Hunter River High School

Stormwater Management Report

Prepared for:	**NSW Department of Education**
Date:	**08th April 2024**
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Revision

Site Address:	36 Elkin Avenue, Heatherbrae, NSW 2324
Real Property Description:	Lot 1, DP120189 Lot 1, DP579025 Lot 1, DP540114
Proposed Development:	Educational Facility
Client:	NSW Department of Education
Local Authority	Port Stephens Council
Authority Reference #:	N/A
Stantec Reference:	301350957-SWMP_005

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Revision	Date	Comment	Prepared By	Approved By
001	26.07.22	Draft Schematic Design	JMB	RET
002	08.08.22	Final Schematic Design	JMB	RET
003	13.04.23	Revised Schematic Design	JMB	RET
004	20.04.23	Revised Schematic Design	JMB	RET
005	18.07.23	Issue for DA	JMB	JMB
006	08.04.24	Issue for REF Approval	HAL	JMB

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1. Introduction

Stantec have been commissioned by NSW Department of Education to prepare this Stormwater Management Plan (SWMP) in support of the approval for the proposed additions to the existing High School development at 36 Elkin Avenue, Heatherbrae NSW 2324.

This report has been prepared to support:

a) A development application for the construction of a Construction of gymnasium (Block Y), consisting of a basketball court, equipment storage, canteen kitchen, staff room, first aid room and change room amenities, construction of hardstand civic space north of the gymnasium, construction of full-size rugby field, the construction of new carpark consisting of sixty-six (66) parking spaces (including 6 accessible parking spaces) and the construction and connection of a reticulated sewer pipe.

b) A Part 5 Activity Approval, development permitted without consent, for the construction of a new administration building, student learning hub and provision of essential services.

c) A Part 5 Activity Approval, development permitted without consent, for the construction of a new linking road and kiss and drop bay between Adelaide Street and Elkin Avenue.

This SWMP outlines the conceptual level stormwater design for the proposed development of an upgraded secondary school.

This SWMP illustrates that the proposed development complies with the conditions set out by Port Stephens Council, Australian Rainfall and Runoff, Australian Standards and best engineering practices.

The purpose of this SWMP is to evaluate the quantity and quality of stormwater associated with the proposed development plan so as to demonstrate to Council that an appropriate stormwater management strategy has been adopted.

This SWMP specifically addresses the following items for both the construction and operational phases of the development:

- Stormwater runoff volumes;
- Stormwater quality treatment measures;
- Water Sensitive Urban Design (WSUD) measures
- Erosion Sedimentation Control
- Stormwater Network Maintenance during Operation

The following will be achieved with the correct application of this SWMP report:

- Appropriate standards to be maintained on all aspects of stormwater within the site,
- Pollution control to be maintained,
- Establishment of a unified, clear, and concise stormwater management strategy.

2. Abbreviations Definitions

- **AEP** Annual Exceedance Probability
- **AHD** Australian Height Datum
- **ARI** Average Recurrence Interval
- **ARR** Australian Rainfall and Runoff
- **DA** Development Application
- **DCP** Development Control Plan
- **DN** Diameter Nominal (mm)
- **EY** Exceedances per Year
- **GPT** Gross Pollutant Trap
- **IFD** Intensity-Frequency-Duration
- **IL** Invert Level
- **L/s** Litres per second
- **m/s** Metres per second
- **MUSIC** Model for Urban Stormwater Improvement Conceptualisation
- **OSD** On-site Stormwater Detention
- **PSD** Permissible Site Discharge
- **RCP** Reinforced Concrete Pipe
- **RL** Relative Level
- **SID** Safety In Design
- **SQID's** Stormwater Quality Improvement Devices
- **SSR** Site Storage Requirement
- **WQO's** Water Quality Objectives
- **WSC** Water Services Coordinator
- **WSUD** Water Sensitive Urban Design

3. Relevant Policies, Standards and Guidelines

The following listed policies, standards and guidelines were referred to in the preparation of this report:

- Port Stephens Council DCP (Section B General Provisions) 2022
- Port Stephens 0074 Stormwater Drainage Design (Development Design Specification) 2022
- Port Stephens 0043 Subsurface Drainage Design (Development Design Specification) 2022
- Australian Rainfall & Runoff 2016;
- AS3500 parts 0-5: 2013 Plumbing and Drainage
- Landcom Managing Urban Stormwater: Soils and Construction Volume 1 2004
- NSW Floodplain Development Manual 2005
- Guidelines for development adjoining land and water managed by DECCW (OEH, 2013)
- Educational Facilities Standards & Guidelines (EFSG), NSW Department of Education

4. Existing Site Characteristics

4.1 Property Detail

The proposed development forms part of the site with the following property details:

Site Address:	36 Elkin Avenue, Heatherbrae, NSW 2324
Real Property Description:	Lot 1, DP120189 Lot 1, DP579025 Lot 1, DP540114
Development Area:	Approximately 92,350 m^2 (9.235 Ha)

The proposed development can be seen on the Civil Design Documentation shown in Appendix A of this report.

The proposed development consists of refurbishment of existing buildings as well as additional school buildings, carparking changes to the bus drop-off/ pick-up facilities, as well as external general open play and sporting fields/ facilities.

The overall site is bounded by:

- Residential Neighbouring Properties to the North and South
- The Pacific Highway to the East
- Agricultural lots/ Floodplain to the West

Refer to locality plan in Figure 1 for further clarification.

Figure 4.1.1: Site Location Plan (Source: Nearmaps 2022)

4.2 Topography

The local topography around the site is extremely flat, as indicated in Figure 2 below. The high point of the site is located along the South-East boundary at a level of RL 7.5 m AHD and the low point located along the North-Western boundary at a level of RL 2 m AHD, this is an average slope of approximately 1%.

Figure 4.2.1: Site Topography (Mecone Mosaic 2022)

4.3 Stormwater Catchments

The surrounding area has been investigated to determine the likely impact of existing external stormwater catchments on the proposed site.

The site is currently surrounded by developments and roadway, so it is believed that no external catchments other than the flooding discussed in following sections impact the development site.

4.4 Existing Stormwater Infrastructure

Stormwater runoff generated from hardstand area is currently either collected and conveyed via pit and pipe network or runs overland on to pervious landscape surfaces. While there are multiple piped systems across the site, for the most part captured stormwater is ultimately conveyed and discharged to the western portion of the site within the school's agricultural area. No connection to external trunk drainage stormwater lines existing within the site and runoff is managed via absorption and runoff to the north west of site.

4.5 Existing Stormwater Discharge

Northrop's site observations (2020), determine that ultimately, stormwater collected within the formal pit and pipe drainage network discharges to the west of the main school buildings within the lower elevation school agricultural area. Stormwater is discharged via infiltration, with no connection to Council stormwater infrastructure identified.

Refer to Figure 3 for further information.

Figure 3: Stormwater Discharge

4.6 Approvals Staging

The proposed stormwater infrastructure for this proposed development has been approved in various stages, with the majority of the site's network approved under a Development Application (Ref: 16-2023-259-1). Parts of the stormwater network connecting into the stormwater network approved under the Development Application is approved under two REFs. For the purpose of understanding design performance of the completed network, this report and design documentation assumes all items have been approved. However, the stormwater network relevant to this Development Application have been identified within Figure 4 below (area in red).

