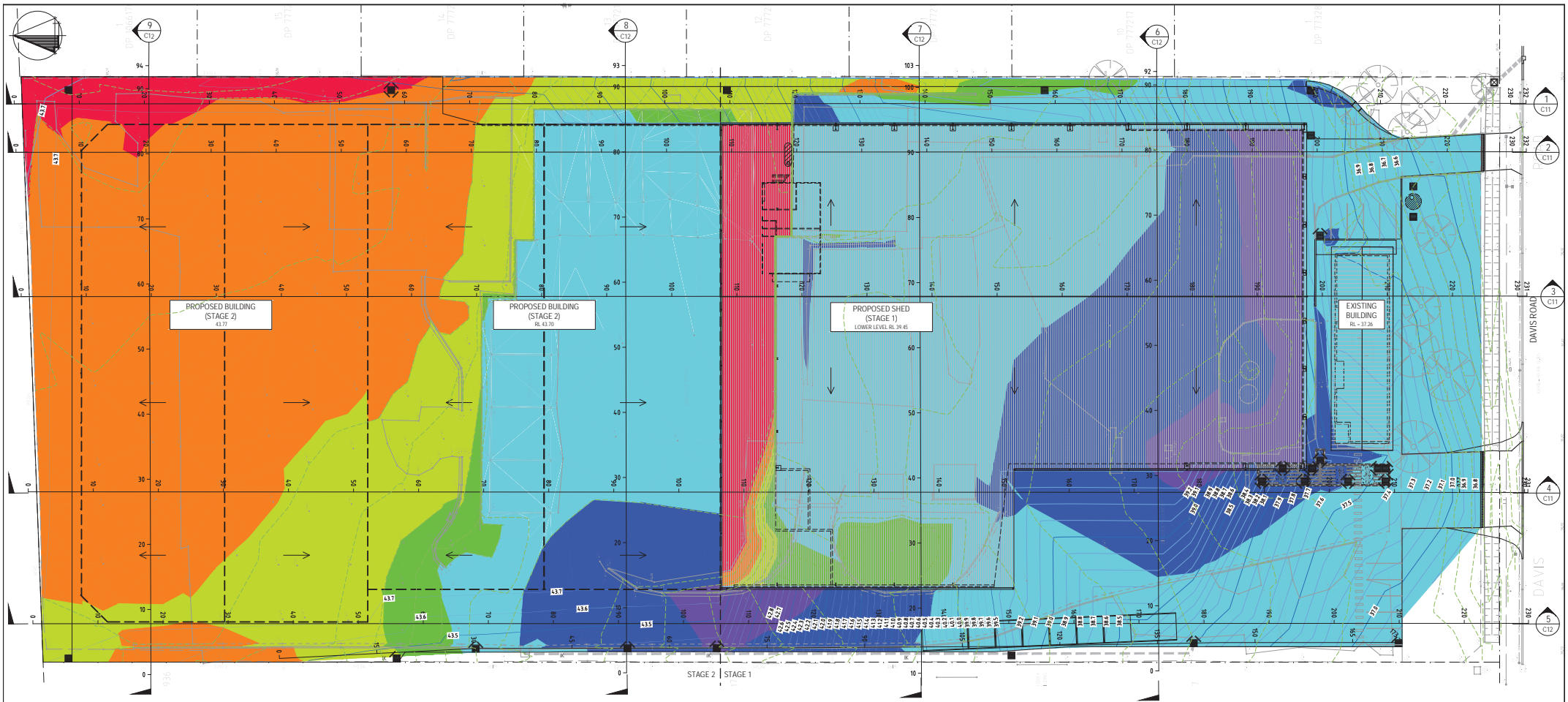
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RECOVERY AND RECYCLING FACILITY
 24 Davis Rd, Wetherill Park
 For BORG Construction

STORMWATER DETAILS SHEET 2 OF 2

DESIGN	DRAWN	DATE	PROJECT No.
SIWH	RCL	AUG 2020	10067
CHECKED	APPROVED	SCALE	DRG No.
		1:20, 1:50	C09 - B

A3 UNIVERSAL SIZE



Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
Cut and Fill Volume - proposed less 200mm	1.000	1.000	19326.582sq.m	26848.171 Cu. M.	2026.541 Cu. M.	24821.631 Cu. M.<Cut>
Totals			19326.582sq.m	26848.171 Cu. M.	2026.541 Cu. M.	24821.631 Cu. M.<Cut>

