

INTEGRATED WATER CYCLE MANAGEMENT REPORT

HUNTINGWOOD PROCESSING EXPANSION

65 HUNTINGWOOD DRIVE, HUNTINGWOOD

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Prepared for: Charter Hall Holdings Pty Ltd

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Document Control

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Approved by	Benjamin Barrett	Revision	7

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1. EXECUTIVE SUMMARY

Sparks & Partners have been engaged by FDC on behalf of Charter Hall Holdings Pty Ltd, to provide civil engineering services to support the proposed State Significant Development Application (SSDA) for 65 Huntingwood Drive, Huntingwood. The engineering services include the design and documentation of the stormwater drainage infrastructure and finished pavement levels for the proposed development.

The Department of Planning, Infrastructure and Environment (DPIE) being the approval authority for the proposed development, require a report to address requirements of the Secretary's Environmental Assessment Requirements (SEARs) dated 12th May 2021. Consideration has also been given to the agency comments from the NSW Environment Protection Authority (EPA) and Blacktown City Council (BCC). In response to this requirement Sparks and Partners has undertaken modelling of the proposed integrated water management measures and prepared this report to demonstrate that the proposed development identifies and incorporates water conservation and stormwater management measures into its design and operation in accordance with the SEARs and Blacktown City Council Development Control Plan 2015 Part J.

This revision addresses Blacktown Council objections as noted in the letter issued to NSW Department of Planning, Industry and Environment dated the 8th of April 2022.

2. INTRODUCTION

2.1 Existing Site

The site is located at 65 Huntingwood Drive, Huntingwood and has an approximate total area of 163,933m². The property is bounded by Huntingwood Drive along its northern boundary, Brabham Drive along its western boundary, neighbouring industrial lots along its eastern boundary and the M4 motorway along its southern boundary. The site is occupied by Arnotts Biscuits Limited and is used for their Australian manufacturing operations. The site consists of several large industrial buildings, asphalt parking, concrete hardstand and landscaping. A playing field also acts as an above ground on-site detention (OSD) tank for a portion of the existing site. A copy of the existing site survey is provided in Appendix A for reference, along with an aerial image in Figure 1 below.



Figure 1. Figure 1. Site Locality Plan (Source: Near Maps)

2.2 Proposed Development

The proposed development consists of a new processing facility, ancillary buildings, hardstand for loading, a multistorey car park and landscaping. The new main processing building occupies 25,660m², ancillary buildings occupying 1,790m², the pavement area occupies 10,322m² and 6,635m² of landscaping area. The proposed development will require the demolition of the existing OSD basin and reconstruction as a below ground tank. Approximately 10,875m² of existing roof area currently drains into the existing OSD basin and will be redirected to the new OSD tank. Detailed architectural plans of the proposed development have been prepared by HLA Architects and are to be read in conjunction with this report.

3. INTEGRATED WATER MANAGEMENT

3.1 General

The objective of integrated water management is to provide a strategy that brings together the different aspects of the water cycle as a whole rather than an ad hoc approach to water management. This includes the management aspects of freshwater, wastewater and stormwater. The following integrated water management strategies have been considered and addressed for the proposed development:

1. Employ an integrated water collection and recycling system for capturing and recycling roofwater;
2. Control the quality of stormwater that is disposed from the site;
3. Control the quantity of stormwater that is discharged for the site.

To demonstrate the above concept stormwater drainage plans and associated details have been prepared along with detailed modelling using the BCC endorsed MUSIC software package. The concept stormwater drainage plans detail the location of the water management infrastructure including pits, pipes, on-site stormwater (OSD) tank, rainwater tank (RWT), OceanGuard filter baskets, Stormfilter cartridges and Jellyfish filters and are included in Appendix A.

3.2 Water Conservation

Water usage reduction is to be achieved throughout the development through the use of water use fittings which comply with the minimum standards defined by the Water Efficiency Labelling and Standards (WELS) scheme.

3.3 Rainwater Reuse

Through the reuse of collected roofwater for non-potable reuse the proposed demand on potable water resources is reduced. The proposed development will capture roof water from part of the processing building roof area (12,380m²). This collected roofwater will be conveyed to an 95,000 litre tank for storage and reuse throughout the development. Re-use purposes will primarily include toilet flushing and irrigation uses. A water balance of the proposed reuse system has been completed to model the effectiveness and efficiency of the system. The water balance model was constructed using the MUSIC software package with the following inputs:

- Blacktown Rainfall data.
- Total approximate non-potable reuse based on:
 - 28 toilets allowing 0.1kL/day per toilet and assuming the site is occupied seven (7) days per week equates to 2.8kL/day

- 2,093m² of irrigated area requiring 0.4kL/year/m² which equates to approximately 837.2kL per year.

Using the above determined non-potable demand the MUSIC model determines the rainwater tank has an approximate efficiency of 80.73%. This efficiency results in an approximate reduction in the proposed demand on potable water supplies of 1,493,600 litres per year.

3.4 Stormwater Quality

The development is located within Section 7.11 Contributions Plan No. 19 Voluntary Contribution Scheme Boundary as per BCC mapping within Part J of their DCP. However, it is proposed that the development will not enter into a Voluntary Planning Agreement (VPA) with Blacktown Council. As per Council's WSUD Developer Handbook 2020 the development is treatment stormwater runoff to achieved Council's pollution reduction targets for gross pollutants, suspended solids, phosphorous, nitrogen and hydrocarbons.

A treatment train of a 47 x Ocean Protect 'OceanGuard' pit inserts, a JF2250-4-1 and JF3250-11-2 Ocean Protect Jellyfish units and 91 x 690 ZPG Ocean Protect 'StormFilter' cartridges have been proposed for use within the development to achieve Blacktown Council's pollution reduction targets. A 90% reduction in hydrocarbons within the system is to be achieved through the installation of oil baffles within jellyfish diversion pits and stormfilter chambers. Design drawings and a WSUD catchment plan are attached in Appendix A.

The site is separated into two main catchment areas. The first catchment consists of the northern portion of the warehouse roof and surrounding hardstand & landscape areas (C1-1 – C1-4) as shown on drawing DA4301. Runoff from these catchments is treated by jellyfish 1 (JF2250-4-1). The high flow bypass that isn't treated by the jellyfish is diverted into stormfilter chamber 1 (SF1) which consists of 30 cartridges. This ensures that treated water from the jellyfish isn't re-treated by the cartridges or dilutes the polluted water, ensuring the MUSIC modelling results accurately reflect the pollution reduction of the treatment train.

The second catchment consists of the eastern & southern hardstand, landscape and the southern portion of the warehouse roof (C2-1 – C2-5) as shown on drawing DA4301. The southern portion of the roof (C2-1) bypasses the jellyfish unit and is treated by the 60 cartridges in stormfilter chamber 2 (SF2). The remaining catchments (C2-2 – C2-5) are treated by jellyfish 2 (JF3250-11-1) before draining into stormfilter chamber 2. Catchment C2-1 consists of 40% of the total catchment area to SF2 while the remaining catchments (C2-2 – C2-5) account for the remaining 60%. This ensures that there is mixing between the two areas which result in sufficient concentrations of pollutions within SF2 to ensure the MUSIC modelling results accurately reflect the pollution reduction of the treatment train.

Modelling of the proposed treatment measures has been undertaken using the MUSIC software package version 6. The modelling inputs have been based on the pre-loaded BCC

	Source Load	Residual Load	% Reduction Achieved	BCC % Reduction Requirement	Compliance with BCC Requirement
Gross Pollutants (kg/yr)	927	69.9	92.5	90	Y
Total Suspended Solids (kg/yr)	3510	472	86.5	85	Y
Total Phosphorous (kg/yr)	8.99	3.15	65.0	65	Y
Total Nitrogen (kg/yr)	82.0	43.9	46.5	45	Y

The screenshot displays the TSS model interface, which includes a detailed flow diagram and a data table titled "Treatment Train Effectiveness - Receiving Node".

Flow Diagram: The diagram illustrates the flow of water through various treatment stages. Key components include:

- Inputs:** C1-3 - Suspended Impervious Catchment to SF1 (5,803 sq.m) [Saledroad], C1-2 - Impervious Catchment to SF1 (1,678 sq.m) [Saledroad], C1-4 - Previous Catchment to SF1 (365 sq.m) [Revegetatedland], C2-3 - Impervious Catchment to SF2 (3,356 sq.m) [Saledroad], C2-5 - Previous Catchment to SF2 (1,115 sq.m) [Revegetatedland], C2-4 - Suspended Impervious Catchment to SF2 (2,343 sq.m) [Saledroad], C2-1 - Roof Catchment to RWT & SF2 (12,389 sq.m) [Roof], C3-4 - Ancillary Roof Catchment (1,199 sq.m) [Roof], C1-1 - Roof Catchment to SF1 (11,280 sq.m) [Roof], C2-2 - Existing Roof Catchment to SF2 (10,875 sq.m) [Roof], B1 - Impervious Bypass Catchment (340 sq.m) [Saledroad], B2 - Pervious Bypass Catchment (1,555 sq.m) [Revegetatedland], B3 - Ancillary Roof Bypass Catchment (390 sq.m) [Roof], B4 - Ancillary Impervious Catchment Area (228 sq.m) [Saledroad].
- Processing:** 1 x 600 ZPG Stormfilter 2 (BCC 2015), 4 x OceanGuard (BCC 2015), 10 x 100 ZPG Stormfilter 1 (BCC 2015), 5 x OceanGuard (BCC 2015), 60 x 600 ZPG Stormfilter 2 (BCC 2015), 2 x OceanGuard (BCC 2015), 95AL +20% Rawwater Tank.
- Output:** Receiving Node.

Treatment Train Effectiveness - Receiving Node:

	Sources	Residual Load	% Reduction
Flow (ML/yr)	36.9	35.4	4
Total Suspended Solids (kg/yr)	3510	472	86.5
Total Phosphorus (kg/yr)	8.99	3.15	65
Total Nitrogen (kg/yr)	82	43.9	46.5
Gross Pollutants (kg/yr)	927	69.9	92.5

The proposed development requires the implementation of on-site detention (OSD) as per the BCC Engineering Guide for Development to control stormwater discharge from the site. The assumed catchment area of the existing OSD basin that is to be demolished is 53,264m². The proposed OSD tank has been designed to predominately collect all runoff from the same catchment as the existing OSD basin however, there are some areas that bypass the OSD tank. The proposed ancillary buildings around the site did not originally drain to the existing OSD basin but are proposed to be included as bypass for the design of the new OSD tank. These additional areas result in a total catchment area of 55,287m². This catchment area includes new and existing hardstand (9,570m²), existing building roof (10,875m²), new processing building roof (25,660m²) and new landscaped areas (2,080m²). Bypassing areas totaling 7,102m² consist of landscaping (4,555m²), hardstand (752m²) and ancillary buildings (1,795m²). A catchment plan of the proposed development is included in the Appendix A.

The BCC – On-site Detention Deemed to Comply Tool has been utilised to determine the required volume and discharge rate for proposed development. Based on Council Deemed to Comply Tool the proposed OSD has a minimum site storage capacity for the 50% and 1% AEP storm event of 1,659m³ and 2,516m³ respectively. The maximum proposed permissible discharge rate for 50% and 1% AEP storm events is 178.5L/s and 652.7L/s respectively. A copy of Council's Deemed to Comply Tool has been provided in Appendix B for review.

3.6 Maintenance and Monitoring

To ensure the continued efficient and correct operation of the proposed integrated water management infrastructure a 'maintenance and monitoring schedule' is included in the Appendix C of this plan. The schedule details the frequency of inspections, what is to be inspected and what rectifications to make if required for the water management infrastructure located within the proposed development. The schedule is to be implemented upon commissioning of the water management infrastructure and remain in place for the life of the development; with all records kept on site for inspection should the approval authority deem it necessary.

4. RESPONSE TO SEARS REQUIREMENTS

4.1 DPIE

4.1.1 Water Resources

Surface runoff will generally be captured into the proposed stormwater management system. As the area is currently landscaping, the proposed development will reduce the volume of water seeping into the groundwater system.

The volume, frequency and quality of stormwater runoff will be controlled by the stormwater management system, in accordance with BCC requirements. Refer to design drawings DA4101-DA4104, DA4111, DA4312, DA4701, DA4702, DA4711 & DA4712 and section 3 of this report for details of stormwater management measures.

4.1.2 Water Quality

During construction stormwater runoff will be managed in accordance with the Landcom "Blue Book" Refer to plans DA2101, DA2102 & DA2701 for Sediment & Erosion Control measures.

Stormwater runoff from the development is collected within the proposed stormwater management system and directed through several pollution treatment devices. These devices reduce the gross pollutant, suspended solids, phosphorous, nitrogen and hydrocarbon pollution loads for the development. Refer to design drawings DA4101-DA4104, DA4111, DA4301, DA4701, DA4702, DA4711 & DA4712 section 3.4 of this report for details of stormwater management measures.

4.1.3 Hydrology

A water balance of rainwater reuse to supply toilet flushing and landscaping irrigation. Refer to design drawings DA4101-DA4104, DA4111, DA4301, DA4701 & DA4711 and section 3.5 of this report for details of stormwater management measures.

4.2 EPA

The development includes rainwater reuse and water quality improvement devices to minimise pollution in stormwater runoff from the development. Refer to design drawings DA4101-DA4104, DA4111, DA4301, DA4312, DA4701, DA4702, DA4711 & DA4712 for details of stormwater management measures. Management of stormwater during construction is in accordance with the Landcom "Blue Book" Refer to plans DA2101, DA2102 & DA2701 for Sediment & Erosion Control measures.

4.3 BCC

4.3.1 On-site Stormwater Detention (OSD)

OSD has been provided and designed to Council's spreadsheet and requirements. Refer to Section 3.5 of this report for further details.

4.3.2 Water Quality

A water quality treatment design has been developed to achieve Council's pollution reduction targets as per Council's requirements. Refer to Section 3.4 of this report for further details.

4.3.3 Water Conservation

A rainwater tank has been provided for reuse for toilet flushing and irrigation. MUSIC modelling confirms 80% reuse efficiency. Refer to Section 3.3 of this report for further details.

CONCLUSION

Based on the preparation of the concept stormwater drainage plans and MUSIC modeling results it is demonstrated that the principles of integrated water management have been incorporated into the design and operation of the proposed development at 65 Huntingwood Drive, Huntingwood in accordance with BCCDCP 2015 Part J. It is demonstrated that the proposed development achieves reductions in potable water import by capturing rainwater on site and reusing this for non-potable uses including irrigation and toilet flushing, achieves pollution reduction targets set by council, and employs OSD for the control of stormwater discharge from the site in accordance with targets set by council. It is also demonstrated that the proposed development employs water conservation measures that will continue to operate effectively and efficiently through the implementation and use of a monitoring and maintenance schedule ensuring the integrity of the system is maintained.

The proposed stormwater quantity and quality control measures has been assessed in relation to the soil and water section of the Local Secretary's Environmental Assessment Requirements (SEARs) Letter set by the Department of Planning and Environment. Other requirements from the EPA and BCC have similarly been addressed in this report and accompanying design drawings. It is demonstrated that the mitigation measures and stormwater infrastructure design of the proposed development meets all the requirements set by the SEAR's. It is also demonstrated that the design satisfies Blacktown Council objections noted in the letter issued to NSW Department of Planning, Industry and Environment dated 16th November 2021.