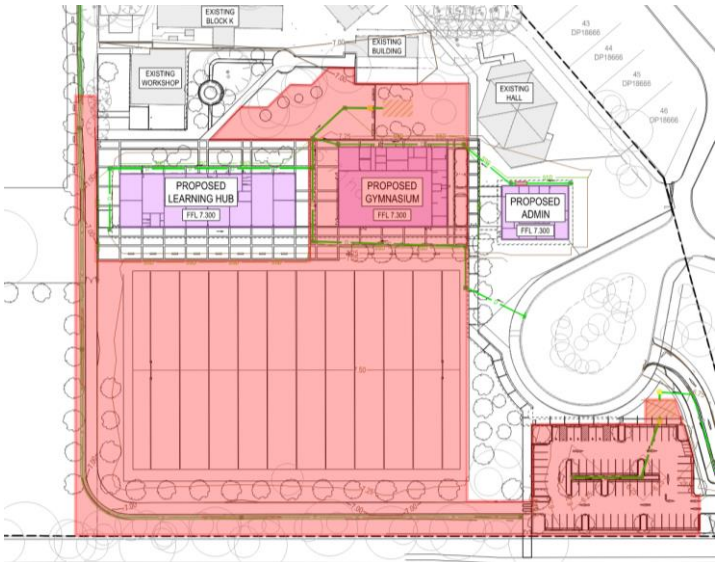


Figure 4: Stormwater for Approval Under Application 16-2023-259-1

Additionally, the stormwater network for approval under REF01 is shown in Figure 4.1 below.

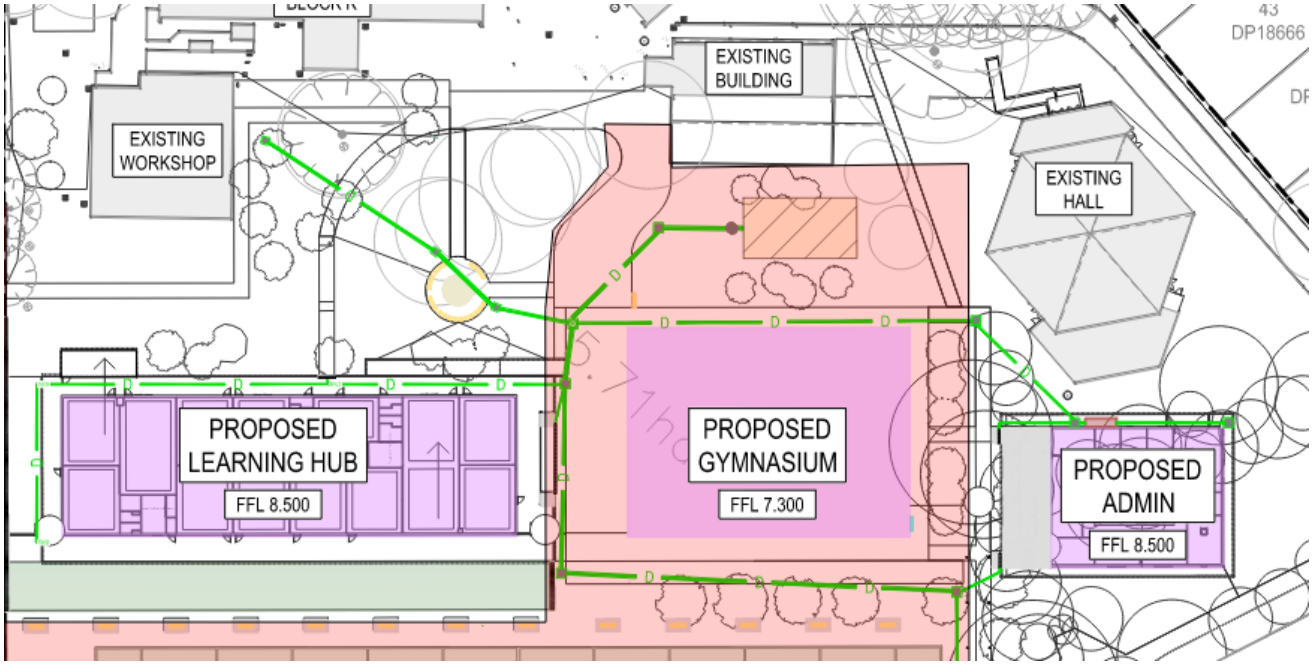


Figure 4.6.1 Stormwater network for approval under REF01

5. Local Authority Requirements

Design requirements for stormwater management on the site have been set out in The Port Stephens Council DCP (2022). These requirements are summarised in the sections below.

5.1 Stormwater Conveyance Requirements

The Port Stephens Council DCP (2022) states that the following design storm Annual Exceedance Probabilities (AEP)'s should be allowed for when designing the Stormwater runoff conveyance systems for the development.

Design Parameter	Annual Exceedance Probability (AEP)	Conveyance Method
Minor Drainage System	10% Flood Event	In Ground (Piped)
Major Drainage System	1% Flood Event	Overland

Table 1: Stormwater Drainage Serviceability

However, the Educational Facilities Standards & Guidelines (EFSG) nominates that "*Design the inground drainage piped system for a 20 year ARI Storm event or to the requirements of the Local Council whichever is more severe. Provide above ground overland flow paths for 100 year ARI storm events in accordance to NSW Floodplain Management Manual (2001).*"

For the minor drainage system, a 5% AEP storm event will be adopted, aligning with the EFSG's 20yr ARI storm event. For major drainage, Council and the EFSG policies align and will be adopted.

5.2 Infiltration System Requirements

According to the Port Stephens Council DCP (2022), on-site infiltration is required where post-development flow rate or volume exceeds the pre-development flow rate or volume, exceeds the total percentage of site area. The on-site infiltration system is to be sized so that post-development flow rate and volume equals the pre-development flow rate and volume for all storm events up to and including the 1% AEP.

The on-site infiltration system should be provided by either underground chambers, surface storage or a combination of the two and positioned under grassed areas for any cellular system, or under hardstand areas such as driveways or any concrete tank structures.

An on-site infiltration system is an alternative to a traditional pit and pipe stormwater network. Geotechnical investigations and Council soil mapping indicate that the site subsurface conditions could cater for this type of system.

Infiltration based systems can be provided in a variety of forms and will need to be explored during the design process. Providing an infiltration system will allow the reduction in any proposed stormwater pit and pipe sizes, as well as the removal of the main trunk line.

5.3 Stormwater Quality

The Port Stephens Council DCP (2022) states that the post-development stormwater runoff quality shall be improved to achieve the following reduction targets when compared to pre-development levels:

Total Suspended Solids	90% reduction in the average annual load of Total Suspended Solids
Total Nitrogen	45% reduction in the average annual load of Total Nitrogen
Phosphorus	60% reduction in the average annual load of Total Phosphorus

Gross Pollutants	90% reduction in the average annual load of Gross Pollutants (>5mm)

Table 2: Pollution Reduction Targets

6. Flood Impact Assessment

When considering a new development, it is important to assess the impact of existing flooding on the proposed development and also the impact of the proposed development on existing or potential flooding both upstream and downstream of the development.