BULK EARTHWORKS CUT AND FILL PLAN

1:300

Range Details

Scale scheme to fit

ID	Minimum Elevation	Maximum Elevation	Color Scheme
1	-5.000m	-4.000m	
2	-4.000m	-3.000m	
3	-3.000m	-2.000m	
4	-2.000m	-1.000m	
5	-1.000m	0.000m	
6	0.000m	1.000m	
7	1.000m	2.000m	

FOR CONSTRUCTION

REVISION	DATE	AMENDMENT DESCRIPTION
C	16.12.21	ISSUED FOR CONSTRUCTION
B	22.10.21	ISSUED FOR CONSTRUCTION
A	28.07.21	ISSUED FOR CC APPROVAL

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BULK EARTHWORKS CUT AND FILL PLAN

DESIGN	DATE	PROJECT No.	
SIWH	AUG 2020	10067	
CHECKED	APPROVED	SCALE	BRG No.
		1:300	C10 - C

AT ORIGINAL SIZE

VERT EXAG 1:1
Datum 30.000

DESIGN LEVELS	EXISTING LEVELS	DEPTH	CHAINAGE
	1.329		0.000
	1.329		1.380 -2.692
	1.329		10.000 -2.762
	1.329		20.000 -2.793
	1.329		30.000 -2.778
	1.329		40.000 -2.623
	1.329		50.000 -2.087
	1.329		60.000 -1.272
	1.329		70.000 -0.172
	1.329		80.000 0.287
	1.329		90.000 0.634
	1.329		100.000 1.147
	1.329		110.000 1.959
	1.329		120.000 1.009
	1.329		130.000 0.547
	1.329		140.000 0.052
	1.329		150.000 -0.331
	1.329		160.000 -0.502
	1.329		170.000 -0.455
	1.329		180.000 -0.356
	1.329		190.000 -0.323
	1.329		200.000 -0.388
	1.329		210.000 -0.321
	1.329		220.000 0.000
	1.329		225.474 36.724
	1.329		229.871

SITE CROSS SECTION 1
1:500

VERT EXAG 1:1
Datum 30.000

DESIGN LEVELS	EXISTING LEVELS	DEPTH	CHAINAGE
	1.329		0.000
	1.329		1.329
	1.329		10.000 -3.051
	1.329		20.000 -3.108
	1.329		30.000 -2.934
	1.329		40.000 -2.773
	1.329		50.000 -2.424
	1.329		60.000 -2.100
	1.329		70.000 -0.146
	1.329		80.000 0.089
	1.329		90.000 0.182
	1.329		100.000 0.146
	1.329		110.000 -4.144
	1.329		120.000 -0.142
	1.329		130.000 -0.057
	1.329		140.000 0.052
	1.329		150.000 0.277
	1.329		160.000 0.515
	1.329		170.000 0.881
	1.329		180.000 1.146
	1.329		190.000 0.680
	1.329		200.000 0.195
	1.329		210.000 0.018
	1.329		220.000 0.041
	1.329		223.347 36.741
	1.329		224.186 36.615
	1.329		229.901

SITE CROSS SECTION 2
1:500

VERT EXAG 1:1
Datum 30.000

DESIGN LEVELS	EXISTING LEVELS	DEPTH	CHAINAGE
	1.725		0.000
	1.725		1.725
	1.725		10.000 -3.451
	1.725		20.000 -3.277
	1.725		30.000 -3.231
	1.725		40.000 -3.112
	1.725		50.000 -3.090
	1.725		60.000 -3.044
	1.725		70.000 -2.531
	1.725		80.000 0.053
	1.725		90.000 -0.107
	1.725		100.000 -0.097
	1.725		110.000 -4.296
	1.725		120.000 0.172
	1.725		130.000 -0.058
	1.725		140.000 -0.067
	1.725		150.000 0.046
	1.725		160.000 0.116
	1.725		170.000 0.355
	1.725		180.000 0.709
	1.725		190.000 1.353
	1.725		200.000 0.079
	1.725		210.000 0.009
	1.725		220.000 -0.001
	1.725		224.361 36.410
	1.725		227.262 36.410
	1.725		230.000 36.214
	1.725		232.422