APPENDIX A. CONCEPT DRAINAGE PLANS

PROPOSED INDUSTRIAL WAREHOUSE
65 HUNTINGWOOD DRIVE, HUNTINGWOOD
CIVIL ENGINEERING PACKAGE



DRAWING SCHEDULE	
DA1101	COVER PAGE & DRAWING SCHEDULE
DA1201	SPECIFICATION SHEET
DA1301	KEY PLAN
DA2101	CONCEPT SEDIMENT & EROSION CONTROL PLAN - STAGE 1
DA2102	CONCEPT SEDIMENT & EROSION CONTROL PLAN - STAGE 2
DA2701	CONCEPT SEDIMENT & EROSION CONTROL DETAILS
DA3101	CONCEPT BULK EARTHWORKS CONTOUR PLAN
DA3201	CONCEPT BULK EARTHWORKS CUT & FILL PLAN
DA3501	CONCEPT BULK EARTHWORKS SECTIONS
DA4101	CONCEPT SITEWORKS & STORMWATER MANAGEMENT PLAN SHEET 1
DA4102	CONCEPT SITEWORKS & STORMWATER MANAGEMENT PLAN SHEET 2
DA4103	CONCEPT SITEWORKS & STORMWATER MANAGEMENT PLAN SHEET 3
DA4104	CONCEPT SITEWORKS & STORMWATER MANAGEMENT PLAN SHEET 4
DA4111	CONCEPT SITEWORKS & STORMWATER MANAGEMENT BASEMENT (B2) PLAN
DA4301	CONCEPT STORMWATER WSUD CATCHMENT PLAN
DA4311	CONCEPT EXISTING OSD CATCHMENT PLAN
DA4312	CONCEPT PROPOSED OSD CATCHMENT PLAN
DA4701	CONCEPT STORMWATER DRAINAGE DETAILS SHEET 1
DA4702	CONCEPT STORMWATER DRAINAGE DETAILS SHEET 2
DA4711	CONCEPT STORMWATER DRAINAGE OSD TANK DETAILS SHEET 1
DA4712	CONCEPT STORMWATER DRAINAGE OSD TANK DETAILS SHEET 2

LOCALITY PLAN
NOT TO SCALE - COURTESY OF SIX MAPS

STATE SIGNIFICANT DEVELOPMENT APPLICATION

NOT TO SCALE

DATE

AMENDMENT

INIT

REV

DATE

AMENDMENT

INIT

REV

19.02.21	50% ISSUE	DD	1				
12.03.21	90% ISSUE	DD	2				
29.03.21	SSDA ISSUE	DD	3				
04.06.21	SSDA ISSUE	DD	4				
10.09.21	SSDA ISSUE	DD	5				
17.12.21	SSDA ISSUE	DD	6				
26.04.21	REVISED SSDA ISSUE	DD	7				

STRUCTURAL

-

MECHANICAL

-

ELECTRICAL

-

CIVIL

SPARKS AND PARTNERS CONSULTING ENGINEERS

CLIENT

BUILDER

PROJECT

PROPOSED INDUSTRIAL WAREHOUSE
65 HUNTINGWOOD DRIVE, HUNTINGWOOD
CIVIL ENGINEERING PACKAGE

ARCHITECT

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FIRE PROTECTION ASSOCIATION
CORPORATE MEMBER

DNV GL

HCAA

DRAWING TITLE

CIVIL DESIGN
COVER PAGE & DRAWING
SCHEDULE

DATE

FEB 2021

SCALE

N.T.S

PROJECT No

20214

DRAWING No

DA1101

DRAWN

MG

DESIGNED

DD

CHECKED

BB

REVISION

B1

7

SURVEY

1. LEVELS BASED ON SURVEY PREPARED BY:
ICD ASIA PACIFIC PTY LTD. REF. - 108/8. DATE - 8/10/2020

APPROVAL AUTHORITY

1. CIVIL DESIGN IS SUBJECT TO APPROVAL FROM THE FOLLOWING AUTHORITIES:
 - 1.1. BLACKTOWN COUNCIL
 - 1.2. SYDNEY WATER
 - 1.3. NSW DEPARTMENT OF PLANNING

STORMWATER DESIGN CRITERIA

1. DESIGN CRITERIA.
 - 1.1. ROOF DRAINAGE - 1:20YR ARI
 - 1.2. PIPED DRAINAGE - 1:20YR ARI
 - 1.3. OVERLAND FLOWS - GAP FLOW BETWEEN 1:20YR ARI & 1:100YR ARI

DESIGN GUIDES

1. ENGINEERING GUIDE FOR DEVELOPMENT JULY 2020
2. BLACKTOWN COUNCIL DCP PLAN 2015
3. BLACKTOWN COUNCIL WSUD DEVELOPER HANDBOOK 2020
4. AS2865:2009 CONFINED SPACES
5. AS2890.1:2004 PARKING FACILITIES, PART 1: OFF-STREET CAR PARKING
6. AS2890.2:2002 PARKING FACILITIES, PART 2: OFF-STREET COMMERCIAL VEHICLE FACILITIES
7. AS2890.6:2009 PARKING FACILITIES, PART 6: OFF-STREET PARKING FOR PEOPLE WITH DISABILITIES
8. AS3500.3:2018 PLUMBING AND DRAINAGE, PART 3: STORMWATER DRAINAGE

RAINWATER RE-USE

RAINWATER TANK
EFFECTIVE VOLUME: 95 kL
ROOF CATCHMENT AREA: 12,232m²
REUSE:
2,093m² LANDSCAPING IRRIGATION
28 TOILETS FLUSHING

DEVELOPMENT APPLICATION (DA) STAGE

1. DOCUMENTS ARE PROVIDED FOR DA APPROVAL PURPOSES ONLY AND ARE NOT TO BE USED FOR CONSTRUCTION
2. STORMWATER DESIGN SHOWN IS CONCEPTUAL ONLY AND SUBJECT TO FINAL DESIGN AT CONSTRUCTION CERTIFICATE STAGE
3. FINISHED LEVELS SHOWN ARE CONCEPTUAL ONLY AND SUBJECT TO DETAILED DESIGN AT CONSTRUCTION CERTIFICATE STAGE. FINAL FINISHED LEVELS TO BE $\pm 0.5m$ FROM LEVELS SHOWN

DESIGN SUMMARY (BLACKTOWN)

1. OSD REQUIREMENTS:
LOCAL GOVERNING AUTHORITY = BLACKTOWN CITY COUNCIL
CATCHMENT NAME = AREA No.4 - OTHER AREAS

TOTAL SITE AREA = 5.5287Ha (55,287m²)
 AREA DRAINING TO OSD = 4.8185Ha (48,185m²)
 AREA BYPASSING OSD = 0.7102Ha (7,102m²)

UTILISING BLACKTOWN CITY COUNCIL'S ON-SITE STORMWATER
DETENTION DEEMED TO COMPLY SPREADSHEET FOR OSD CALCULATION
AND INCORPORATING THE ABOVE AREAS THE VOLUME AND DISCHARGE
REQUIREMENTS OF THE OSD ARE:

- VOLUME REQUIRED

$V_{1,5}$	=	1,659m ³
V_{100}	=	2,516m ³

- OSD DISCHARGE

Q_{15}	=	178.5L/s
Q_{100}	=	652.7L/s

MAX TOP WATER LEVEL	= RL58.200
1.5 YR OVERFLOW LEVEL	= RL57.330
100 YR OVERFLOW LEVEL	= RL57.960
1.5 YR ORIFICE CENTERLINE LEVEL	= RL55.870
100 YR ORIFICE CENTERLINE LEVEL	= RL55.870
1.5 YR ORIFICE DIAMETER	= 208.5mm
100 YR ORIFICE DIAMETER	= 423.5mm

2. WSUD REQUIREMENTS:
AS PER PRE-DA ADVICE RECEIVED FROM COUNCIL THE PROPOSED DEVELOPMENT CAN ACHIEVE WATER QUALITY OBJECTIVES BY ENTERING A VOLUNTARY PLANNING AGREEMENT WITH COUNCIL. A GROSS POLLUTANT TRAP HAS BEEN PROVIDED PRIOR TO THE SITE DISCHARGE POINT. REF. TO IWCM REPORT FOR DETAILS

SAFETY IN DESIGN

1. CONTRACTOR SHALL ENSURE ALL ACCESS TO THE TANKS & CHAMBERS ARE COMPLETE WITH RELEVANT CONFINED SPACE SIGNAGE.
2. ALL PERSONNEL REQUIRED TO INSPECT AND MAINTAIN SERVICES WITHIN THESE AREAS SHALL BE TRAINED IN ACCORDANCE WITH WHS/OH&S REQUIREMENTS.

SITE WORKS - GENERAL

1. ALL WORKS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH LOCAL COUNCIL, AUSTRALIAN AND AUTHORITY STANDARDS.
2. ALL TRENCHING WORKS ARE TO BE RESTORED TO ORIGINAL CONDITION.
3. THE INTEGRITY OF ALL EXISTING AND NEW SERVICES IS TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
4. ALL PLANS ARE TO BE READ IN CONJUNCTION WITH APPROVED ARCHITECTS, STRUCTURAL ENGINEERS AND OTHER CONSULTANT'S PLANS. ANY DISCREPANCIES ARE TO BE NOTIFIED TO THE ENGINEER FOR CLARIFICATION.
5. THE ENGINEER SHALL BE GIVEN A MIN. OF 48 HOURS NOTICE FOR ALL STORMWATER DRAINAGE AND PAVEMENT INSPECTIONS. CONCRETE SHALL NOT BE DELIVERED UNTIL ENGINEERS APPROVAL IS OBTAINED.

SITE WORKS - ACCESS AND SAFETY

1. ALL WORKS ARE TO BE UNDERTAKEN IN A SAFE MANNER IN ACCORDANCE WITH ALL STATUTORY AND INDUSTRIAL RELATION REQUIREMENTS.
2. ACCESS TO ADJACENT BUILDINGS AND PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.
3. WHERE NECESSARY SAFE PASSAGE SHALL BE PROVIDED FOR VEHICLES AND PEDESTRIANS THROUGH OR ADJACENT TO THE SITE.

FINISHED LEVELS

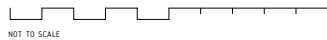
1. LEVELS BASED ON SITE SURVEY INFORMATION. THE CONTRACTOR SHALL VERIFY LEVELS PRIOR TO CONSTRUCTION COMMENCEMENT. ANY DISCREPANCIES SHALL BE NOTIFIED TO THE ENGINEER OR SUPERVISOR FOR CLARIFICATION.
2. CARPARK & SERVICE AREA LAYOUT AND GRADES TO COMPLY WITH A52890.
3. DRIVEWAY LAYOUT AND DESIGN TO COMPLY WITH APPROVAL AUTHORITY ACCESS DRIVEWAY DESIGN AND CONSTRUCTION SPECIFICATIONS.
4. ALL CONTOUR LINES & SPOT LEVELS INDICATE FINISHED PAVEMENT LEVELS UNO. ON PLAN.
5. PERMANENT BATTER SLOPES ARE TO HAVE A MAXIMUM GRADE OF 1V/3H.
6. ALL FOOTPATHS ARE TO FALL AWAY FROM THE BUILDING AT 25% NOMINAL GRADE.
7. ALL PAVEMENTS ARE TO BE SET AT 50mm BELOW THE FINISHED FLOOR LEVEL OF THE WAREHOUSE AND OFFICE AREAS UNO.

SEDIMENT AND EROSION CONTROL

1. THE CONTRACTOR SHALL INTEGRATE ALL SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH COUNCIL AND THE "BLUE BOOK" (MANAGING URBAN STORMWATER SOLS AND CONSTRUCTION, PRODUCED BY THE DEPARTMENT OF WATER). THESE MEASURES ARE TO BE REGULARLY INSPECTED AND MAINTAINED.
2. THE SEDIMENT & EROSION CONTROL PLAN PRESENTS CONCEPTS ONLY. THE CONTRACTOR SHALL AT ALL TIMES BE RESPONSIBLE FOR THE ESTABLISHMENT & MANAGEMENT OF A DETAILED SCHEME MEETING COUNCIL'S DESIGN, AND ALL OTHER REGULATORY AUTHORITY REQUIREMENTS.
3. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE SHALL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
 - a. INSTALL ALL TEMPORARY SEDIMENT FENCES AND BARRIER FENCES. WHERE FENCES ARE ADJACENT TO EACH OTHER THE SEDIMENT FENCE CAN BE INCORPORATED INTO THE BARRIER FENCE.
 - b. CONSTRUCT TEMPORARY STABILISED SITE ACCESS, INCLUDING SEDIMENT TRAPS AND WASH BAYS.
 - c. INSTALL SEDIMENT CONTROL MEASURES AS OUTLINED ON THESE SEDIMENT AND CONTROL PLANS (ONCE APPROVED).
4. THE CONTRACTOR SHALL UNDERTAKE SITE DEVELOPMENT WORKS SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF MINIMUM WORKABLE SIZE.
5. AT ALL TIMES AND IN PARTICULAR DURING WINDY AND DRY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOST (NOT NET) BY SPRINKLING WATER TO ROAD SURFACES TO PREVENT DUST. TAPERS MAY BE USED TO CONTROL DUST DURING EXTENDED PERIODS OF DRY WEATHER.
6. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) SHALL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
7. WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE DITCH UNLESS A CATCHMENT AREA HAS BEEN STABILISED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED OUT.
8. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES SHALL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE STABILISED / REHABILITATED.
9. THE CONTRACTOR SHALL ALLOW FOR THE ESTABLISHMENT OF ANY OTHER EROSION PROTECTION MEASURES (IF APPLICABLE).
10. THE CONTRACTOR SHALL REGULARLY INSPECT (MINIMUM TWICE PER WEEK) ALL EROSION AND SEDIMENT CONTROL MEASURES TO ENSURE THEY ARE OPERATING EFFECTIVELY. REPAIRS AND/OR MAINTENANCE SHALL BE UNDERTAKEN REGULARLY AND AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.
11. ACCEPTABLE RECEPTORS SHALL BE USED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER. WASTE FROM THESE RECEPTORS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL RELEVANT REGULATORY REQUIREMENTS. PAINT AND FEES AND PROVIDE EVIDENCE OF SAFE DISPOSAL.

STORMWATER

1. ALL WORKS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH THE FOLLOWING AUSTRALIAN STANDARDS AS2032, AS3500 AND AS3725 AS A MINIMUM
2. ALL PIPES LESS THAN OR EQUAL TO Ø300mm IN SIZE ARE TO BE SOLID FIELD-JOINTED UPVC CLASS 500 UNO.
3. ALL PIPES Ø375mm OR GREATER IN SIZE ARE TO BE MN. CLASS 2 REINFORCED CONCRETE PIPE (RCP) WITH SPIGGOT AND SLOCKETED JOINT OR VANTAGE PIPE PLUS (VPPPE) FIBRE REINFORCED CONCRETE (FRC) WITH VANTAGE PIPE PLUS JOINT UNO.
4. ALL PIPES ARE TO BE LAID AT MIN. 10% GRADE UNO.
5. PIPE BEDDING IS TO BE H2 UNDER ROADS AND TRAFFICKED AREAS AND SHALL BE H2 IN LANDSCAPED AND PEDESTRIAN TRAFFICKED AREAS UNO.
6. ALL PIPE BENDS AND JUNCTIONS ARE TO BE MADE WITH EITHER PURPOSE MADE FITTINGS OR STORMWATER DRAINAGE PITS.
7. MINIMUM COVER FROM THE OVERT OF THE STORMWATER PIPE OF 300mm IS TO BE PROVIDED IN LANDSCAPED AREAS AND 300mm IN VEHICULAR TRAFFICKED AREAS UNO.
8. WHERE MINIMUM COVER CANNOT BE ACHIEVED, CONCRETE ENCASEMENT OF THE AFFECTED PIPE MAY BE UNDERTAKEN WITH 200pa CONCRETE MINIMUM COVER OF 150mm TO ALL SIDE OF THE PIPE. THE CONTRACTOR SHALL SUBMIT THIS REQUIREMENT WITH THE ENGINEER OR SUPERINTENDENT.
9. LAID PIPELINES ARE TO HAVE THE FOLLOWING CONSTRUCTED TOLERANCES:
 - a. HORIZONTAL-1300 ANGLAR DEVIATION FROM REQUIRED ALIGNMENT;
 - b. VERTICAL-1300 ANGLAR DEVIATION FROM REQUIRED ALIGNMENT
10. ALL DRAINAGE PITS ARE TO BE CAST IN-SITU. PRECAST DRAINAGE PITS MAY BE USED WITH APPROVAL FROM THE ENGINEER. THE CONTRACTOR SHALL SUBMIT A PRECAST PIT INSTALLATION WORK METHOD STATEMENT FOR ASSESSMENT BY THE ENGINEER FOR APPROVAL.
11. DRAINAGE PIT COVERS ARE TO BE EITHER GALVANISED STEEL OR CAST IRON CLASS "B" IN LANDSCAPED AND PEDESTRIAN TRAFFICKED AREAS AND CLASS "D" IN ALL VEHICULAR TRAFFICKED AREAS UNO.
12. DRAINAGE PIT COVERS ARE TO BE "HEELSAFE" TYPE IN ALL PEDESTRIAN TRAFFICKED AREAS UNO.
13. EXISTING STORMWATER PIT LOCATIONS AND INVERT LEVELS TO BE CONFIRMED PRIOR TO COMMENCING WORKS ON SITE.
14. PROVIDE CLEANING EYES (RODDING POINTS) TO PIPES AT ALL CORNERS AND T-JUNCTIONS WHERE NO PITS ARE PRESENT.
15. DOWN-TO-UP CONNECTED DIRECT T-J PIPES TO BE CONNECTED AT 45° TO THE FLOW DIRECTION WITH A CLEANING EYE PROVIDED AT GROUND LEVEL.