6.1 Existing Flooding

6.1.1 Regional Flooding

A flood impact assessment report has been undertaken by BMT. The following outlines a summary of the extent of the report.

Runoff contributing to Hunter River forms the basis for flooding of the site. Substantial flood warning time of the order of days is anticipated through the lower Hunter.

The subject site is exposed to flooding during the 1% AEP (otherwise referred to as the 1 in 100yr flood event). During a 1% AEP flood event, floodwaters are expected to approach the site from the west inundating the low-lying school agricultural area. Flood waters during this event are expected to reach 4.7m AHD, and PMF levels are anticipated to reach 8.5m AHD. The corresponding flood planning level of 5.7m AHD is provided for the site.

Table 3 below summarises these flood levels.

Flood Levels	
Probable maximum flood level	8.5m AHD
Current day 1% AEP flood level	4.7m AHD
Adaptable minimum floor level	5.7m AHD

Table 3: Site Flood Levels

During the PMF event the existing buildings are expected to be inundated with flood waters up to approximately 1.5m in depth. While early evacuation is the recommended response to a PMF event (i.e. onsite refuge is not recommended), however should onsite refuge be desired then an adequate refuge area should be provided to house student and staff at a level about 8.5m AHD. Response time to peak flood levels during the PMF event is expected to be in the order of days for this site, and therefore sufficient response time should be available to safely evacuate the site prior to any buildings being inundated.

The current Flood Emergency Response Plan (FERP) is under preparation will be issued as part of the development for approval. It is recommended that the current FERP is reviewed and updated to align with current Council requirements and industry standards.

Refer to Figure 4 for 1% AEP design event flood depths.

The proposed design aims to have all new infrastructure functional and out of the 1% AEP flood extents.

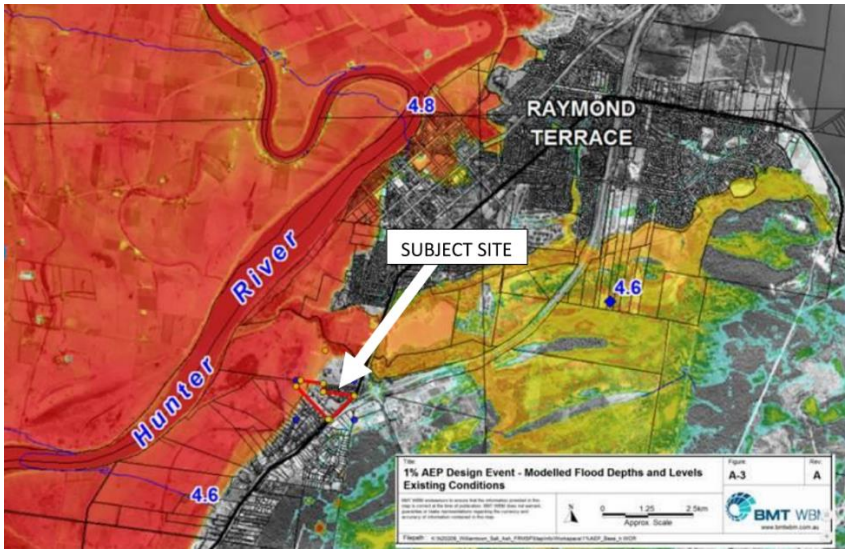


Figure 4: 1% AEP Design Event Flood Depths

6.1.2 Local Flooding

Local or Nuisance flooding describes flooding occurring due to site specific constraints. Local flooding is often caused by local topographical constraints and stormwater drainage system capacity restrictions.

The topography of the site is such that there is no risk of local flooding on the site as it currently exists.

6.2 Flood Impacts

As previously mentioned, the proposed site is flood affected. The site currently has a major overland flow path from the South to the North-West.

This overland flow path mitigates impacts of flooding on the proposed development as well as impact from the development on existing flooding a channel through the site has been designed to control the flood water.

The overland flow path will follow the natural grade of the site from South to the North-West of the site, where it will discharge into the existing infiltration/ discharge area. It has been designed such that there are no building entrances or wall penetrations located in the overland flow path.

7. Stormwater Conveyance

This section of the report discusses the systems proposed to allow for stormwater to be conveyed across the site to the legal point of discharge.

As discussed in Section 5.1 of this report council have set serviceability requirements for the stormwater conveyance network such that minor flows are conveyed through piped drainage, and major flows are discharged via controlled overland flow.

7.1 Roof Drainage

The drainage system will be designed in accordance with AS3500.3-2003 to convey the minor design storm runoff from the roof to the in-ground drainage system. For storm events exceeding the design storm event, flows will surcharge the roof drainage system and discharge onto the surrounding ground where it will then convey through the inground pits to the stormwater network within the site.

7.2 Surface Drainage

The surface areas will be drained through a variety of methods, discussed below, in accordance with AS3500.3:2003 and Council's stormwater drainage guidelines.

7.2.1 In Ground Drainage

The in-ground drainage has been designed to meet the following criteria:

- In the minor design storm event (5% AEP) there will be no surcharging of the in-ground drainage system and;
- In the major design storm event (1% AEP) there will be no uncontrolled discharge from the site onto neighbouring properties or the surrounding street

Surface runoff from the roads and hardstand areas will be directed to the proposed inground stormwater network using the design topography of these elements. The inlet structures have been designed to adequately convey the surface runoff into the in-ground drainage network.

The runoff will then be conveyed underground across the site to the legal point of discharge using gravity and the geometric falls of the pipe system.

7.3 Legal Point of Discharge

As discussed in Section 4.5, the development area discharges via infiltration onto lawn/ agricultural areas. The collected stormwater is proposed to discharge to the lawn area between existing building Q and the proposed new gymnasium building via a storm chamber absorption trench, that will filtrate over minimum 120m^2 of the lawn. The new carpark will also have the proposed runoff discharged to landscaped lawn area via a storm chamber absorption trench, that will filtrate over minimum 60m^2.

Absorption capacity of the absorption trenches has been based around soil capacity for the site, detailed within the geotechnical investigation prepared by Douglas Partners (Ref: 216008.00, Dated August 2022). This report outlines in section 6.1 that permeability of 10^{-5} to 10^{-3} m/s would be expected in the sandy soils, however, there may be some variability. As 10^{-5} m/s is the median value, it has been adopted within calculations. Groundwater was identified at the site, however, is located at a depth much lower than the proposed stormwater network.

For the largest impervious catchment, see below calculation.