SITE CROSS SECTION 3
1:500

VERT EXAG 1:1
Datum 30.000

DESIGN LEVELS	EXISTING LEVELS	DEPTH	CHAINAGE
	1.735		0.000
	1.735		1.735
	1.735		10.000 -3.761
	1.735		20.000 -3.789
	1.735		30.000 -3.593
	1.735		40.000 -3.444
	1.735		50.000 -3.286
	1.735		60.000 -3.287
	1.735		70.000 -2.830
	1.735		80.000 0.038
	1.735		90.000 0.009
	1.735		100.000 -0.012
	1.735		110.000 -4.250
	1.735		120.000 -0.699
	1.735		130.000 -0.629
	1.735		140.000 -0.557
	1.735		150.000 -0.503
	1.735		160.000 -0.486
	1.735		170.000 -0.427
	1.735		180.000 0.473
	1.735		190.000 1.359
	1.735		200.000 -0.046
	1.735		210.000 0.092
	1.735		220.000 -0.044
	1.735		225.159 -0.002
	1.735		228.057 36.193
	1.735		230.000 36.176
	1.735		232.393

SITE CROSS SECTION 4
1:500

FOR CONSTRUCTION

REVISION	DATE	AMENDMENT DESCRIPTION
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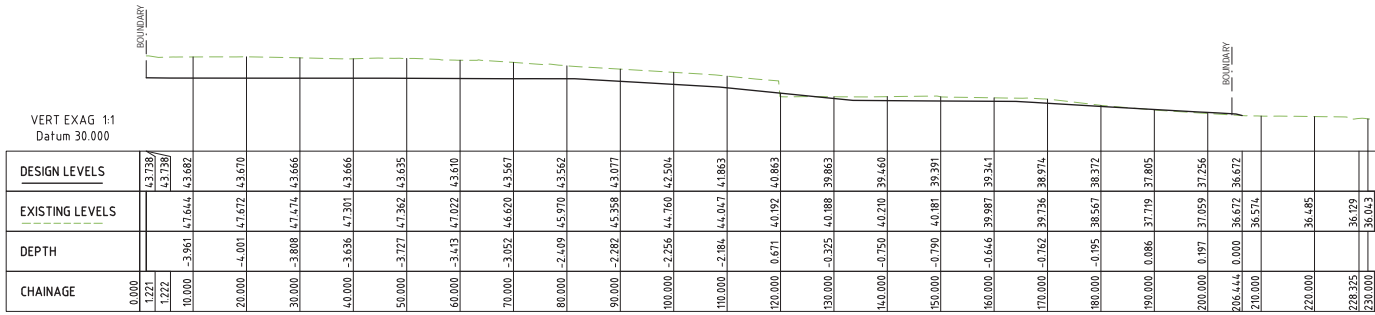
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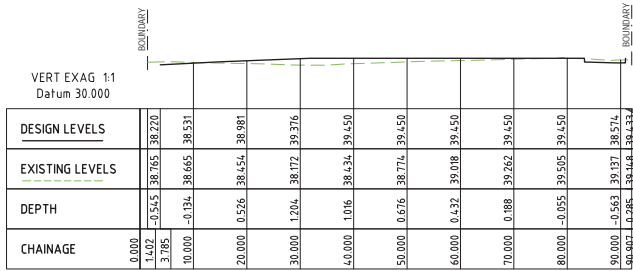
RECOVERY AND RECYCLING FACILITY
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SITE CROSS SECTIONS SHEET 1 OF 2

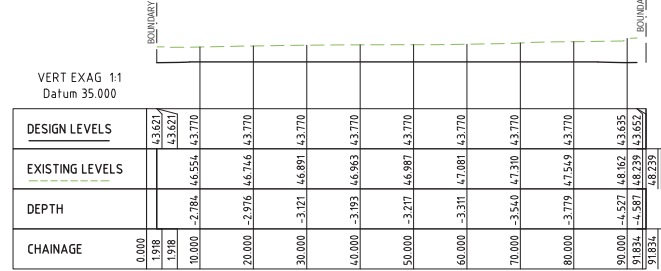
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		AUG 2020	10067
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		1:500	C11 - C