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PROJECT
PROPOSED INDUSTRIAL WAREHOUSE
65 HUNTINGWOOD DRIVE, HUNTINGWOOD
CIVIL ENGINEERING PACKAGE
ARCHITECT


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CIVIL DESIGN SPECIFICATION SHEET				
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STATE SIGNIFICANT DEVELOPMENT APPLICATION

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SHEET 3

SHEET 4

SHEET 1

SHEET 2

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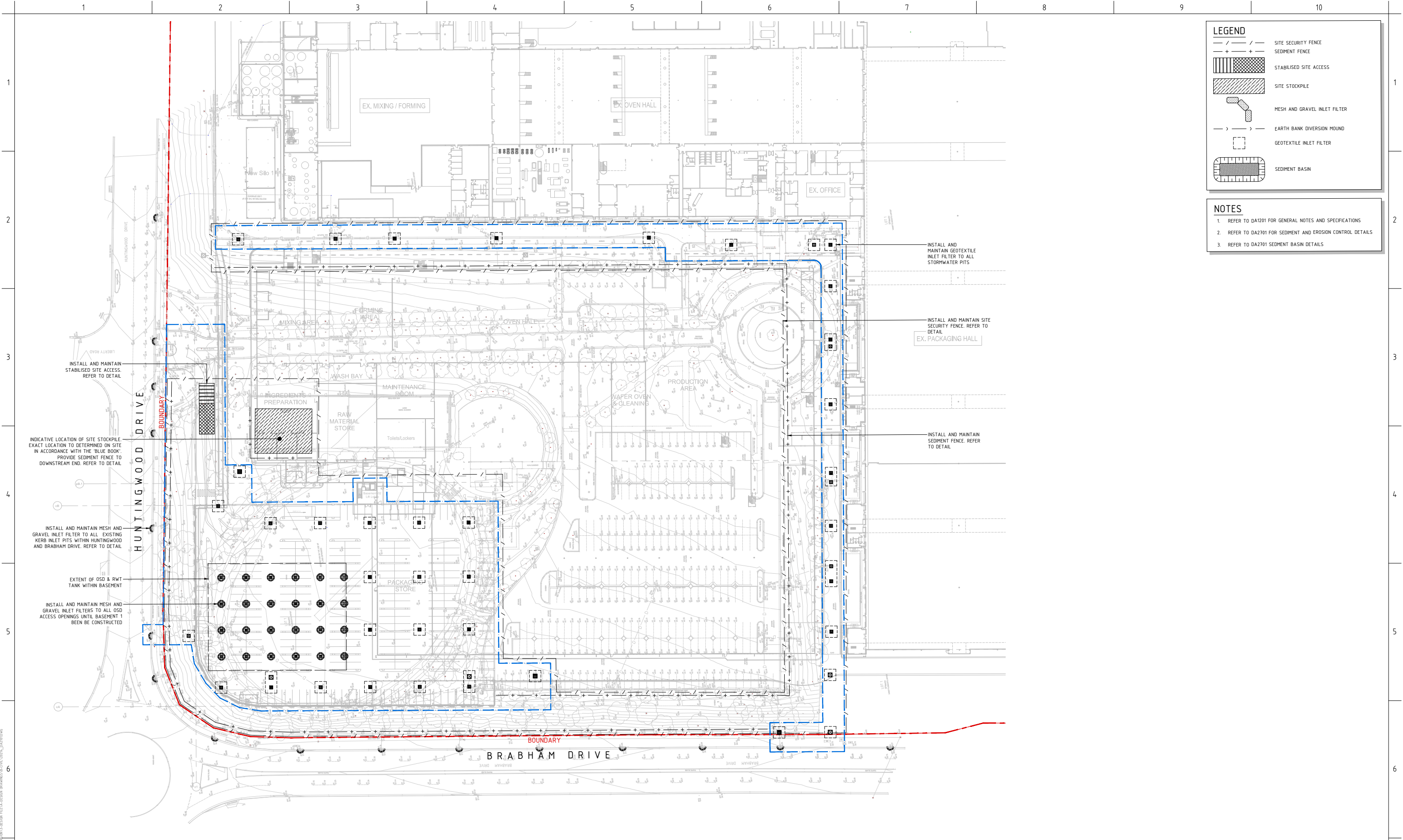
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LEGEND

SITE SECURITY FENCE

SEDIMENT FENCE

STABILISED SITE ACCESS

SITE STOCKPILE

MESH AND GRAVEL INLET FILTER

EARTH BANK DIVERSION MOUND

GEOTEXTILE INLET FILTER

SEDIMENT BASIN

NOTES

1. REFER TO DA1201 FOR GENERAL NOTES AND SPECIFICATIONS

2. REFER TO DA2701 FOR SEDIMENT AND EROSION CONTROL DETAILS

3. REFER TO DA2701 SEDIMENT BASIN DETAILS

AS SHOWN

7

PROJECT 15/03/2021 - ASHLEY HUNTINGWOOD INDUSTRIAL EROSION CONTROL DESIGN REVIEW DESIGN DRAWING 01 - DRAFTING

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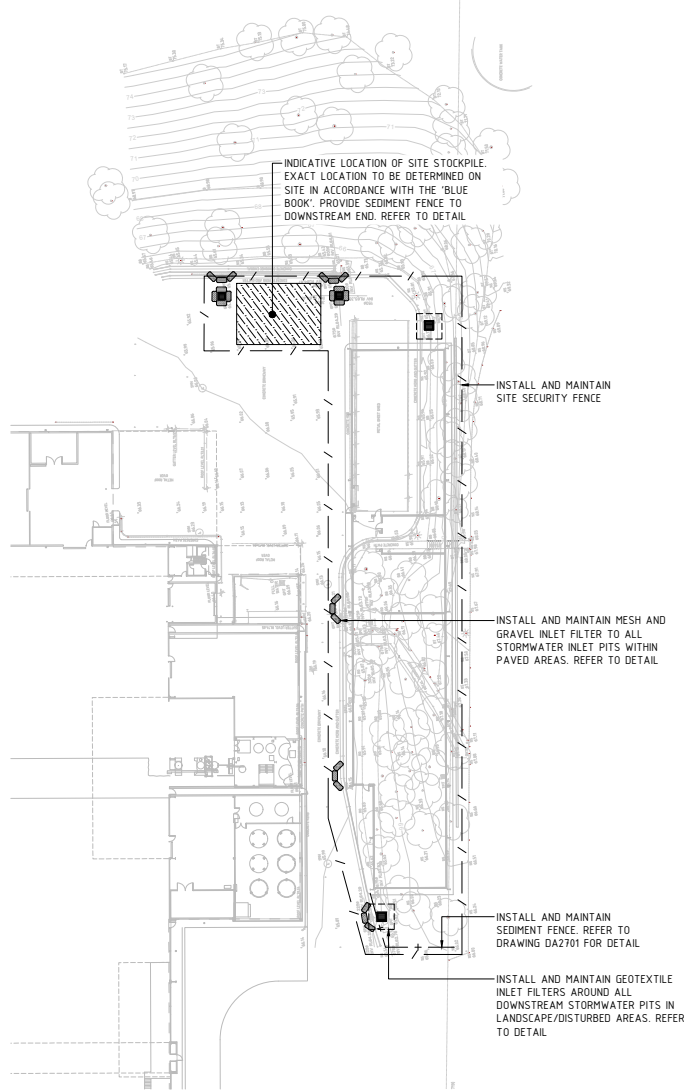
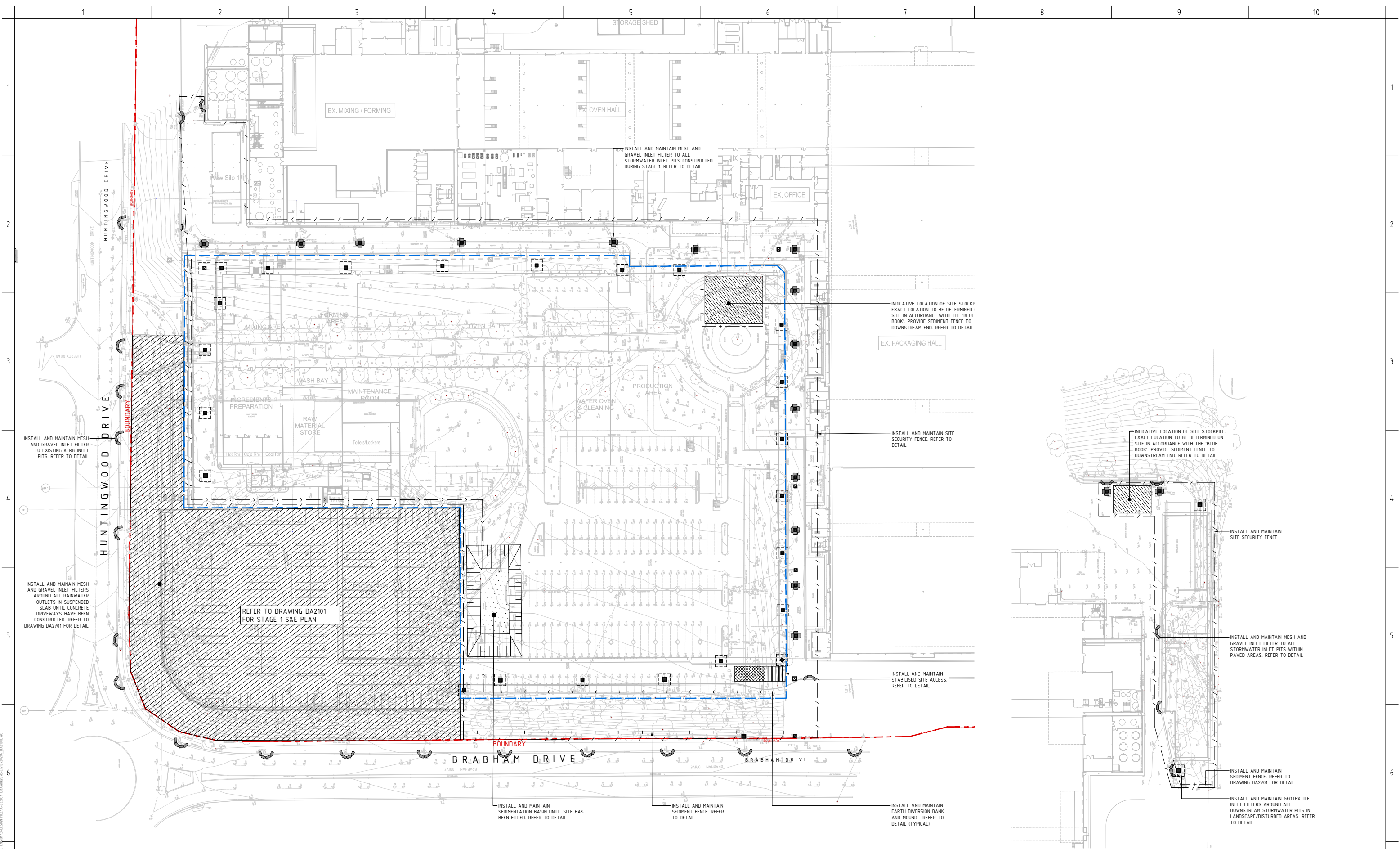
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CIVIL DESIGN
CONCEPT SEDIMENT & EROSION
CONTROL PLAN - STAGE 1

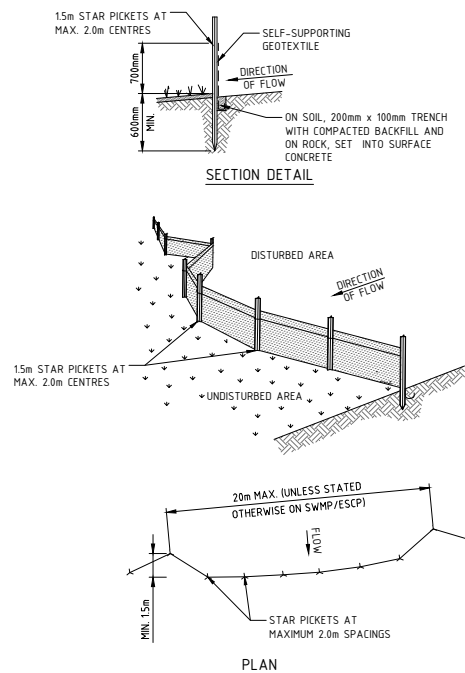
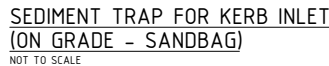
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- THE TEMPORARY ACCESS SHALL BE MAINTAINED IN A CONDITION THAT PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY.
- THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.
- INSTALL BARRIER ON EITHER SIDE OF SHAKER PAD TO ENSURE VEHICLES ARE GUIDED ON TO THE PAD.
- INVERT OF SHAKER PAD TO BE DRAINED VIA AGRICULTURAL PIPE WRAPPED IN GEOTEXTILE FABRIC.

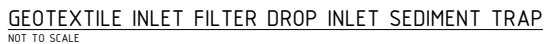


1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.

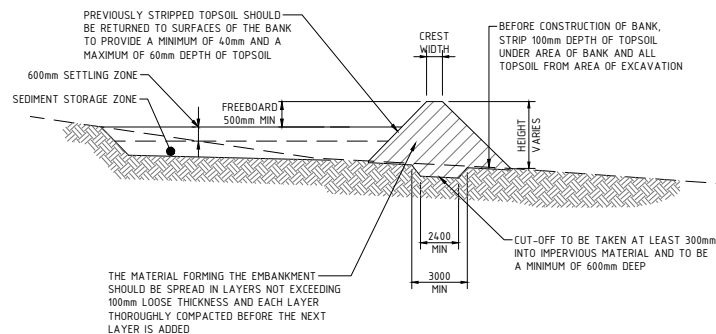


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1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 500 LITRES PER DESIGN FLOOD. USUALLY THE 10-YEAR EVENT CUT A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
2. DRIVE 150m LONG STAKE PICTETS INTO GROUND AT 2.0m INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAKE PICTETS ARE FITTED WITH SAFETY CAPS.
3. FIX THE SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
4. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
5. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.



1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. CUT A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FROM THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 100mm LONG STAIR PICKETS INTO GROUND AT THE FOUR CORNERS OF PICK WALLS.
4. ENSURE ANY STAIR PICKETS ARE FITTED WITH SAFETY CAPS.
5. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
6. JOIN JOINTS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
7. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.



SEDIMENT BASIN WET (TYPICAL) CROSS SECTION - TYPE D AND F SOILS

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA
2. CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AND 1200mm WIDE ALONG THE CENTERLINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISE CURB
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIAL WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95% STANDARD PROCTOR DENSITY
4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR OTHER FOREIGN MATERIAL
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE
6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP
7. CONSTRUCT THE EMERGENCY SPILLWAY
8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP

SEDIMENT BASIN CATCHMENT AREA	= 5.4Ha
REQUIRED SETTLING ZONE	= 917m ³
REQUIRED STORAGE ZONE	= 458m ³
REQUIRED BASIN VOLUME	= 1375m ³
BASE DIMENSION	= 23m (L) x 10m (W)
TOP DIMENSION	= 39m (L) x 19m (W)
MAX SIDE SLOPE	= 1V:1H
BASIN STORAGE VOLUME PROVIDED	= 1404m ³
DESIGN STORM	= 80TH PERCENTILE

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PROJECT	PROPOSED INDUSTRIAL WAREHOUSE 65 HUNTINGWOOD DRIVE, HUNTINGWOOD CIVIL ENGINEERING PACKAGE
ARCHITECT	