ABSORPTION TRENCH CALCULATIONS (ARI 20)

IMPERVIOUS AREA = 4900 m^2 K = 0.05 $l/m^2/s$ 180 mm/hr (absorption rate)

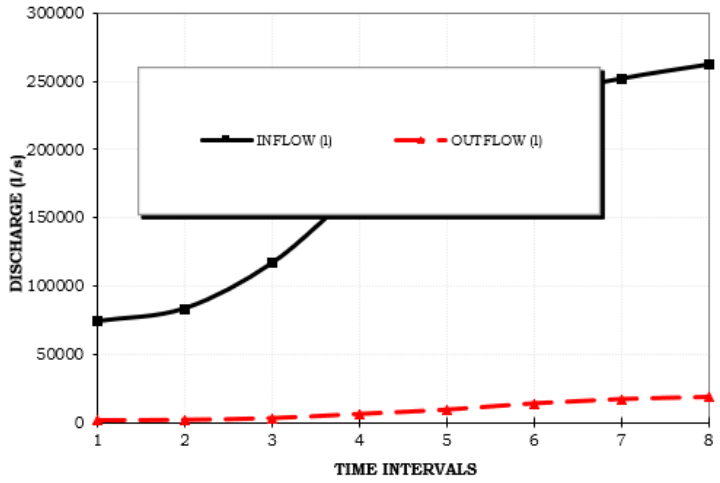
Adjusted Absorption Rate K for 15% clogging factor = 0.0425 mm/s 0.00005 m/s (site permeability)

TRENCH ABSORBTION AREA = 120 m^2 C = 0.85

OR L = 8 m W = 15 m

TIME INTERVALS	INTENSITY	DURATION (min)	INFLOW (l)	OUTFLOW (l)	VOLUME (l)
1	213.0	5	73988	1530	72458
2	200.0	6	83367	1836	81531
3	168.0	10	116713	3060	113653
4	122.0	20	169512	6120	163392
5	97.0	30	202164	9180	192984
6	76.0	45	237595	13770	223825
7	66.0	55	252184	16830	235354
8	63.0	60	262605	18360	244245

INFLOW-OUTFLOW DIAGRAM



Absorbtion trench designed for 20yr storm event

Volume required =	244.24 m^3

As proposed trenches have 2100mm deep granular material and chamber units, the proposed 120m^2 area will be suitably sized for managing inground stormwater up to and including the 5% AEP storm.

Roads are proposed to drain via grassed table drains with receiving grated inlet pits with absorption chambers at the base.

8. Stormwater Attenuation

As discussed in section 4.2 the attenuation of stormwater discharge from the site will be provided in accordance with The Port Stephens Council Development Control Plan requirements (2022) and the Educational Facilities Standards & Guidelines (EFSG). Hydraulic modelling in DRAINS software has been used to determine the required on-site detention so as to restrict discharge from the development site back to pervious predevelopment discharge rates for all storm events from the 10% AEP event up to the 1% AEP event.

Two SPEL Stormchamber has been proposed for the site for stormwater disposal. This absorption trench is proposed to have a pre-treatment SPEL Hydrosystem HS. 1200/3 or approved equivalent. The storm chamber will ensure filtration over a minimum of 120 m^2 and 60m2 lawn area for each of the zones. The SPEL Stormchamber is an inground modular arch system which is used for onsite detention, retention and infiltration applications. The system is encased by an impermeable LLDPE liner which is sealed and watertight. The open-bottom arches allow the stormwater runoff to balance across the tank through the clean aggregate stone which surround the arches.

The system helps counter drought conditions by maintaining groundwater base flow to streams, extensive range of 4 different arch heights and the ability to increase the size of the tank to suit the volume required in the available footprint, can be implemented in landscape areas, structural design of the arch allows for superior load ratings which comply with AS5100 & W80 wheel loads, and the system is fast to install and easy to maintain.

Several grassed table drains have been proposed, which fall towards deep stormwater pits with heel guard galvanised grating. An Atlantis cell will be provided at the base of the pits for absorption.

AEP Rainfall Event	Pre-development Discharge (m^3/s)	Infiltration tank Discharge (m^3/s)	Total Site Peak Discharge (m^3/s)
5%	0.315	0.245	0.245
1%	0.525	0.395	0.395

Table 4: Pre vs. Post Development Discharge

9. Water Quality Treatment

As discussed in section 5.3 of this report The Port Stephens Council DCP (2022) require stormwater quality treatment on new developments to reduce the pollutant loading of stormwater discharged into the council drainage system.

This section of the report describes the proposed Stormwater Quality Improvement Devices (SQID's) and the effectiveness of the treatment system in achieving the reduction targets set by council for the proposed development.

9.1 Potential Pollutants

There are a wide range of potential stormwater pollutant sources which occur from urbanised catchments, many which can be managed through appropriate stormwater quality treatment. Typical urban pollutants may include:

- Atmospheric deposition
- Erosion (including that from subdivision and building activities)
- Litter and debris
- Traffic emissions and vehicle wear
- Animal droppings
- Pesticides and fertilisers
- Application, storage and wash-off of car oil, detergents and other household and commercial solvents and chemicals
- Solid's accumulation and growth in stormwater systems
- Weathering of buildings

The following specific pollutants in urban stormwater assessed through water quality modelling and management include:

- Suspended Solids
- Litter
- Nutrients such as Nitrogen and Phosphorous
- Biological oxygen demand (BOD) and chemical oxygen demand (COD) materials
- Micro-organisms
- Toxic organics
- Trace metals
- Oils and surfactants

While only the key pollutants underlined above will be examined within the modelling, the Stormwater Quality Improvement Devices implemented are expected to assist in reducing a wide range of pollutants. For example, heavy metals are commonly associated with, and bound to fine sediments. This reduces the discharge of fine sediment during the construction and operational phases will also reduce the discharge of heavy metals to existing stormwater systems.

9.2 Pollutant Reduction System

In order to achieve the pollutant reduction targets specified in section 5.3 of this report, a series of treatment devices are proposed within the stormwater network which form a treatment train.

The diagram below shows a typical treatment train:

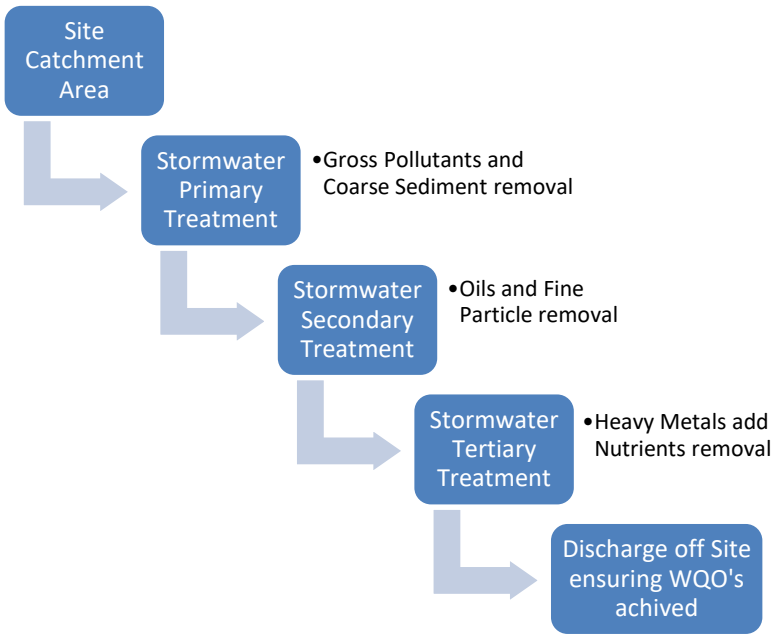


Figure 4: Treatment Train

9.2.1 Water Treatment Modelling

In order to demonstrate that the proposed treatment train s the required reduction targets, a pollutant reduction model has been generated using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) Software program Version 6.3 by eWater CRC. Pollutant export rates are currently only available for Total Suspended Solids (TSS), Total Nitrogen (TN), Total Phosphorus (TP) and Gross Pollutants (GP). Therefore, only quantitative modelling for TSS, TN, TP & GN has been undertaken using MUSIC.