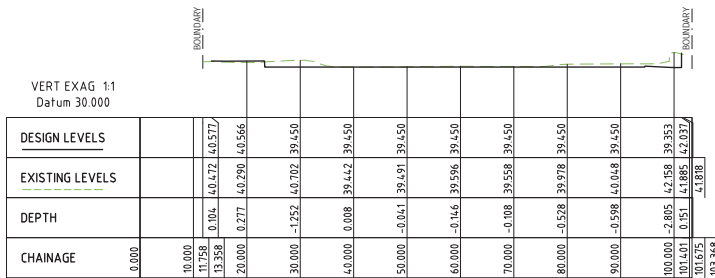
SITE CROSS SECTION C10
1:500



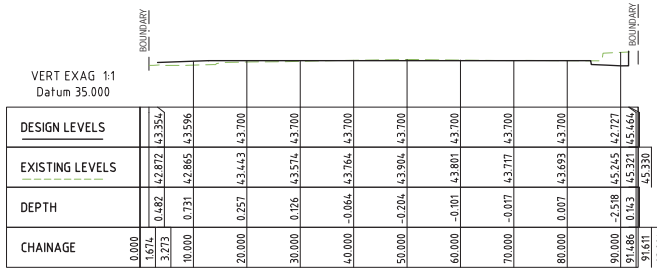
SITE CROSS SECTION C10
1:500



SITE CROSS SECTION C9
1:500



SITE CROSS SECTION C7
1:500



SITE CROSS SECTION C10
1:500

FOR CONSTRUCTION

REVISION	DATE	AMENDMENT DESCRIPTION
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RECOVERY AND RECYCLING FACILITY
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SITE CROSS SECTIONS SHEET 2 OF 2

DESIGN	DRAWN	DATE	PROJECT No.
SIWH	RCL	AUG 2020	10067
CHECKED	APPROVED	SCALE	DRG No.
		1:500	C12 - C

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APPENDIX B – FLOOD INFORMATION SHEET



Flood Information Sheet

Fairfield City Council
 Administration Centre
 86 Avoca Road
 WAKELEY NSW 2176
 PO Box 21
 FAIRFIELD NSW 1860
 Telephone: (02) 9725 0222
 Facsimile: (02) 9609 3257

Applicant's Details:

Applicant's Name	Northrop Consulting Engineers Pty Ltd
Postal Address	PO Box 180 CHARLESTOWN NSW 2290
Phone	
Fax	

Property Particulars:

House No.	24
Street & Suburb	Davis Road WETHERILL PARK
Lot Description	Lot 18 DP 249417

Council has adopted a policy on flooding which may restrict the development of land. The Fairfield City-Wide Development Control Plan 2013 (which includes provisions for flood management) applies to all of the Fairfield Local Government area.

Part or all of this land may be affected by local overland flooding.

LOCAL OVERLAND FLOODING

Description

This parcel is identified as being partly within a **Medium** Flood Risk Precinct, partly within a **Low** Flood Risk Precinct as a result of overland flooding and partly **not affected** by local overland flooding.

Local Overland Flood Details

Size of Flood	Flood Level (m AHD)
Probable Maximum Flood (PMF)	38.0 – 37.0
100 Year ARI	36.9 – 36.4
20 Year ARI	36.8 – 36.3

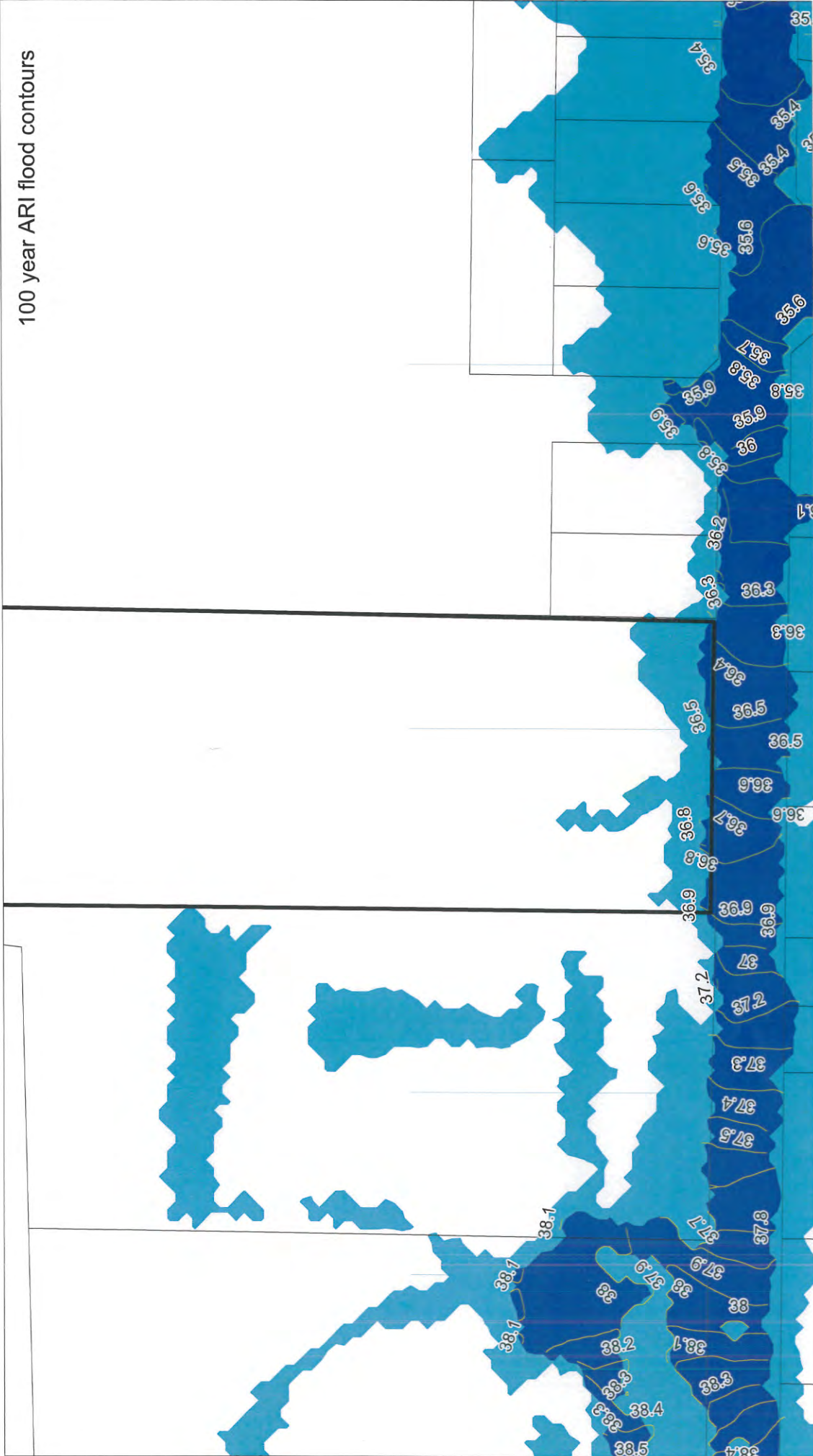
Local overland flood levels in the vicinity of the above property have been extracted from the Fairfield City Council (2015) *Wetherill Park Overland Flood Study*.