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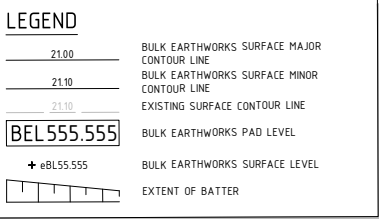
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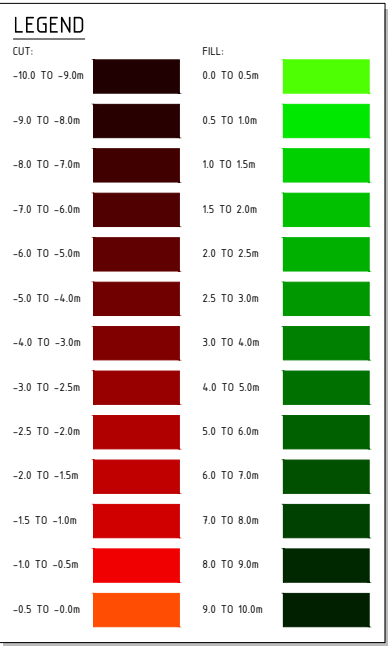
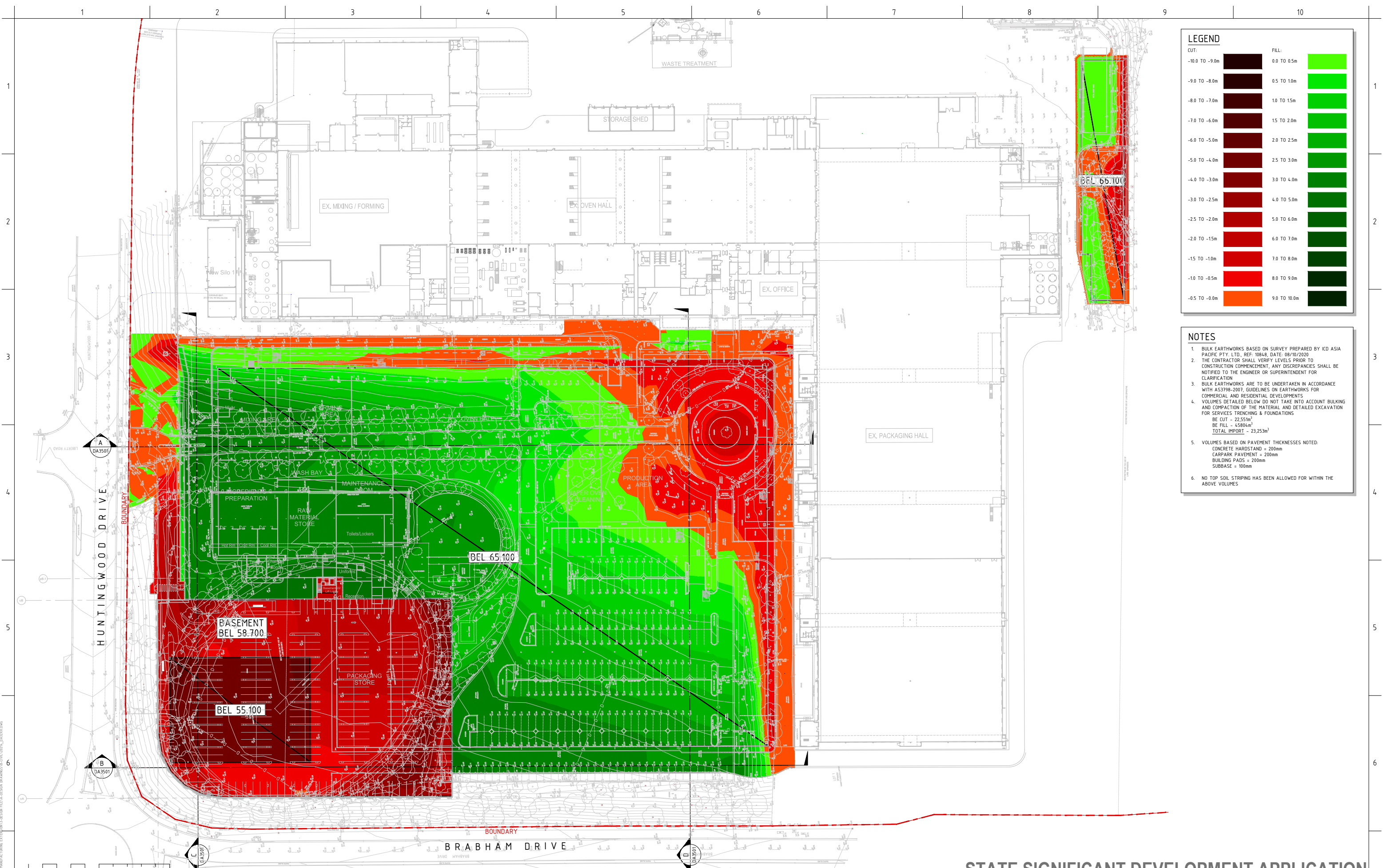
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DA3101			5



- NOTES**
- BULK EARTHWORKS BASED ON SURVEY PREPARED BY ICD ASIA PACIFIC PTY. LTD., REF: 10848, DATE: 08/10/2020
 - THE CONTRACTOR SHALL VERIFY LEVELS PRIOR TO CONSTRUCTION COMMENCEMENT, ANY DISCREPANCIES SHALL BE NOTIFIED TO THE ENGINEER OR SUPERINTENDENT FOR CLARIFICATION
 - BULK EARTHWORKS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH AS3798-2007, GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS
 - VOLUMES DETAILED BELOW DO NOT TAKE INTO ACCOUNT BULKING AND COMPACTION OF THE MATERIAL AND DETAILED EXCAVATION FOR SERVICES TRENCHING & FOUNDATIONS
BE CUT - 22,551m³
BE FILL - 4,5804m³
TOTAL IMPORT - 23,253m³
 - VOLUMES BASED ON PAVEMENT THICKNESSES NOTED:
CONCRETE HARSTAND = 200mm
CARPARK PAVEMENT = 200mm
BUILDING PADS = 200mm
SUBBASE = 100mm
 - NO TOP SOIL STRIPING HAS BEEN ALLOWED FOR WITHIN THE ABOVE VOLUMES

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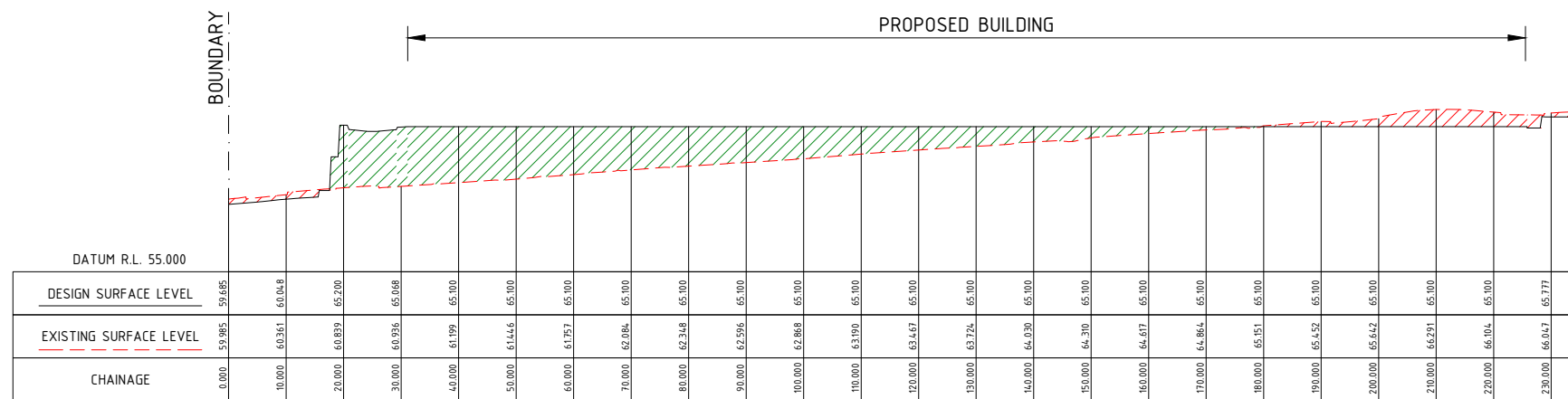
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CONCEPT BULK EARTHWORKS CUT
& FILL PLAN

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20214	1:500	DA3201		5

PLAN 2 - PROJECT 20214-2021 - ASSET 101 HUNTINGWOOD DRIVE ACTING EXTENDING DESIGN AREA DESIGN DRAWING CIVIL UTILA_032102.DWG



CHAINAGE	EXISTING SURFACE LEVEL	DESIGN SURFACE LEVEL
0.000	56.160	
10.000	58.731	
20.000	60.208	58.700
30.000	59.997	58.700
40.000	59.391	58.700
50.000	59.417	58.700
60.000	59.485	58.700
70.000	59.528	58.700
80.000	59.716	58.700
90.000	61.005	58.700
100.000	61.880	58.700
110.000	60.531	58.700
120.000	60.734	64.841
130.000	60.915	64.775
140.000	61.072	64.884
150.000	61.245	64.818
160.000	61.384	64.791
170.000	61.559	64.893
180.000	61.741	64.805
190.000	61.850	64.800
200.000	61.075	64.858
210.000	62.958	65.167
220.000	63.545	65.379
230.000	65.921	65.590

The profile view shows the existing ground surface (red dashed line) and the proposed design surface (green solid line). The design surface includes a base area (hatched) and a driveway (dashed). Key features include the OSD/RWT tank, base area, and driveway. The profile is divided into three sections: EXISTING LANDSCAPE, BASEMENT, and DRIVEWAY. The datum is R.L. 53.000.

CHAINAGE	EXISTING SURFACE LEVEL	DESIGN SURFACE LEVEL
0.000	57.078	
10.000	59.819	
20.000	59.984	58.700
30.000	59.140	55.130
40.000	59.713	55.130
50.000	59.416	55.130
60.000	60.093	58.700
70.000	61.059	58.700
80.000	61.603	64.893
90.000	61.696	64.789
100.000	61.396	64.872
110.000	61.233	64.789
120.000	60.911	64.887
130.000	60.795	64.829
140.000	60.814	64.815
150.000	61.497	65.097
160.000	63.663	65.595
170.000	66.950	65.707
180.000	65.852	

CHAINAGE	EXISTING SURFACE LEVEL	DESIGN SURFACE LEVEL
0.000	58.442	
10.000	62.780	
20.000	61.915	64.512
30.000	62.324	65.100
40.000	62.704	65.100
50.000	63.108	65.100
60.000	63.535	65.100
70.000	63.902	65.100
80.000	64.305	65.100
90.000	64.678	65.100
100.000	64.938	65.100
110.000	65.055	65.100
120.000	65.300	65.100
130.000	65.518	65.100
140.000	65.606	65.100
150.000	65.925	65.100
160.000	66.048	65.100
170.000	65.332	65.158

STRUCTURAL
=
MECHANICAL
=
ELECTRICAL
=
CIVIL

SPARKS AND PARTNERS CONSULTING ENGINEERS

CLIENT	
BUILDER	

PROJECT	PROPOSED INDUSTRIAL WAREHOUSE 65 HUNTINGWOOD DRIVE, HUNTINGWOOD CIVIL ENGINEERING PACKAGE
ARCHITECT	

SPARKS+PARTNERS
CONSULTING ENGINEERS
HYDRAULIC | CIVIL | FIRE

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P 02 9691 5033 | F 02 9691 3898 | E admin@sparksandpartners.com.au
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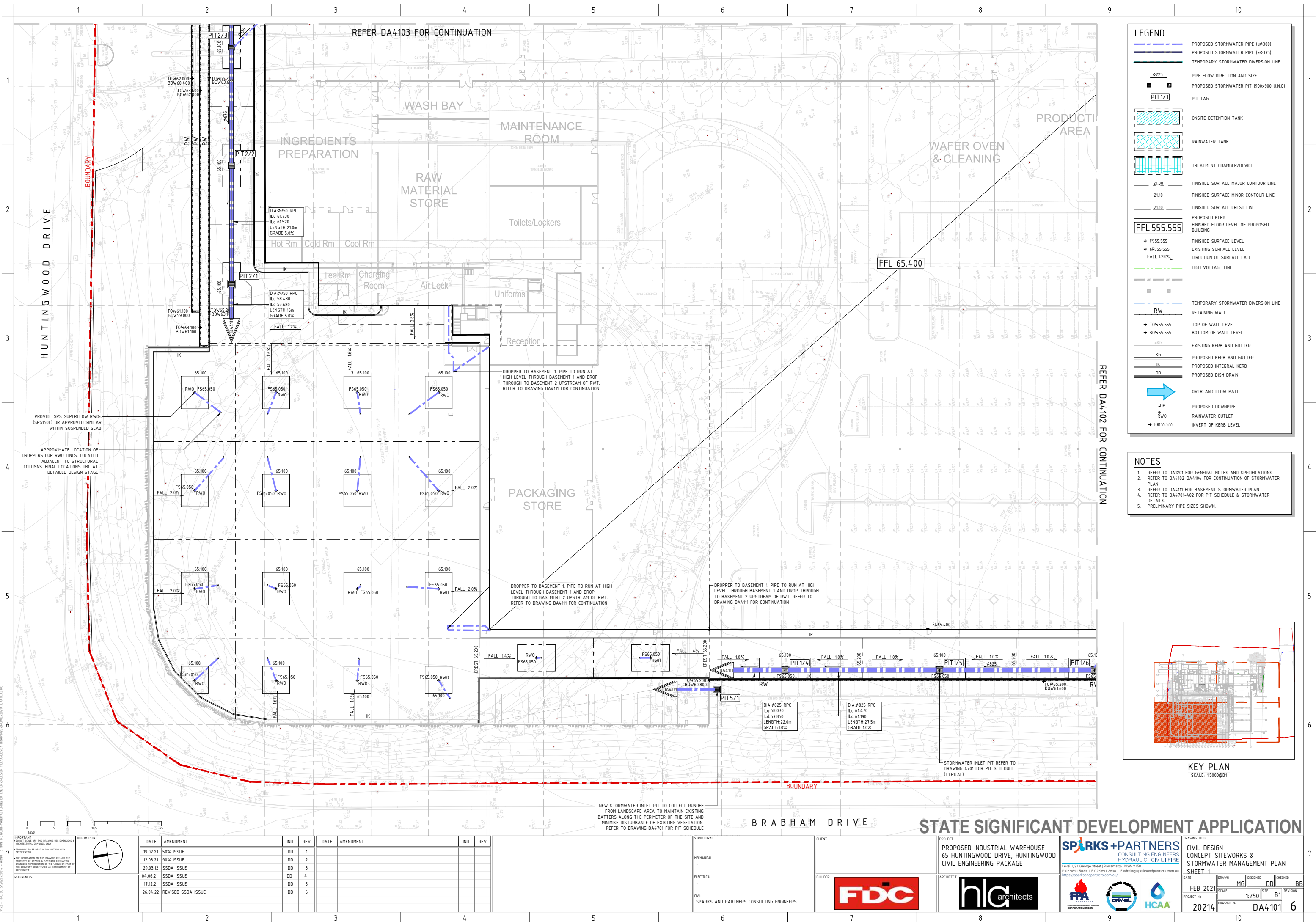
 **FPA**
AUSTRALIA
Fire Protection Association Australia
CORPORATE MEMBER

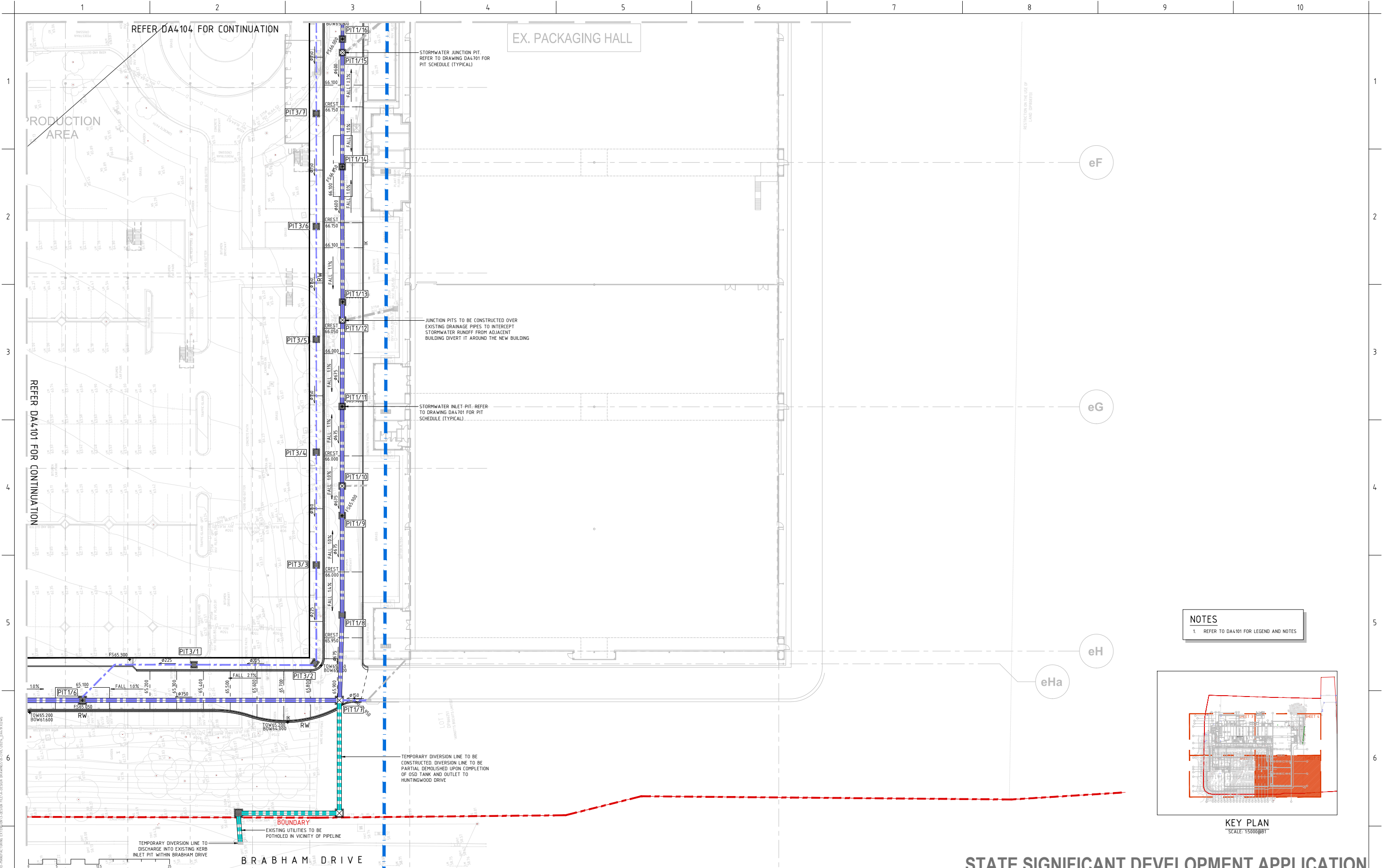
 **DNV-GL**

 **HCAA**

DRAWING TITLE			
CIVIL DESIGN CONCEPT BULK EARTHWORKS SECTIONS			
DATE	DRAWN	DESIGNED	CHECKED
FEB 2021	MG	DD	B
PROJECT No	SCALE	SIZE	REVISION
20214	AS SHOWN	B1	
DRAWING No			
20214		DA3501	