Modelling has only been undertaken on the post-development proposal with SQID's installed so as to demonstrate the percentage reduction for each pollutant type.

The proposed treatment train includes the following:

- SPEL Hydrosystem HS. 1200/3
- SPEL Stormsacks

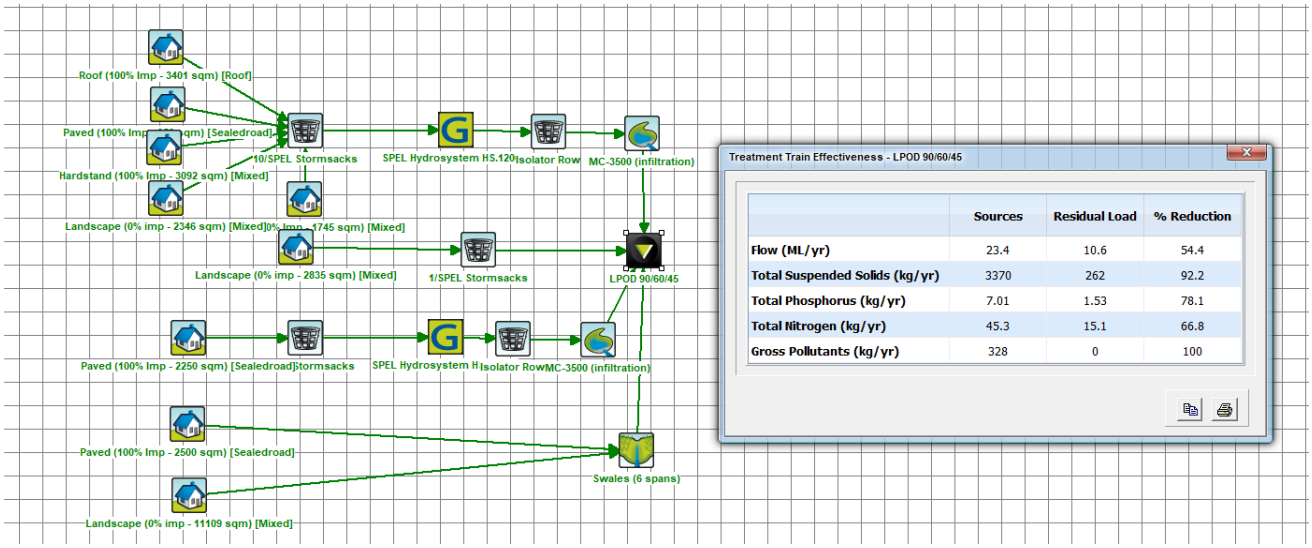


Figure 5: MUSIC Model Treatment Train

Pollutant/Issue	Target	Reduction	Target Achieved
TSS	90%	92.2%	YES
Phosphorus	60%	78.1%	YES
Nitrogen	45%	66.8%	YES
Gross Pollutants	90%	100%	YES

Table 5: MUSIC Results vs. Site Targets

As can be seen in the table above, the MUSIC model show that the proposed design meets council's reduction target. Refer to Appendix C for Port Stephens Council MUSIC Link report.

9.2.2 SPEL Hydrosystem

The SPEL Hydrosystem is a specialist stormwater filter, designed for installation within load bearing shafts and chambers of concrete or plastic construction. The SPEL Hydrosystem uses an up-flow process. This means there is minimal head drop between the inlet and the outlet. The stormwater is treated within the unit but the following processes: sedimentation, filtration, adsorption, and precipitation. It is suitable for heavy metal, TSS and nutrient reduction.

Figure 6: SPEL Hydrosystem (Source: SPEL Website)

9.2.3 SPEL Stormsacks

The SPEL stormsack is specifically designed for the capture of gross pollutants: sediment, litter and oil and grease. It is a water quality device that is deployed directly in the stormwater system to capture contaminants close to the surface for ease of maintenance. The benefits of the SPEL stormsack include:

- Low cost gross pollutant capture
- Quick and easy installation
- Simple maintenance
- At source capture
- Adjusts to custom pit sizes

Figure 7: SPEL Stormsack (Source: SPEL Website)

10. Water Sensitive Urban Design Strategy

WSUD Background Information

Design guidelines for Water Sensitive Urban Design (WSUD) on the site have been set out in the Port Stephens Council DCP (2022). WSUD integrates land use and water management in the aim of minimising impacts of urban development on the natural water cycle. The WSUD design strategy for the proposed development is as follows. No previous WSUD studies have been done for this site.

Site Context

Full site context has been provided in Section 4 above.

Proposed Development

The proposed development has been outlined in Section 7-9 above, as well as in Appendix A with the Civil Design Documentation.

WSUD Objectives and Targets

As discussed in Section 9 above, the site will implement stormfilters and stormsacks in order minimise the development impact on the natural water cycle.

Constraints and Opportunities

There are always opportunities to adopt a range of WSUD measures for any development. There were no major constraints within or neighbouring the site such as flood plains, watercourses or sensitive environments that are required to be preserved or remediated as part of the proposed works.

Stormwater Management

The proposed stormwater system has been designed as per Liverpool Development Control Plan (LDCP) 2008. The full extent of the stormwater management procedures undertaken in the design has been explored throughout the entirety of this SWMP.

Water Table Management

It is not expected that the proposed development will have any impact on the existing water table. No impervious areas of the site will discharge to the ground and hence no groundwater quality measures are required to ensure WSUD requirements are met.

11. Stormwater Network Maintenance Schedule

In order to ensure the ongoing effective operation of the stormwater network and water quality treatment devices, the devices must be maintained in accordance with manufacturer recommendations/requirements and general best practice. It is noted that all pits are to be inspected in a safe manner that assesses localised risk and in accordance with maintenance contractor safe work method statements (SWMS).

The below summaries the various stormwater network components that will need to be maintained, whilst Schedule 1 below details required maintenance of specific items within the network requiring maintenance.

11.1 Pit and Pipe Network

A general inspection of the stormwater pit network is to be undertaken every six (6) months and after major storm events. The general inspection involves visual inspection inside pits, removal and disposal of larger gross pollutants within pits in accordance with waste disposal regulations to prevent blockages, and minimal rectification works as required. Inspection of general pits can coincide with inspection and maintenance of water quality pit inlets (if applicable).

11.2 Water Quality Treatment Devices

The filtration inserts, located within the pits, are to undergo minor service every three (3) months and after major storm events or a hazardous material spill. This involves inspection and evaluation of the filter bad and its condition, removal of captured pollutants, and the appropriate disposal of captured material in accordance with waste disposal regulations. The minor service is designed to return the ocean guard back to optimal operating performance. An inspection of the condition is to be particularly undertaken following major storm events to check for damage and higher than normal sediment accumulation. Refer to manufacturer's maintenance procedures for details of safely undertaking hand maintenance or vacuum maintenance of the ocean guards.