12/02/2016

GLOSSARY

m AHD	metres Australian Height Datum (AHD).
Australian Height Datum (AHD)	A common national plane of level approximately equivalent to the height above sea level. All flood levels, floor levels and ground levels are normally provided in metres AHD.
Average Recurrence Interval (ARI)	The long term average number of years between the occurrence of a flood as big as the selected event. For example, floods with a discharge as great as the 20 year ARI event will occur on average once every 20 years. ARI is another way of expressing the likelihood of occurrence of a flood event.
flood	A relatively high stream flow that overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam. It also includes local overland flooding associated with major drainage before entering a watercourse, or coastal inundation resulting from raised sea levels, or waves overtopping the coastline.
flood risk precinct	<p>An area of land with similar flood risks and where similar development controls may be applied by a Council to manage the flood risk. The flood risk is determined based on the existing development in the precinct or assuming the precinct is developed with normal residential uses. Usually the floodplain is categorised into three flood risk precincts 'low', 'medium' and 'high', although other classifications can sometimes be used.</p> <p>High Flood Risk: This has been defined as the area of land below the 100-year flood event that is either subject to a high hydraulic hazard or where there are significant evacuation difficulties.</p> <p>Medium Flood Risk: This has been defined as land below the 100-year flood level that is not within a High Flood Risk Precinct. This is land that is not subject to a high hydraulic hazard or where there are no significant evacuation difficulties.</p> <p>Low Flood Risk: This has been defined as all land within the floodplain (i.e. within the extent of the probable maximum flood) but not identified within either a High Flood Risk or a Medium Flood Risk Precinct. The Low Flood Risk Precinct is that area above the 100-year flood event.</p>
local overland flooding	The inundation of normally dry land by local runoff rather than overbank discharge from a stream, river, estuary, lake or dam.
mainstream flooding	The inundation of normally dry land occurring when water overflows the natural or artificial banks of a stream, river, estuary, lake or dam.
probable maximum flood (PMF)	The largest flood that could conceivably occur at a particular location.
zone of significant flow	That area of the floodplain where a significant discharge of water occurs during floods. Should the area within this boundary be fully or partially blocked, a significant distribution of flood flows or increase in flood levels would occur.

100 year ARI flood contours



Low Flood Risk Precinct



Medium Flood Risk Precinct



High Flood Risk Precinct



24 Davis Road, Wetherill Park Lot 18 DP 249417

Flood Risk Mapping has been extracted from the
Fairfield City Council (2015) Wetherill Park Overland Flood Study.

25 February 2016