STATE SIGNIFICANT DEVELOPMENT APPLICATION





REFER DA4104 FOR CONTINUATION

EX. PACKAGING HALL

PRODUCTION AREA

REFER DA4101 FOR CONTINUATION

STORMWATER JUNCTION PIT. REFER TO DRAWING DA4701 FOR PIT SCHEDULE (TYPICAL)

JUNCTION PITS TO BE CONSTRUCTED OVER EXISTING DRAINAGE PIPES TO INTERCEPT STORMWATER RUNOFF FROM ADJACENT BUILDING DIVERT IT AROUND THE NEW BUILDING

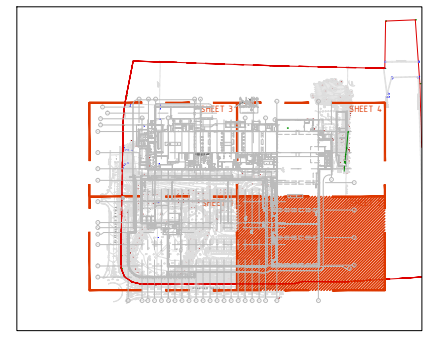
STORMWATER INLET PIT. REFER TO DRAWING DA4701 FOR PIT SCHEDULE (TYPICAL)

TEMPORARY DIVERSION LINE TO BE CONSTRUCTED. DIVERSION LINE TO BE PARTIAL DEMOLISHED UPON COMPLETION OF OSD TANK AND OUTLET TO HUNTINGWOOD DRIVE

TEMPORARY DIVERSION LINE TO DISCHARGE INTO EXISTING KERB INLET PIT WITHIN BRABHAM DRIVE

BRABHAM DRIVE

NOTES
1. REFER TO DA4101 FOR LEGEND AND NOTES



KEY PLAN
SCALE: 1:500@B1

IMPORTANT

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REFERENCES

DATE	AMENDMENT	INIT	REV
19.02.21	50% ISSUE	DD	1
12.03.21	90% ISSUE	DD	2
29.03.21	SSDA ISSUE	DD	3
04.06.21	SSDA ISSUE	DD	4
17.12.21	SSDA ISSUE	DD	5
26.04.22	REVISED SSDA ISSUE	DD	6

STRUCTURAL

-

MECHANICAL

-

ELECTRICAL

-

CIVIL

SPARKS AND PARTNERS CONSULTING ENGINEERS

CLIENT

FDC

PROJECT

PROPOSED INDUSTRIAL WAREHOUSE
65 HUNTINGWOOD DRIVE, HUNTINGWOOD
CIVIL ENGINEERING PACKAGE

ARCHITECT

hla architects

SPARKS + PARTNERS
CONSULTING ENGINEERS
HYDRAULIC | CIVIL | FIRE

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FPA
FIRE PROTECTION ASSOCIATION
COMPLIANT MEMBER

DNV-GL
DESIGN VERIFICATION
COMPLIANT MEMBER

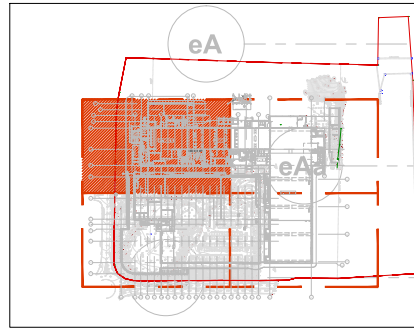
HCAA
HYDRAULIC CONSULTANTS ASSOCIATION
COMPLIANT MEMBER

DRAWING TITLE

CIVIL DESIGN
CONCEPT SITEWORKS &
STORMWATER MANAGEMENT PLAN
SHEET 2

DATE	DRAWN	DESIGNED	CHECKED	BB
FEB 2021	MG	DD		

PROJECT No 20214 **DRAWING No** DA4102 **REVISION** 6



KEY PLAN
SCALE: 15000@BT

NOTES
1 REFER TO DA4101 FOR LEGEND AND NOTES

HUNTINGWOOD DRIVE

BOUNDARY

New Silo 1

EX. MIXING / FORMING

STORAGE SHED

NEW STORAGE SHED DRAINAGE TO CONNECT TO EXISTING SITE DRAINAGE SYSTEM

EX. OVEN HALL

REFER DA4101 FOR CONTINUATION

FORMING AREA

OVEN HALL

REFER DA4101 FOR CONTINUATION

STATE SIGNIFICANT DEVELOPMENT APPLICATION

IMPORTANT
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REFERENCES
19.02.21 50% ISSUE
12.03.21 90% ISSUE
29.03.21 SSDA ISSUE
04.06.21 SSDA ISSUE
17.12.21 SSDA ISSUE
26.04.22 REVISED SSDA ISSUE

DATE	AMENDMENT	INIT	REV	DATE	AMENDMENT	INIT	REV
19.02.21	50% ISSUE	DD	1				
12.03.21	90% ISSUE	DD	2				
29.03.21	SSDA ISSUE	DD	3				
04.06.21	SSDA ISSUE	DD	4				
17.12.21	SSDA ISSUE	DD	5				
26.04.22	REVISED SSDA ISSUE	DD	6				

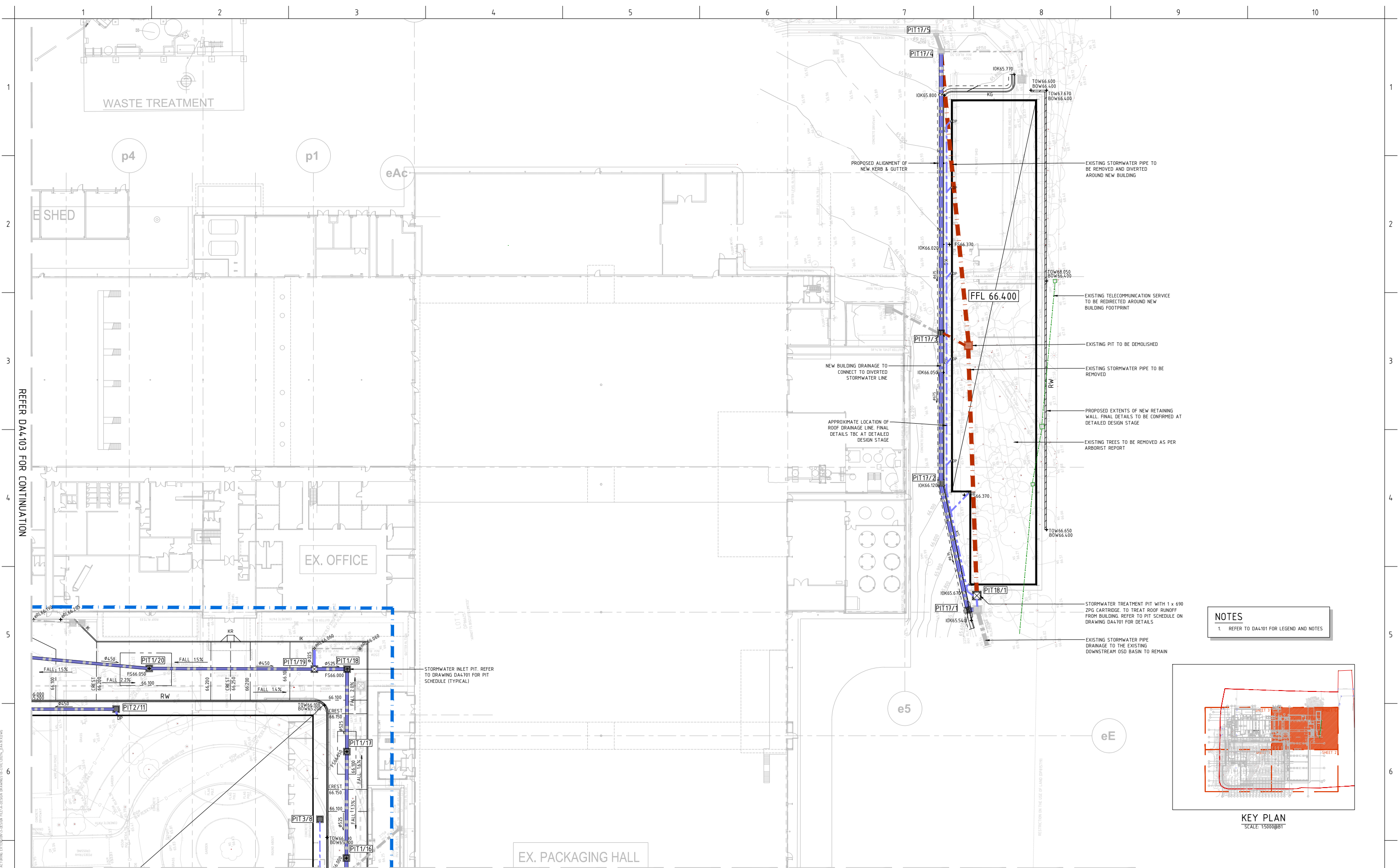
STRUCTURAL
MECHANICAL
ELECTRICAL
CIVIL
SPARKS AND PARTNERS CONSULTING ENGINEERS

CLIENT
BUILDER
FDC

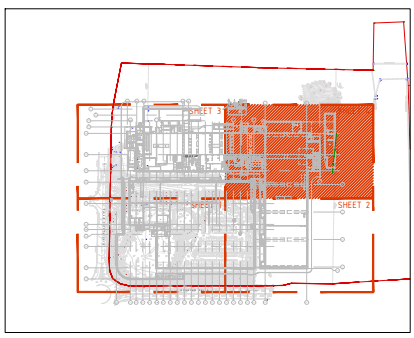
PROJECT
PROPOSED INDUSTRIAL WAREHOUSE
65 HUNTINGWOOD DRIVE, HUNTINGWOOD
CIVIL ENGINEERING PACKAGE
ARCHITECT
hla architects

SPARKS+PARTNERS
CONSULTING ENGINEERS
HYDRAULIC | CIVIL | FIRE
Level 1, 91 George Street | Parramatta | NSW 2150
P 02 9691 5033 | F 02 9691 3898 | E admin@sparksandpartners.com.au
https://sparksandpartners.com.au/

DRAWING TITLE
CIVIL DESIGN
CONCEPT SITEWORKS &
STORMWATER MANAGEMENT PLAN
SHEET 3
DATE
FEB 2021
SCALE
1:250
PROJECT NO
20214
DRAWING NO
DA4103
DESIGNED
MG
CHECKED
DD
REVISION
B1
6



NOTES
1. REFER TO DA4101 FOR LEGEND AND NOTES



KEY PLAN
SCALE: 1:500@B1

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REFERENCES

DATE	AMENDMENT
19.02.21	50% ISSUE
12.03.21	90% ISSUE
29.03.21	SSDA ISSUE
04.06.21	SSDA ISSUE
17.12.21	SSDA ISSUE
26.04.22	REVISED SSDA ISSUE

INIT	REV	DATE	AMENDMENT	INIT	REV
DD	1				
DD	2				
DD	3				
DD	4				
DD	5				
DD	6				

STRUCTURAL

MECHANICAL

ELECTRICAL

CIVIL

SPARKS AND PARTNERS CONSULTING ENGINEERS

CLIENT

BUILDER

FDC

PROJECT

PROPOSED INDUSTRIAL WAREHOUSE
65 HUNTINGWOOD DRIVE, HUNTINGWOOD
CIVIL ENGINEERING PACKAGE

ARCHITECT

hla architects

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FPA
FIRE PROTECTION ASSOCIATION
CORPORATE MEMBER

DNV-GL
DESIGN VERIFICATION
CORPORATE MEMBER

HCAA
HYDRAULIC CONSULTANTS ASSOCIATION
CORPORATE MEMBER

DRAWING TITLE

CIVIL DESIGN
CONCEPT SITEWORKS &
STORMWATER MANAGEMENT PLAN
SHEET 4

DATE	DRAWN	DESIGNED	CHECKED	BB
FEB 2021	MG	DD		

PROJECT No

20214

DRAWING No

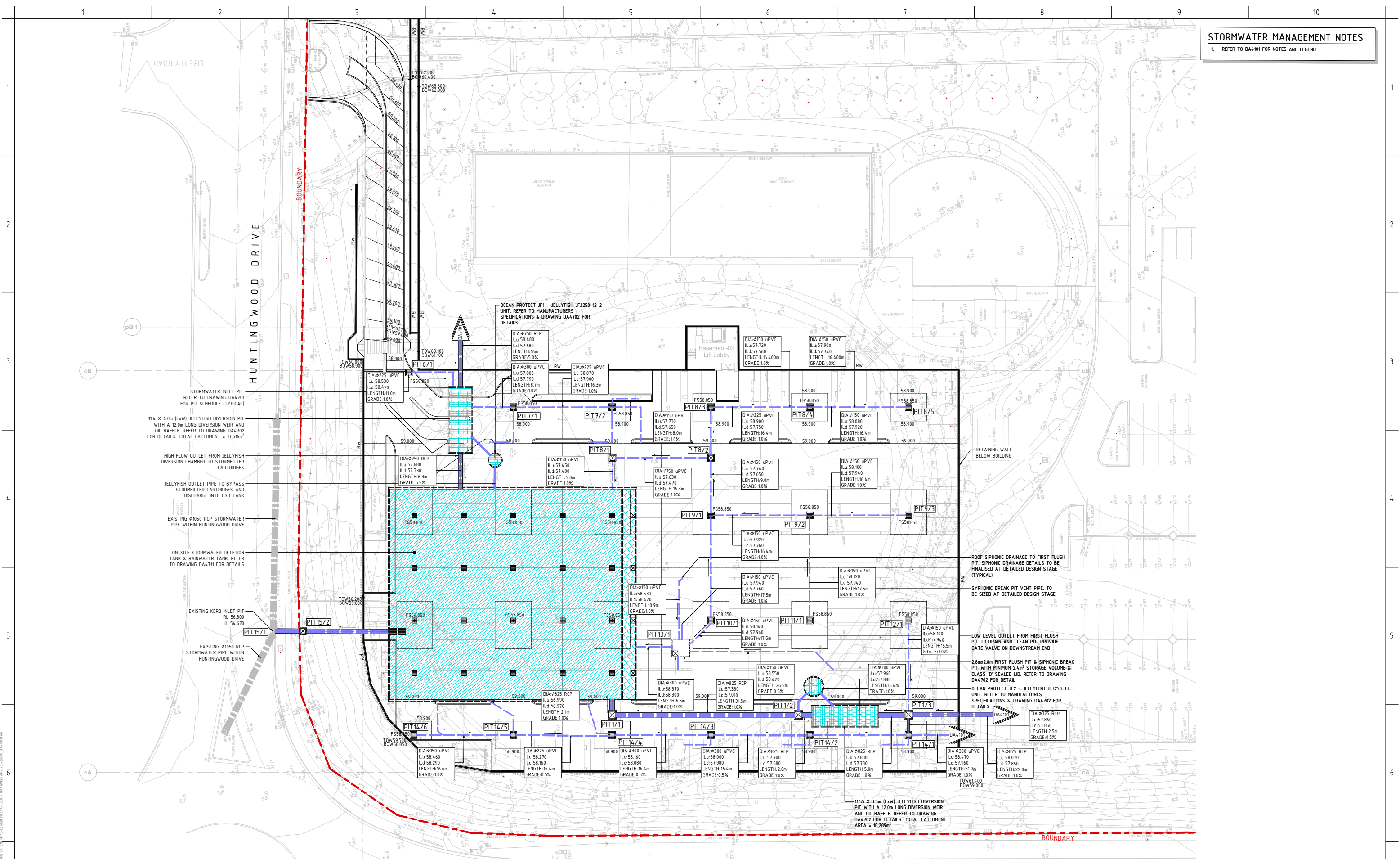
DA4104

REVISION

6

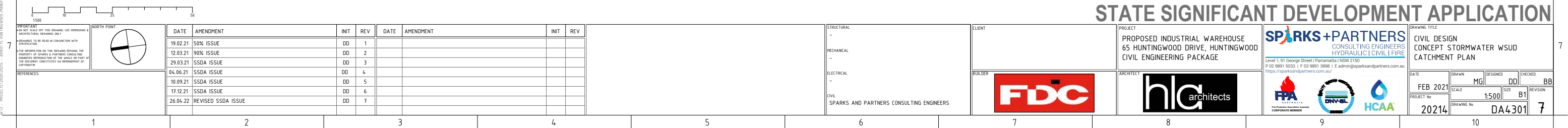
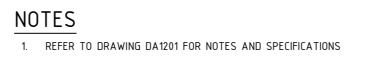
STORMWATER MANAGEMENT NOTES