A major service of the ocean guards is undertaken on an as-required basis and involves the inspection of ocean guards to determine the need for filter bag replacement and support frame rectification. Replacement is based on the outcomes from the minor service whereby damage is detected. Contact manufacturer for assessment and replacement components and refer to manufacturer's maintenance procedures for safely replacing components.

A general inspection of the filtration cartridges located in a Stormfilter chamber within the OSD tank, is to be undertaken every six (6) months and after major storm events or a hazardous material spill. The general inspection involves visual inspection of the Stormfilter cartridges and chamber, removal and disposal of larger gross pollutants from the device in accordance with waste disposal regulations to prevent blockages, and minimal rectification works as required. Cartridges are also to be checked to ensure they are all firmly connected to the connectors.

A minor service of the Stormfilters, undertaken every twelve (12) months and after major storm events or a hazardous material spill, involves the evaluation of the Stormfilter cartridges and media, removal of accumulated sediment and a wash-down of the Stormfilter chamber. Refer to Ocean Protect maintenance procedures for details of safely undertaking maintenance of the Stormfilter cartridges. During this service, the cartridge media is to be inspected and replaced if it is revealed that the cartridge media is exhausted. If this is the case, a major service is to be undertaken to replace the Stormfilter cartridge media. Contact manufacturer for assessment and replacement components and refer to manufacturer's maintenance procedures for details of safely replacing the media components.

11.3 Civil Structures

A general inspection of civil structures and associate drainage across a site should be undertaken annually. The general inspection involves visual inspection, with identified defects assessed by applicable qualified engineers

11.4 Stormwater and OSD Maintenance Schedule

Maintenance Action	Frequency	Responsibility	Procedure
Pit and Pipe Network			
Blockages of inlet and outlet pipes within pits	Six Monthly	Maintenance Contractor	Remove grate. Remove any debris/litter/sludge from within pits.
Condition of inlet grates	Six Monthly	Maintenance Contractor	Clear vegetation and any debris from the pit grate and repair as required.
Condition of pit structures and section of pipes at inlets/ outlets.	Two Years	Maintenance Contractor	Remove grate to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required. Notify structural engineer if detrimental features observed.
Overland flow paths and drainage swales	Six Monthly	Maintenance Contractor	Walk along the flow path and swale. Check batters and condition of path extent. Remove any debris/litter/sludge.
Survey pipe condition with CCTV's and repair defects as necessary	Five Years	Maintenance Contractor	Remove grate. Clear blockages for camera access. Operate camera in accordance with manufacturer specifications and operator standard procedures.
Water Quality Devices			
Blockages and debris within stormwater pit filtration inserts/ storm sacks	Six Monthly	Maintenance Contractor	Remove grate. Remove any debris/litter/sludge from within inserts.
Blockages and debris within filtration tanks and devices	Six Monthly	Maintenance Contractor	Remove grate. Remove any debris/litter/sludge. Hose out tank and devices from outside tank.
Blockages and debris within filtration cartridges inside storage tanks.	Six Monthly	Maintenance Contractor	Remove grate. Remove any debris/litter/sludge. Hose out tank and devices from outside tank.
Blockages and water conveyance within filtration stormwater lines	Annual	Maintenance Contractor	Remove grate. Flow water through filtration stormwater line from inspection openings to remove blockages.
Condition of stormwater pit filtration inserts/ storm sacks	Annual	Manufacturer's Contractor	Remove inserts from pit to inspect. Repair as required.
Condition and performance of treatment tank components	Annual	Manufacturer's Contractor	Remove grate and follow SWMS procedures to enter into the tank. View and repair damaged components.

Condition and performance of filtration cartridges	Annual	Manufacturer's Contractor	Remove cartridges from pit to inspect. Repair as required.
Civil Structures			
Check subsoil behind retaining walls drainage capacity via hose flushing	Annual	Maintenance Contractor	Blast with hose, water into inspection openings and pits to ensure conveyance through lines. Review outlets to ensure flow through line.
Condition of retaining walls and other structures, including cracking and stability	Annual	Maintenance Contractor	Walk along and inspect all visible faces of wall structure. Observe for cracking, crack width, any lean in on wall and moisture within structure. Notify structural engineer if detrimental features observed.
Check batters for signs of scour and erosion	Annual	Maintenance Contractor	Walk along bottom of embankments where possible. Check batter stability and vegetation. Notify civil engineer if detrimental features observed.

12. Erosion & Sedimentation Control

Landcom have published a design guide entitled “Managing Urban Stormwater - Soils and Construction” which is regarded as the standard to which erosion and sedimentation control should be designed to within NSW.

The control of erosion and sedimentation describes the measures incorporated during and following construction of a new development to prevent the pollution and degradation of the downstream watercourse.

A Soil and Water Management Plan has prepared as part of the development application documentation and is included in Appendix A of this report.

12.1 Stormwater Drainage Infrastructure Inlets

Risk:

- Sediment from the construction site washing into the existing stormwater drainage inlet infrastructure.

Consequence:

- The sediment will then be conveyed into the downstream waterbody by stormwater runoff, contaminating the waterbody.
- The sediment will build up blocking the stormwater infrastructure and preventing stormwater conveyance to the downstream waterbody and impacting drainage upstream.

Mitigation:

- Sediment traps protection will be installed surrounding all existing stormwater drainage infrastructure inlets to prevent sediment entering the system.
- Temporary Stormwater Systems are to be installed where required to capture all site runoff within the zone of excavation. Runoff will be allowed to settle out suspended particles and debris, and an acceptable water of 50mg per litre of Non Filterable Residues (NFR) is required to be achieved prior to discharge.
- Installation of a fence around the perimeter of the basin is required as well as a rip rap to allow for bobcat access for periodic removal of sediment. Also, a perforated riser outlet pipe needs to be placed for the connection and discharge to an existing pit.

Maintenance:

- Frequent inspection of the sandbags to ensure they are arranged in a manner that prevents sediment from accessing the drainage system. If sediment is building up on the sandbags they should be cleared of sediment and re-established.
- All soil erosion and sediment control structures including temporary sediment basins and sediment traps shall be inspected following each storm event and any necessary maintenance work shall be undertaken to ensure their continued proper operation.

12.2 Construction Exit Protection

Risk:

- Spoil such as soil being conveyed from the site on the wheels of vehicles.

Consequence:

- Spoil being tracked onto the public road corridors where it is then washed into the existing stormwater drainage infrastructure and is then washed downstream polluting the downstream waterbody.
- Spoil being tracked onto the public road creating dangerous driving conditions for other road users.

Mitigation:

- A shaker grid and wash down facility will be installed at all exits from the construction site. All vehicles leaving the site will have their wheels washed down and pass over the shaker grid to remove any spoil collected on their wheels and retaining the spoil on site.

Maintenance:

- Frequent inspection of the shaker grid to ensure it is clean and still functioning.

12.3 Downstream Site Boundaries

Risk:

- Rainfall runoff falling on the site collecting sediment from the construction site and conveying it overland onto downstream properties and waterbodies.

Consequence:

- Sediment discharge polluting downstream properties and waterbodies.