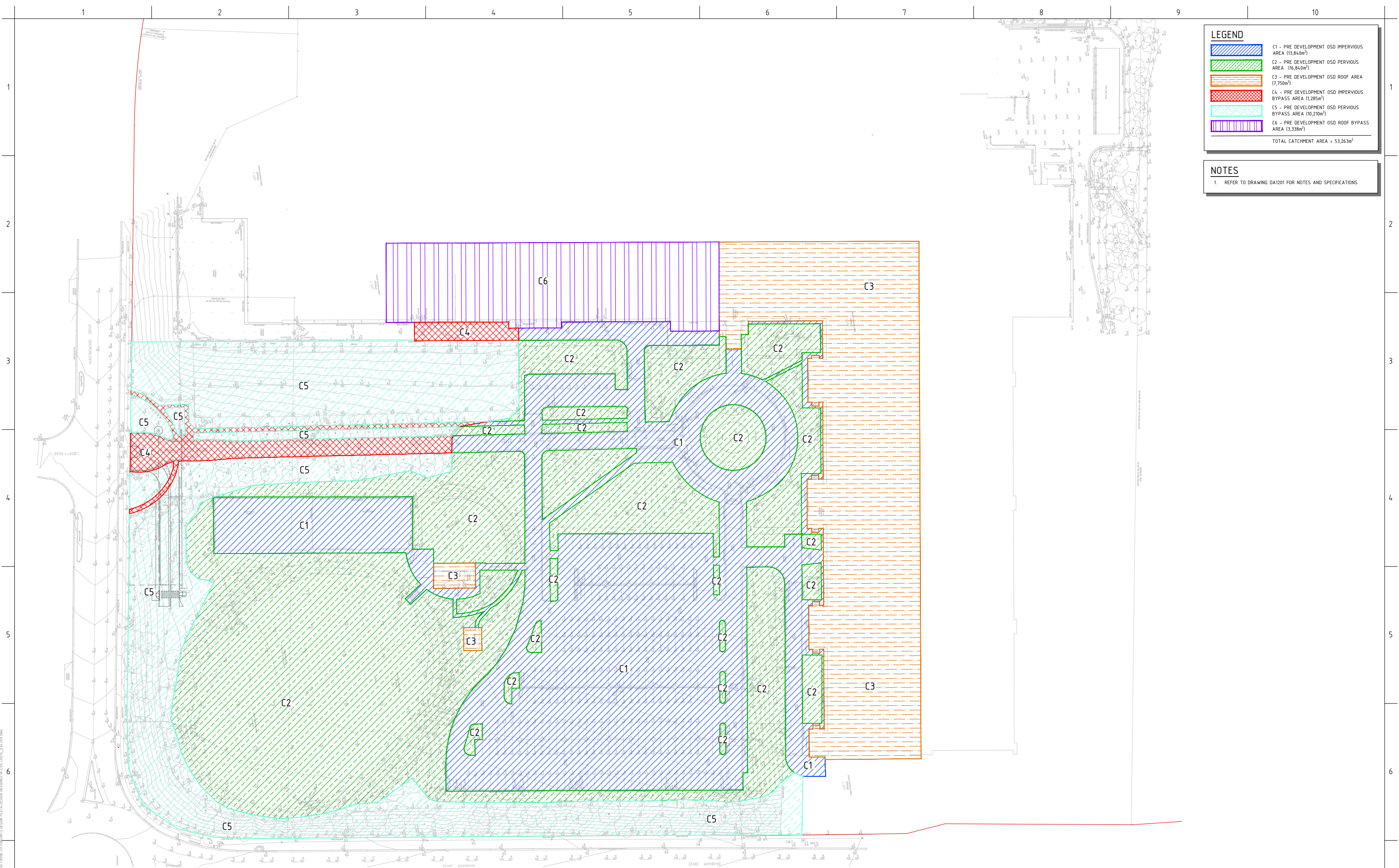
1. REFER TO DA4101 FOR NOTES AND LEGEND



STATE SIGNIFICANT DEVELOPMENT APPLICATION

REPORT DO NOT SCALE OFF THE DRAWING. USE DIMENSIONS & DIMENSIONS ONLY. (DRAWING IN) 7</





LEGEND	
	C1 - PRE DEVELOPMENT OSD IMPERVIOUS AREA (13,840m²)
	C2 - PRE DEVELOPMENT OSD PERVIOUS AREA (16,840m²)
	C3 - PRE DEVELOPMENT OSD ROOF AREA (7,750m²)
	C4 - PRE DEVELOPMENT OSD IMPERVIOUS BYPASS AREA (1,285m²)
	C5 - PRE DEVELOPMENT OSD PERVIOUS BYPASS AREA (10,210m²)
	C6 - PRE DEVELOPMENT OSD ROOF BYPASS AREA (3,338m²)
TOTAL CATCHMENT AREA = 53,263m²	

NOTES	
1. REFER TO DRAWING DA1201 FOR NOTES AND SPECIFICATIONS	

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REFERENCES:

DATE	AMENDMENT	INIT	REV	DATE	AMENDMENT	INIT	REV
17.12.21	SSDA ISSUE	DD	1				
26.04.22	REVISED SSDA ISSUE	DD	2				

STRUCTURAL	-
MECHANICAL	-
ELECTRICAL	-
CIVIL	SPARKS AND PARTNERS CONSULTING ENGINEERS

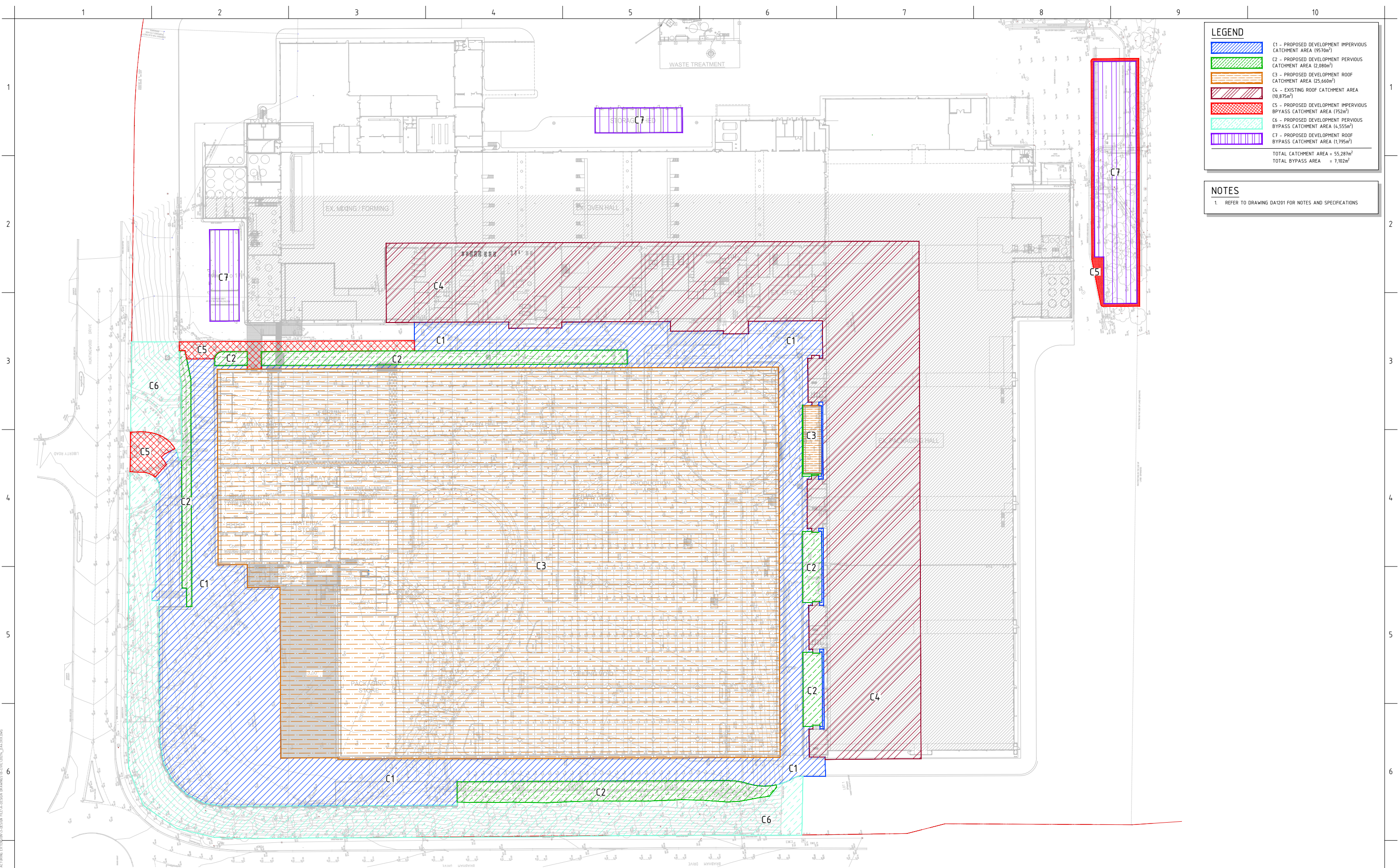
CLIENT	
BUILDER	

PROJECT	PROPOSED INDUSTRIAL WAREHOUSE 65 HUNTINGWOOD DRIVE, HUNTINGWOOD CIVIL ENGINEERING PACKAGE
ARCHITECT	

Level 1, 91 George Street Parramatta NSW 2150 P 02 9691 5033 F 02 9691 3998 E admin@sparksandpartners.com.au https://sparksandpartners.com.au/	

DRAWING TITLE	
CIVIL DESIGN CONCEPT EXISTING OSD CATCHMENT PLAN	
DATE	DRAWN
FEB 2021	MG
SCALE	DESIGNED
1:500	DD
SIZE	CHECKED
B1	BB
REVISION	
20214	
DRAWING No	DA4311
	2

STATE SIGNIFICANT DEVELOPMENT APPLICATION



LEGEND

C1 - PROPOSED DEVELOPMENT IMPERVIOUS CATCHMENT AREA (9570m²)

C2 - PROPOSED DEVELOPMENT PERVIOUS CATCHMENT AREA (2,080m²)

C3 - PROPOSED DEVELOPMENT ROOF CATCHMENT AREA (25,660m²)

C4 - EXISTING ROOF CATCHMENT AREA (10,875m²)

C5 - PROPOSED DEVELOPMENT IMPERVIOUS BYPASS CATCHMENT AREA (752m²)

C6 - PROPOSED DEVELOPMENT PERVIOUS BYPASS CATCHMENT AREA (4,555m²)

C7 - PROPOSED DEVELOPMENT ROOF BYPASS CATCHMENT AREA (1,795m²)

TOTAL CATCHMENT AREA = 55,287m²

TOTAL BYPASS AREA = 7,102m²

NOTES

1. REFER TO DRAWING DA1201 FOR NOTES AND SPECIFICATIONS

IMPORTANT

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DO NOT SCALE OFF THIS DRAWING. USE DIMENSIONS AS SHOWN.

DATE

17.12.21

SSDA ISSUE

INIT

DD

REV

1

DATE

26.04.22

REVISED SSDA ISSUE

INIT

DD

REV

2

STRUCTURAL

-

MECHANICAL

-

ELECTRICAL

-

CIVIL

SPARKS AND PARTNERS CONSULTING ENGINEERS

CLIENT

PROPOSED INDUSTRIAL WAREHOUSE
65 HUNTINGWOOD DRIVE, HUNTINGWOOD
CIVIL ENGINEERING PACKAGE

BUILDER

FDC

ARCHITECT

hla architects

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HCAA

DRAWING TITLE

CIVIL DESIGN
CONCEPT PROPOSED OSD
CATCHMENT PLAN

DATE

FEB 2021

SCALE

1:500

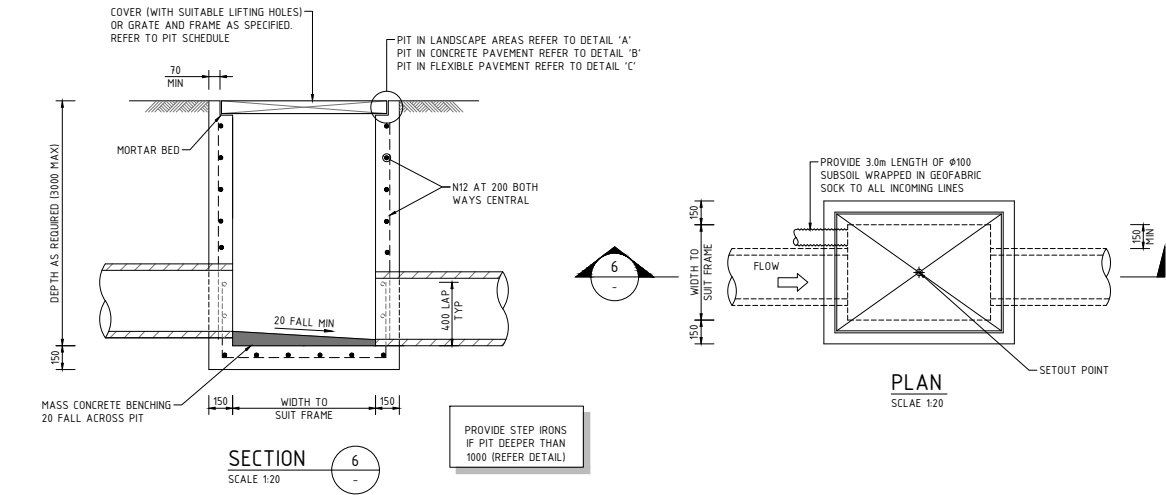
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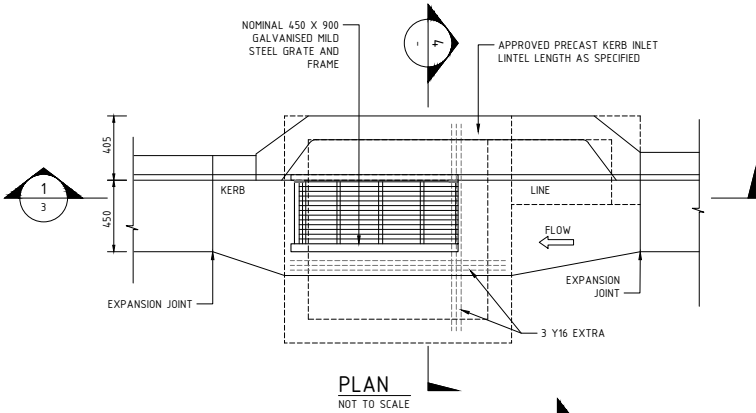
REVISION

2

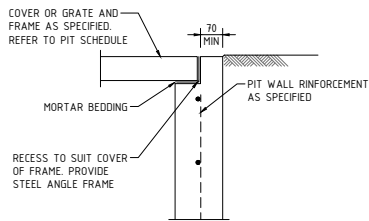
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PIT No.	PIT TYPE	CHAMBER SIZE	COVER TYPE	COVER RL	COMMENTS
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1/2	JUNCTION PIT	900x900	CLASS 'D' SEALED	58.930	
1/3	JUNCTION PIT	900x900	CLASS 'D' SEALED	58.930	
1/4	INLET PIT	900x900	CLASS 'D' GRATED	65.050	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
1/5	INLET PIT	900x900	CLASS 'D' GRATED	65.050	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
1/6	INLET PIT	900x900	CLASS 'D' GRATED	65.050	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
1/7	JUNCTION PIT	900x900	CLASS 'D' SEALED	65.900	
1/8	INLET PIT	900x900	CLASS 'D' GRATED	65.900	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
1/9	INLET PIT	900x900	CLASS 'D' GRATED	65.900	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
1/10	JUNCTION PIT	900x900	CLASS 'D' SEALED	65.950	
1/11	INLET PIT	900x900	CLASS 'D' GRATED	65.900	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
1/12	JUNCTION PIT	900x900	CLASS 'D' SEALED	66.030	
1/13	INLET PIT	900x900	CLASS 'D' GRATED	66.000	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
1/14	INLET PIT	900x900	CLASS 'D' GRATED	66.050	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
1/15	JUNCTION PIT	900x900	CLASS 'D' SEALED	66.050	
1/16	INLET PIT	900x900	CLASS 'D' GRATED	66.000	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
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1/18	INLET PIT	900x900	CLASS 'D' GRATED	66.000	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
1/19	JUNCTION PIT	900x900	CLASS 'D' SEALED	66.050	
1/20	INLET PIT	900x900	CLASS 'D' GRATED	66.050	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
1/21	INLET PIT	900x900	CLASS 'D' GRATED	65.950	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
1/22	INLET PIT	900x900	CLASS 'D' GRATED	66.050	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
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2/2	INLET PIT	900x900	CLASS 'D' GRATED	65.050	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
2/3	INLET PIT	900x900	CLASS 'D' GRATED	65.050	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
2/4	JUNCTION PIT	900x900	CLASS 'D' SEALED	66.060	
2/5	INLET PIT	900x900	CLASS 'B' GRATED	65.200	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
2/6	INLET PIT	900x900	CLASS 'B' GRATED	65.200	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
2/7	INLET PIT	900x900	CLASS 'B' GRATED	65.200	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
2/8	INLET PIT	900x900	CLASS 'B' GRATED	65.200	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
2/9	INLET PIT	900x900	CLASS 'B' GRATED	65.200	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
2/10	INLET PIT	900x900	CLASS 'B' GRATED	65.200	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
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3/2	INLET PIT	900x900	CLASS 'B' GRATED	65.100	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
3/3	INLET PIT	900x900	CLASS 'B' GRATED	65.100	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
3/4	INLET PIT	900x900	CLASS 'B' GRATED	65.100	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
3/5	INLET PIT	900x900	CLASS 'B' GRATED	65.100	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
3/6	INLET PIT	900x900	CLASS 'B' GRATED	65.100	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
3/7	INLET PIT	900x900	CLASS 'B' GRATED	65.100	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
3/8	INLET PIT	900x900	CLASS 'B' GRATED	65.100	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
4/1	INLET PIT	900x900	CLASS 'B' GRATED	65.100	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
5/1	INLET PIT	900x900	CLASS 'B' GRATED	60.400	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
6/1	INLET PIT	900x900	CLASS 'D' GRATED	58.850	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
7/1	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
7/2	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
8/1	JUNCTION PIT	900x900	CLASS 'D' SEALED	58.970	
8/2	JUNCTION PIT	900x900	CLASS 'D' SEALED	58.970	
8/3	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
8/4	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
8/5	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
9/1	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
9/2	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
9/3	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
10/1	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
11/1	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
12/1	INLET PIT	900x900	CLASS 'D' GRATED	58.850	FIRST FLUSH PIT/SIPHONIC BREAK PIT
13/1	JUNCTION PIT	2400x2400	CLASS 'D' SEALED	58.950	
14/1	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
14/2	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
14/3	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
14/4	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
14/5	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
14/6	INLET PIT	900x900	CLASS 'D' GRATED	58.850	
15/1	KERB INLET PIT	900x900	CLASS 'D' GRATED	56.300	EXISTING KERB INLET PIT WITHIN HUNTINGWOOD DRIVE
15/2	JUNCTION PIT	900x900	CLASS 'B' SEALED	56.600	
16/1	INLET PIT	900x900	CLASS 'D' GRATED	65.990	EXISTING INLET PIT
16/2	INLET PIT	900x900	CLASS 'D' GRATED	65.800	EXISTING INLET PIT
16/3	INLET PIT	900x900	CLASS 'D' GRATED	65.890	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
16/4	INLET PIT	900x900	CLASS 'D' GRATED	66.090	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
16/5	INLET PIT	900x900	CLASS 'D' GRATED	66.050	FITTED WITH AN OCEAN PROTECT 'OCEANGUARD' PIT INSERT
17/1	KERB INLET PIT	900x900	CLASS 'D' GRATED	65.600	PROVIDE 24m LINTEL
17/2	INLET PIT	900x900	CLASS 'D' GRATED	66.120	
17/3	INLET PIT	900x900	CLASS 'D' GRATED	66.050	
17/4	INLET PIT	900x900	CLASS 'D' GRATED	65.720	
17/5	KERB INLET PIT	900x900	CLASS 'D' GRATED	65.650	EXISTING KERB INLET PIT
18/1	JUNCTION PIT	1200x1200	CLASS 'B' SEALED	65.500	STORMWATER TREATMENT PIT WITH 1 x 690 ZPG CARTRIDGE



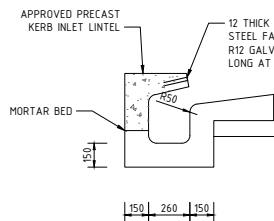
SURFACE INLET / JUNCTION PIT
(PIPE SIZES $\leq \phi 450$)



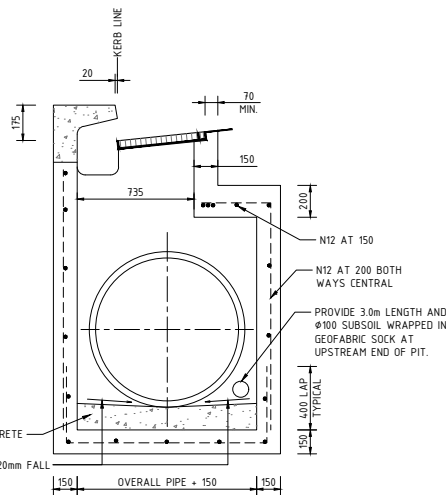
KERB INLET PIT TYPE "B" (PIPE SIZE $> \phi 450$)
NOT TO SCALE



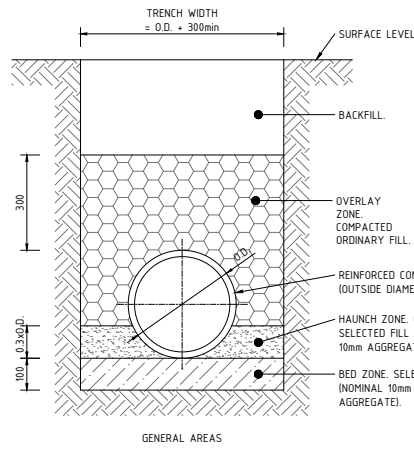
DETAIL 'A'
SCALE 1:10



SECTION
NOT TO SCALE

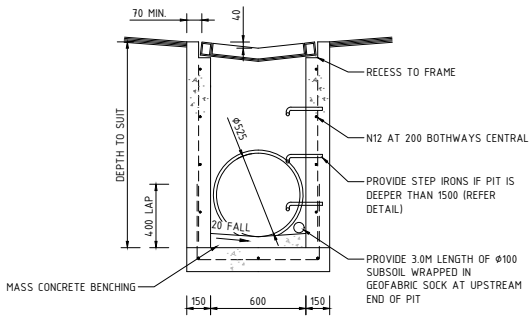


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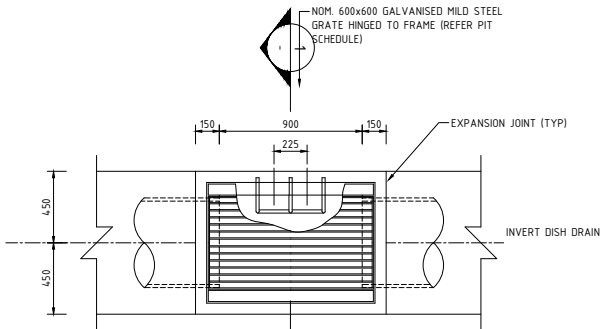


TYPICAL PIPE TRENCH
SCALE 1:10

- TRENCH WIDTH MAY NEED TO BE INCREASED SUBJECT TO ACHIEVING ADEQUATE COMPACTION
 - MINIMUM PIPE COVER NOT UNDER ROADS = 300mm UNDO
 - THE CONTRACTOR SHALL ENSURE THAT THE SHORING OF TRENCHES IS INSTALLED AS REQUIRED BY STATUTORY REQUIREMENTS
 - ENSURE BACKFILLING COMPACTION MEETS THE FOLLOWING STANDARDS
- A) TRENCHES UNDER PAVED AREAS & BUILDINGS - 100% SMDD
TRENCHES NOT UNDER PAVEMENTS - 90% SMDD

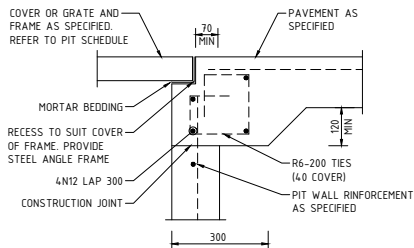


SECTION
SCALE 1:20

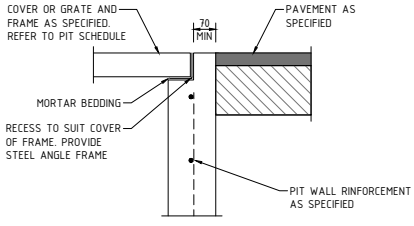


PLAN
SCALE 1:20

DISH DRAIN PIT
SCALE 1:20



DETAIL 'B'
SCALE 1:10



DETAIL 'C'
SCALE 1:10

STATE SIGNIFICANT DEVELOPMENT APPLICATION

DATE	AMENDMENT	INIT	REV	DATE	AMENDMENT	INIT	REV
19.02.21	50% ISSUE	DD	1				
12.03.21	90% ISSUE	DD	2				
29.03.21	SSDA ISSUE	DD	3				
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17.12.21	SSDA ISSUE	DD	5				
26.04.22	REVISED SSDA ISSUE	DD	6				

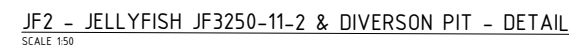
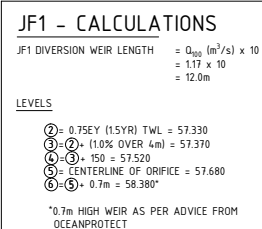
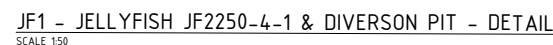
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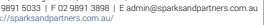
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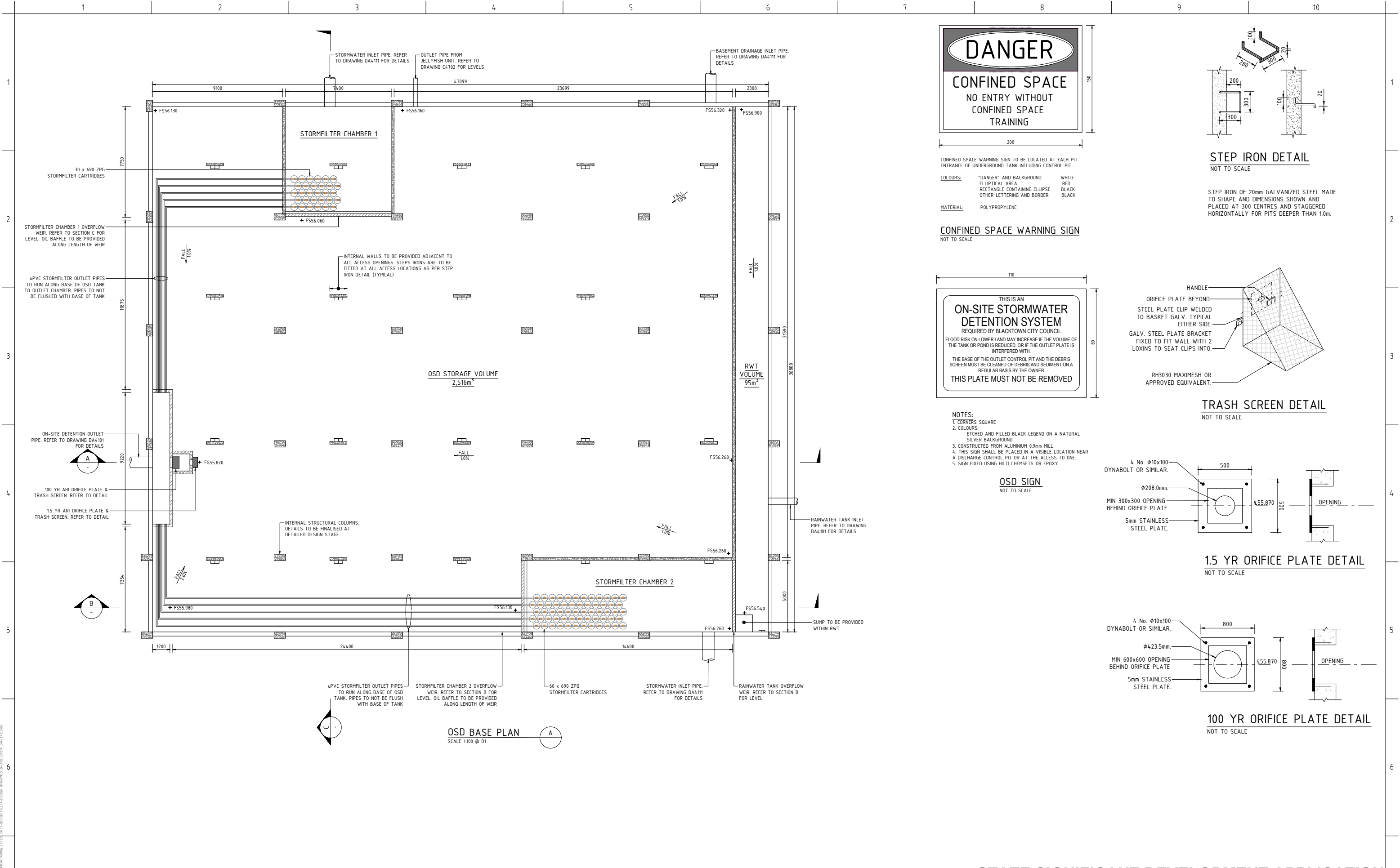
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MECHANICAL -	BUILDER FDC	PROJECT PROPOSED INDUSTRIAL WAREHOUSE 65 HUNTINGWOOD DRIVE, HUNTINGWOOD CIVIL ENGINEERING PACKAGE	ARCHITECT hla architects	DATE FEB 2021	SCALE AS SHOWN	DESIGNED MG	CHECKED DD	REVISION B1	BB
ELECTRICAL -	BUILDER FDC	PROJECT PROPOSED INDUSTRIAL WAREHOUSE 65 HUNTINGWOOD DRIVE, HUNTINGWOOD CIVIL ENGINEERING PACKAGE	ARCHITECT hla architects	DATE FEB 2021	SCALE AS SHOWN	DESIGNED MG	CHECKED DD	REVISION B1	BB
CIVIL SPARKS AND PARTNERS CONSULTING ENGINEERS	BUILDER FDC	PROJECT PROPOSED INDUSTRIAL WAREHOUSE 65 HUNTINGWOOD DRIVE, HUNTINGWOOD CIVIL ENGINEERING PACKAGE	ARCHITECT hla architects	DATE FEB 2021	SCALE AS SHOWN	DESIGNED MG	CHECKED DD	REVISION B1	BB

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STRUCTURAL MECHANICAL ELECTRICAL CIVIL SPARKS AND PARTNERS CONSULTING ENGINEERS	CLIENT BUILDER 	PROJECT PROPOSED INDUSTRIAL WAREHOUSE 65 HUNTINGWOOD DRIVE, HUNTINGWOOD CIVIL ENGINEERING PACKAGE ARCHITECT 	 Level 1, 91 George Street Parramatta NSW 2150 P 02 9991 5003 F 02 9991 3988 E admin@sparksandpartners.com.au http://sparksandpartners.com.au   	DRAWING TITLE CIVIL DESIGN CONCEPT STORMWATER DRAINAGE DETAILS SHEET 2 <table border="1"> <tr> <td>DATE</td> <td>DRAWN</td> <td>DESIGNED</td> <td>CHECKED</td> <td>BB</td> </tr> <tr> <td>FEB 2021</td> <td>MG</td> <td>DD</td> <td></td> <td></td> </tr> <tr> <td>PROJECT No</td> <td>SCALE</td> <td>AS SHOWN</td> <td>SIZE B1</td> <td></td> </tr> <tr> <td>20214</td> <td>DRAWING No</td> <td>DA 302</td> <td></td> <td>2</td> </tr> </table>	DATE	DRAWN	DESIGNED	CHECKED	BB	FEB 2021	MG	DD			PROJECT No	SCALE	AS SHOWN	SIZE B1		20214	DRAWING No	DA 302		2
DATE	DRAWN	DESIGNED	CHECKED	BB																				
FEB 2021	MG	DD																						
PROJECT No	SCALE	AS SHOWN	SIZE B1																					
20214	DRAWING No	DA 302		2																				

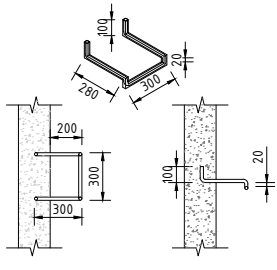


CONFINED SPACE WARNING SIGN TO BE LOCATED AT EACH PIT ENTRANCE OF UNDERGROUND TANK INCLUDING CONTROL PIT.