Mitigation:

- Installation of sediment fences on all downstream boundaries of the site to collect sediment and prevent it discharging onto downstream properties or waterbodies.

Maintenance:

- Regular inspection of the sediment fences to ensure they are functioning correctly and are intact.
- If sediment build up is present it should be removed to ensure correct functionality of the fences.

12.4 Sediment Runoff

Risk:

- Sediment from the construction site washing into the existing stormwater drainage inlet infrastructure.

Consequence:

- The sediment will build up blocking the stormwater infrastructure and preventing stormwater conveyance to the downstream waterbody and impacting drainage upstream.

Mitigation:

- A sediment basin will be installed, and all overland flow directed towards it. The basin will attenuate stormwater flows allowing for the settlement of sediment preventing discharge into the downstream infrastructure.

Maintenance:

- Frequent inspection of the basin to ensure there is sufficient volume for the storage of settlement. If there is insufficient storage the basin should be cleared of sediment and re-established.

Appendix A Civil Design Documentation

Stantec

SCHOOL INFRASTRUCTURE NSW

NSW GOVERNMENT

The APP Group

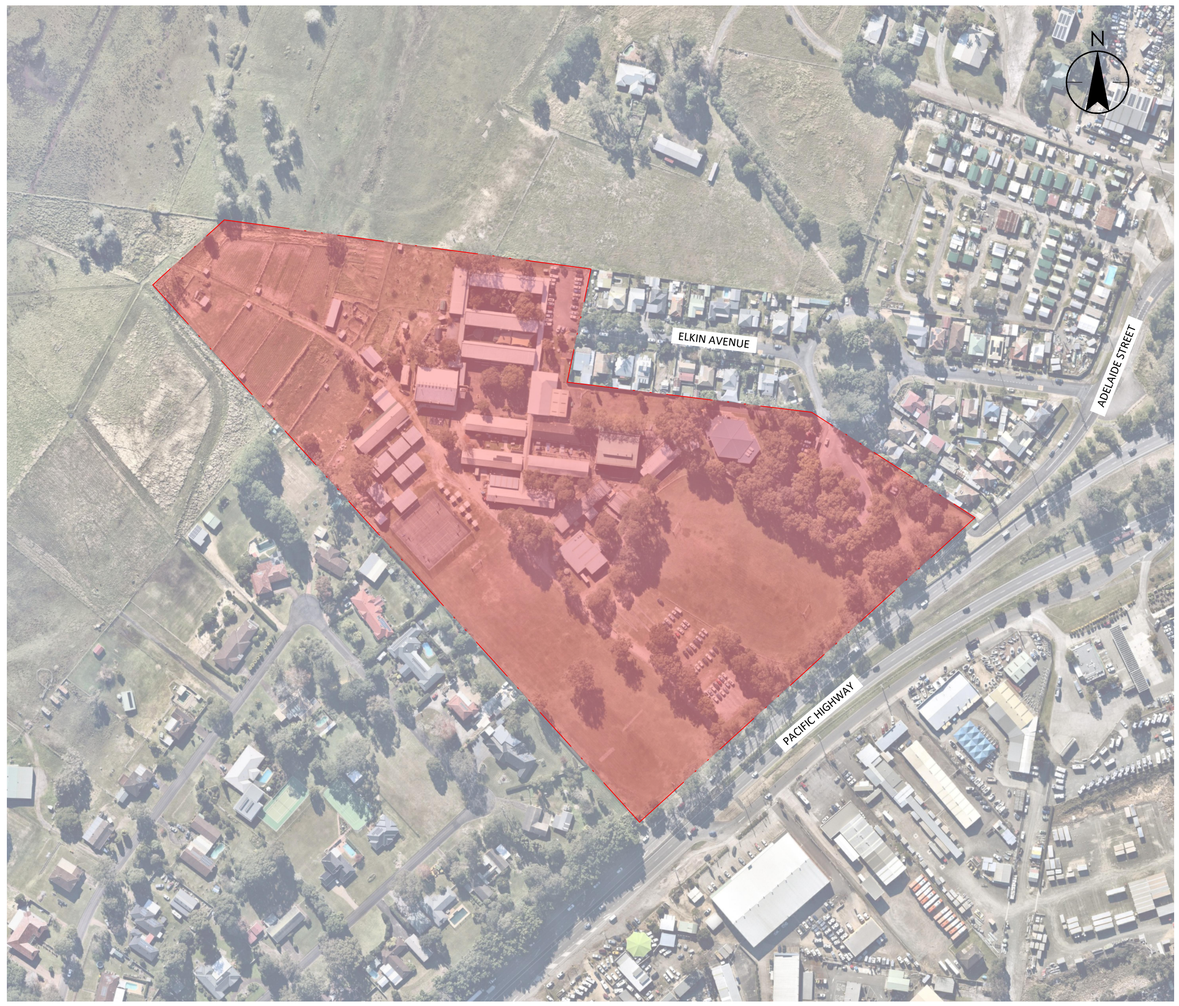
HUNTER RIVER HIGH SCHOOL

36 ELKIN AVENUE, HEATHERBRAE NSW 2324

ISSUE FOR SCHEMATIC DESIGN - REF01
2024.05.02

Stantec Project Number: 301350909

DRAWING LIST			
NO.	DRAWING NAME	REVISION	DATE
HRHS-STNC-XX-XX-DR-C-000001	COVER SHEET, DRAWING REGISTRY AND LOCALITY PLAN	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-007001	GENERAL NOTES	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-050001	EXISTING CONDITIONS PLAN	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-055001	DEMOLITION PLAN	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-060001	GENERAL ARRANGEMENT PLAN - SITE WIDE	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-060101	SITEWORKS PLAN - SHEET 1	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-060102	SITEWORKS PLAN - SHEET 2	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-060103	SITEWORKS PLAN- SHEET 3	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-070001	EROSION AND SEDIMENT CONTROL - PLAN	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-076001	EROSION AND SEDIMENT CONTROL - DETAILS	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-100001	BULK EARTHWORKS PLAN	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-403001	ROADS TYPICAL SECTIONS	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-406001	ROADS DETAILS - SHEET 1	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-406002	ROADS DETAILS - SHEET 2	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-406003	ROADS DETAILS - SHEET 3	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-440101	PAVEMENT PLAN - SHEET 1	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-440102	PAVEMENT PLAN - SHEET 2	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-440103	PAVEMENT PLAN - SHEET 3	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-500001	STORMWATER DRAINAGE CATCHMENT PLAN	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-520001	STORMWATER DRAINAGE PLAN - SITE WIDE	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-520101	STORMWATER DRAINAGE PLAN - SHEET 1	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-520102	STORMWATER DRAINAGE PLAN - SHEET 2	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-520103	STORMWATER DRAINAGE PLAN - SHEET 3	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-526001	STORMWATER DRAINAGE DETAILS - SHEET 1	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-526002	STORMWATER DRAINAGE DETAILS - SHEET 2	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-526003	STORMWATER DRAINAGE DETAILS - SHEET 3	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-526004	STORMWATER DRAINAGE DETAILS - SHEET 4	C	2024.05.02
HRHS-STNC-XX-XX-DR-C-527001	STORMWATER DRAINAGE PIT SCHEDULE	C	2024.05.02



GENERAL NOTES

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
2. 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.
3. ALL DIMENSIONS ARE IN MILLIMETRES & ALL LEVELS ARE IN METRES, UNO (UNLESS NOTED OTHERWISE).
4. NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.
5. ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
6. 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.
7. CAD FILES / DTM FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).