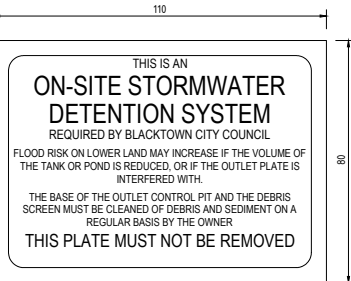
COLOURS: "DANGER" AND BACKGROUND WHITE
ELLIPTICAL AREA RED
RECTANGLE CONTAINING ELLIPSE BLACK
OTHER LETTERING AND BORDER BLACK

MATERIAL: POLYPROPYLENE

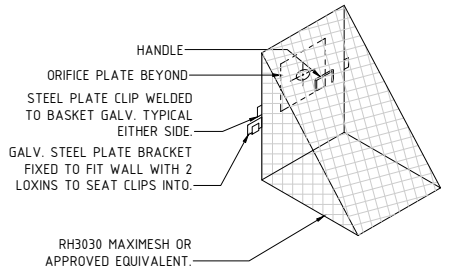
CONFINED SPACE WARNING SIGN
NOT TO SCALE



STEP IRON OF 20mm GALVANIZED STEEL MADE TO SHAPE AND DIMENSIONS SHOWN AND PLACED AT 300 CENTRES AND STAGGERED HORIZONTALLY FOR PITS DEEPER THAN 1.0m.

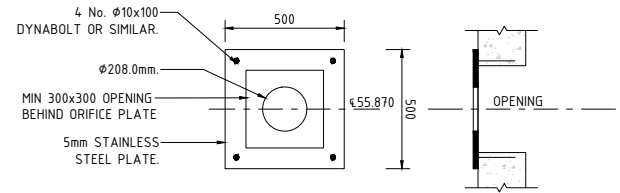


NOTES:
1. CORNERS: SQUARE
2. COLOURS: ETCHED AND FILLED BLACK LEGEND ON A NATURAL SILVER BACKGROUND
3. CONSTRUCTED FROM ALUMINIUM 0.9mm MILL
4. THIS SIGN SHALL BE PLACED IN A VISIBLE LOCATION NEAR A DISCHARGE CONTROL PIT OR AT THE ACCESS TO ONE.
5. SIGN FIXED USING HILTI CHEMSETS OR EPOXY

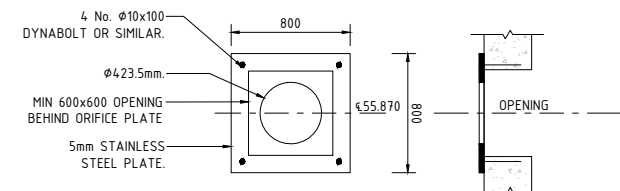


TRASH SCREEN DETAIL
NOT TO SCALE

OSD SIGN
NOT TO SCALE



1.5 YR ORIFICE PLATE DETAIL
NOT TO SCALE



100 YR ORIFICE PLATE DETAIL
NOT TO SCALE

AS SHOWN

7

DO NOT SCALE OFF THIS DRAWING. USE DIMENSIONS & DIMENSION LINES.

DO NOT SCALE OFF THIS DRAWING. USE DIMENSIONS & DIMENSION LINES.

DO NOT SCALE OFF THIS DRAWING. USE DIMENSIONS & DIMENSION LINES.

DATE

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19.02.21

50% ISSUE

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17.12.21

SSDA ISSUE

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26.04.22

REVISED SSDA ISSUE

DD

7

STRUCTURAL

-

MECHANICAL

-

ELECTRICAL

-

CIVIL

SPARKS AND PARTNERS CONSULTING ENGINEERS

CLIENT

65 HUNTINGWOOD DRIVE, HUNTINGWOOD

PROPOSED INDUSTRIAL WAREHOUSE

65 HUNTINGWOOD DRIVE, HUNTINGWOOD

CIVIL ENGINEERING PACKAGE

ARCHITECT

hla architects

Level 1, 91 George Street | Parramatta | NSW 2150

P 02 9691 5033 | F 02 9691 3898 | E admin@sparksandpartners.com.au

https://sparksandpartners.com.au/

DATE

2021

SCALE

MG

DESIGNED

DD

CHECKED

BB

PROJECT NO

20214

DRAWING NO

DA4711

REVISION

7

SPARKS + PARTNERS

CONSULTING ENGINEERS

HYDRAULIC | CIVIL | FIRE

Level 1, 91 George Street | Parramatta | NSW 2150

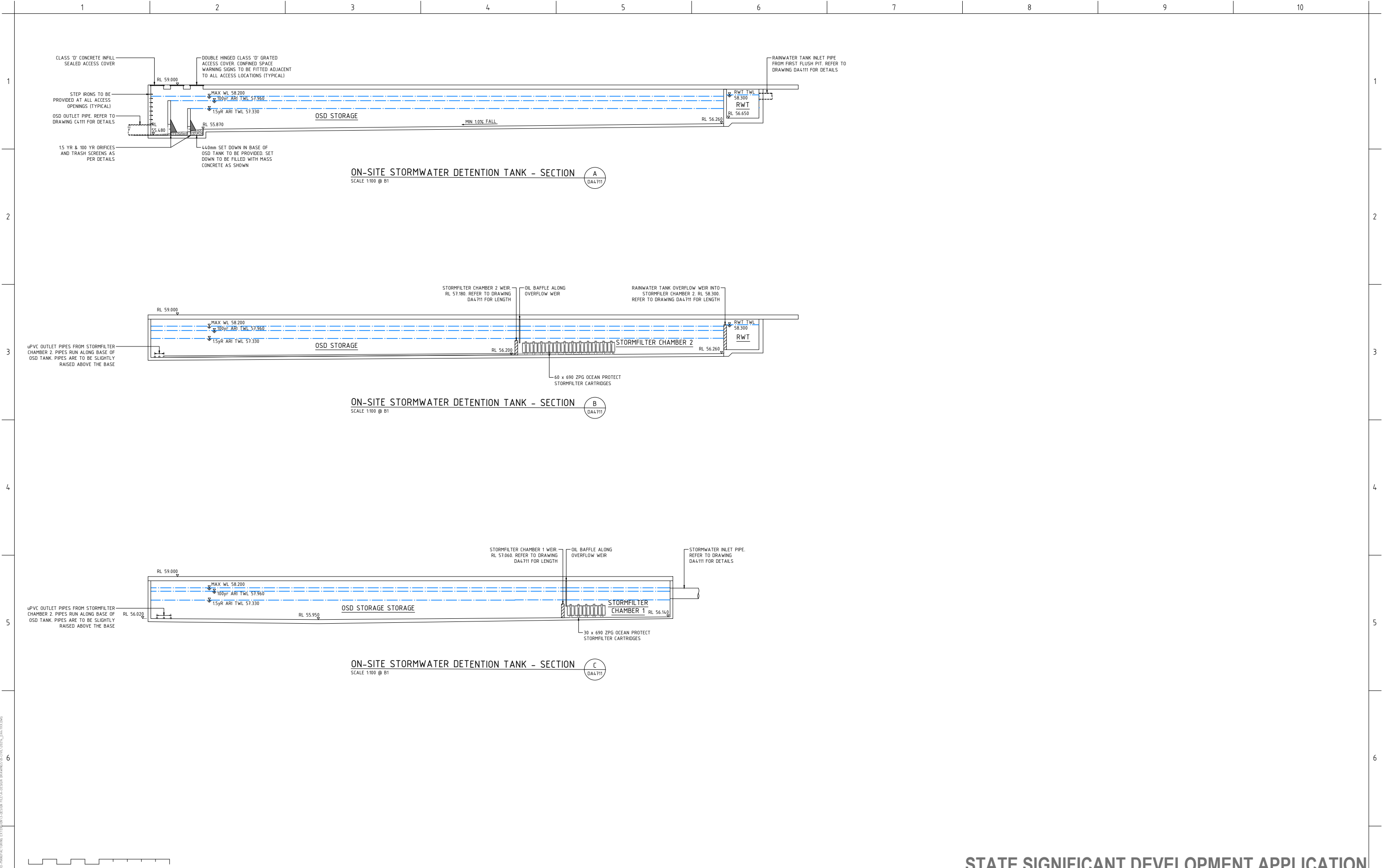
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FPA

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HCAA



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STRUCTURAL

MECHANICAL

ELECTRICAL

CIVIL

SPARKS AND PARTNERS CONSULTING ENGINEERS

CLIENT

BUILDER

ARCHITECT

PROJECT

PROPOSED INDUSTRIAL WAREHOUSE
65 HUNTINGWOOD DRIVE, HUNTINGWOOD
CIVIL ENGINEERING PACKAGE

SPARKS+PARTNERS
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https://sparksandpartners.com.au/

FPA
FIRE PROTECTION ASSOCIATION
CORPORATE MEMBER

DNV-GL
DESIGN VERIFICATION
CORPORATE MEMBER

HCAA
HYDRAULIC CONSULTANTS ASSOCIATION
CORPORATE MEMBER

DRAWING TITLE

CIVIL DESIGN
CONCEPT STORMWATER DRAINAGE
OSD TANK DETAILS SHEET 2

DATE

DRAWN

DESIGNED

CHECKED

FEB 2021

MG

DD

BB

PROJECT No

SCALE

AS SHOWN

SIZE

REVISION

20214

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W:\2 - PROJECTS\2020\2021 - ASSET\1618 HUNTINGWOOD WAREHOUSE EXISTING CIVIL DESIGN DRAWINGS\DA4.712 OSD TANK DETAILS

APPENDIX B. BCC OSD CALCULATION SUMMARY

Blacktown City Council

Project Details:

Project Title	Arnotts, Huntingwood
Address	65 Huntingwood Drive, Huntingwood
Reference Number	20214

General Site Data:

Site Area (m ²)	55287 m ²
Area Draining to OSD (m ²)	48185 m ²

On-Site Detention Data:

OSD Location	Below Ground
OSD Discharge Location	Council Drainage Pit
RL of Bottom of OSD Storage Area	56.110
RL of Top of OSD Storage Area	58.200
Length of Emergency Overflow Weir (m)	11.50 m

Filter Cartridges:

Will filter cartridges be used to manage water quality?	Yes
Design flow from Filter Cartridges (L/s)	67.20 L/s
Filter Cartridges flow with 100 Year ARI Head (L/s)	103.10 L/s

Discharge Data:

RL of 1.5 Year ARI Orifice Centreline	55.870
Number of Orifices	1
RL of 100 Year ARI Orifice Centreline	55.870
Number of Orifices	1
RL of Invert of Discharge to Council Drainage Pit	54.780
RL of obvert of Pit outlet pipe	55.720

Below Ground OSD Summary with calculated values

Site:	
Site Area	55287 m ²

Site Area NOT Draining to OSD	7102 m ²
<u>Reduced Levels (AHD):</u>	
RL of Top of Tank	58.2
RL of Bottom of OSD Tank	56.11
RL of 1.5 Year ARI Overflow Weir	57.33
RL of Emergency Overflow Weir	57.96
RL of 1.5 Year ARI Orifice Centerline	55.87
RL of 100 Year ARI Orifice Centreline	55.87
RL of Invert of Discharge to Council Drainage Pit	54.78
RL of obvert of Pit outlet pipe	55.72
Minium RL of Garage Floor	58.29
Minium RL of House Floor	58.39
<u>OSD Volume:</u>	
Required Storage BELOW 1.5 Year ARI Overflow Weir	1658.6 m ³
Required Storage BELOW Emergency Overflow Weir	2515.6 m ³
<u>Discharge Details:</u>	
Using Filter Cartridges to Manage Water Quality	Yes
Discharge Location	Council Drainage Pit
Length of Emergency Overflow Weir	11.50 m
Maximum 1.5 Year ARI Site Discharge	178.54 L/s
1.5 Year ARI Orifice Discharge	111.34 L/s
Maximum 100 Year ARI Site Discharge	652.74 L/s
100 Year ARI Orifice Discharge	549.64 L/s
Filter Cartridges design flow	67.20 L/s
Filter Cartridges Discharge with Additional Head	103.10 L/s
<u>Orifice Details:</u>	
Number of 1.5 Year ARI Orifices	1
Number of 100 Year ARI Orifices	1
1.5 Year ARI Orifice Size (mm)	208.5 mm
100 Year ARI Orifice Size (mm)	423.5 mm
<u>Notifications:</u>	
Access grates to be provided such that the maximum reach from any point in the tank to the nearest grate is 3.0m.	

APPENDIX C. MAINTENANCE & MONITORING SCHEDULE

Job No.: 20214

Date: 13 September 2021

Author Name: Daniel Drewitt

Signature:

PROJECT ADDRESS: 65 HUNTINGWOOD DRIVE, HUNTINGWOOD

General Notes:

1. Maintenance is to be carried out with regard to relevant occupational health and safety guidelines and standards. This includes all confined space, traffic management, fall arrest and other requirements.
2. Initial monitoring and inspections of the stormwater system post commissioning are to be carried out every 3 months for the first year of operation. The amount and type of debris is to be noted and recorded. This information shall be used to determine if modification of the frequency of inspections is required.
3. The frequency of inspections shown in the stormwater maintenance schedule are the maximum periods. Inspection frequencies may be reduced upon completion of the initial monitoring and inspection program as noted in note 2.
4. Blank copies of the maintenance schedule are to be made and filled out during each subsequent inspection with the details kept on site for future reference.

Inspected by:

Date of Inspection:

Date of Next Inspection:

Item to be Inspected	Frequency	Performed by	Inspected	Maintenance Required	Maintenance Procedure	Maintenance Completed
			Yes/No	Yes/No		Date
General						
Eaves/Box Guttering System and Downpipes	Six Monthly/ After Major Storm	Owner / Maintenance Contractor			Inspect and remove any build up of sediment, debris, litter and vegetation within gutter system.	
Stormwater surface inlet and junction pits	Four Monthly/ After Major Storm	Owner / Maintenance Contractor			Remove grate and inspect internal walls and base, repair where required. Remove any collected sediment, debris, litter and vegetation. (e.g. Vacuum/eductor truck) Inspect and ensure grate is clear of sediment, debris, litter and vegetation. Ensure flush placement of grate on refitment	
General inspection of complete stormwater drainage system (that's visible)	Bi-annually	Owner / Maintenance Contractor			Inspect all drainage structures noting any dilapidation, carry out required repairs.	

Rainwater Tank						
First Flush Pit	6 Monthly	Owner / Maintenance Contractor			Inspect first flush pit to ensure correct operation. Flush pit dry and remove accumulated litter & debris. If pit is not functioning properly repair or replace.	
Internal Inspection	6 Monthly	Owner / Maintenance Contractor			Check for evidence of access by animals, birds or insects including the presence of mosquito larvae. If present, identify access point and close. If evidence of algal growth, find and close points of light entry.	
Tank and tank roof	6 Monthly	Owner / Maintenance Contractor			Check structural integrity of tank including roof and access covers. Any dilapidation including holes or gaps are to be noted and repaired.	
Treatment Devices						
Ocean Protect 'Jellyfish'	Refer Manufacturer's Manual	Maintenance / Specialised Contractor			Refer to manufacturer's operation and maintenance manual.	
Ocean Protect 'StormFilter' Cartridges	Refer Manufacturer's Manual	Maintenance / Specialised Contractor			Refer to manufacturer's operation and maintenance manual.	
Ocean Protect 'OceanGuard'	Refer Manufacturer's Manual	Maintenance / Specialised Contractor			Refer to manufacturer's operation and maintenance manual.	
On-Site Detention Tank						
Trash Screen	Six Monthly/ After Major Storm	Owner / Maintenance Contractor			Inspect trash screen to ensure correct operation. Remove accumulated litter & debris. If device is not functioning properly repair or replace.	
Orifice Plate	Six Monthly/ After Major Storm	Owner / Maintenance Contractor			Inspect orifice plate to ensure correct operation. Check orifice diameter size is correct and no damage is present to orifice edge. Check orifice plate is securely fastened to wall with no gaps present between plate and face of wall. If gaps are present fill with sealant or mortar to provide water tight seal.	
Weep Holes in base of sump	Six Monthly/ After Major Storm	Owner / Maintenance Contractor			Inspect weep holes in base of sump. Ensure weep holes are able to drain effectively and remove accumulated sediment and debris if present.	
Tank and tank roof	6 Monthly	Owner / Maintenance Contractor			Check structural integrity of tank including roof and access covers. Any dilapidation including holes or gaps are to be noted and repaired.	