SITEWORKS NOTES

1. ORIGIN OF LEVELS:- REFER SURVEY NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO STANTEC.
3. CONTRACTOR TO CONFIRM ALL CBR VALUES PRIOR TO COMMENCEMENT OF WORKS.
4. MAKE SMOOTH CONNECTION WITH EXISTING WORKS.
5. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
6. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
7. PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVEMENTS.
8. ASPHALTIC CONCRETE SHALL CONFORM TO RMS. SPECIFICATION R116.
9. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS. FORM 3051 (UNBOUND), RMS. FORM 3052 (BOUND) COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1.
   FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m^3 BASECOURSE MATERIAL PLACED.
10. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS. FORM 3051, 3051.1 AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH A.S 1289 5.2.1
    FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m^3 OF SUB-BASE COURSE MATERIAL PLACED.
11. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH RMS. FORM 3051 AND 3051.1 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF STANTEC.
12. SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT THIS SHALL BE CLEARLY INDICATED IN THEIR TENDER AND THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE CLEARLY INDICATED.
13. WHERE NOTED ON THE DRAWINGS THAT WORKS ARE TO BE CARRIED BY OTHERS, (eg. ADJUSTMENT OF SERVICES), THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CO-ORDINATION OF THESE WORKS.

SURVEY NOTES

1. THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN SHOWN AS PER THE TOPOGRAPHIC SURVEY RECEIVED ON 14/06/2022 PREPARED BY PARKER SCANLON, REFERENCE 'B1975', DATED 04/05/2020.
2. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. STANTEC DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT STANTEC.

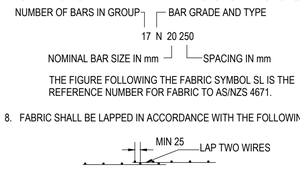
CONCRETE NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. CONCRETE QUALITY ALL REQUIREMENTS OF THE CURRENT ACSE CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

ELEMENT	AS 3600 F'c MPa AT 28 DAYS	SPECIFIED SLUMP	NOMINAL AGG. SIZE
VEHICULAR BASE	32	60	20
KERBS, PATHS, AND PITS	25	80	20

- CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL
- PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379.

3. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY STANTEC.
4. CLEAR CONCRETE COVER TO ALL REINFORCEMENT FOR DURABILITY SHALL BE 40mm TOP AND 70mm FOR EXTERNAL EDGES UNLESS NOTED OTHERWISE.
5. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
6. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED AND CURED IN ACCORDANCE WITH R.M.S. SPECIFICATION R83.
7. REINFORCEMENT SYMBOLS:
   N DENOTES GRADE 450 N BARS TO AS/NZS 4671 GRADE N
   R DENOTES 230 R HOT ROLLED PLAIN BARS TO AS/NZS 4671
   SL DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS/NZS 4671



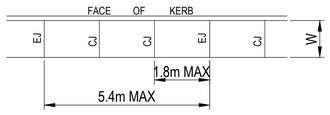
THE FIGURE FOLLOWING THE FABRIC SYMBOL SL IS THE REFERENCE NUMBER FOR FABRIC TO AS/NZS 4671.

8. FABRIC SHALL BE LAPPED IN ACCORDANCE WITH THE FOLLOWING DETAIL:

JOINTING NOTES

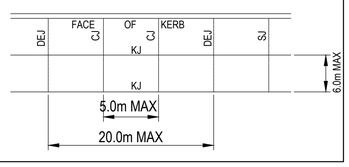
PEDESTRIAN PAVEMENT JOINTS

1. ALL PEDESTRIAN PAVEMENTS ARE TO BE JOINTED AS FOLLOWS. (U.N.O)
2. EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX. 5.4m CENTRES.
3. CONTRACTION JOINTS ARE TO BE LOCATED AT A MAX. SPACING OF 1.8m
4. WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.
5. PEDESTRIAN PAVEMENT JOINT DETAIL:



VEHICULAR PAVEMENT JOINTS

6. ALL VEHICULAR PAVEMENTS TO BE JOINTED AS FOLLOWS. (U.N.O)
7. CONTRACTION JOINTS SHOULD GENERALLY BE LOCATED AT A MAX OF 5.0m CENTRES WITH DOWELED EXPANSION JOINTS AT MAX 20.0m CENTRES
8. VEHICULAR PAVEMENT JOINT DETAIL.



KERBING NOTES

1. ALL CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 25 MPa U.N.O IN REINFORCED CONCRETE NOTES.
2. ALL KERBS, GUTTERS, DISH DRAINS AND CROSSINGS TO BE CONSTRUCTED ON 100mm GRANULAR BASECOURSE COMPACTED TO MINIMUM 95% MODIFIED DRY DENSITY (AS 1289 5.2.1).
3. EXPANSION JOINTS (E.J) TO BE FORMED FROM 10mm COMPRESSIBLE CORK FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE. EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX 12m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
4. WEAKENED PLANE JOINTS TO BE MIN 3mm WIDE AND LOCATED AT 3m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
5. BROOMED FINISH TO ALL RAMPED AND VEHICULAR CROSSINGS. ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.
6. IN THE REPLACEMENT OF KERB AND GUTTER :- EXISTING ROAD PAVEMENT IS TO BE SAWCUT 900mm U.N.O FROM THE LIP OF GUTTER. UPON COMPLETION OF THE NEW KERB AND GUTTER NEW BASECOURSE AND SURFACE TO BE LAID 600mm WIDE U.N.O.
7. EXISTING ALLOTMENT DRAINAGE PIPES ARE TO BE BUILT INTO THE NEW KERB AND GUTTER WITH 100mm DIA HOLE.
8. EXISTING KERB AND GUTTER IS TO BE COMPLETELY REMOVED WHERE NEW KERB AND GUTTER IS SHOWN.

PROPOSED SERVICES NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH RELEVANT SERVICE AUTHORITY DOCUMENTATION AND CURRENT NSW STREETS OPENING CONFERENCE GUIDE TO CODES AND PRACTICES FOR STREETS OPENING LITERATURE.
2. THE CONTRACTOR SHALL ATTEND, MANAGE & SUPERVISE THE PROVISION OF PUBLIC UTILITY SERVICES TO THE WORKS GENERALLY AS INDICATED ON THE SERVICES PLANS, NOTING THAT PRIOR & DURING CONSTRUCTION THE PUBLIC UTILTITY AUTHORITIES WILL FINALISE THEIR DOCUMENTATION TO CONSTRUCTION ISSUE STANDARD.
3. THE CIVIL CONTRACTOR (TRENCH PROVIDER) IS TO ARRANGE ON SITE MEETING WITH ALL SERVICE AUTHORITIES PRIOR TO THE INSTALLATION OF CONDUITS.
4. THE CIVIL CONTRACTOR TO CO-ORDINATE INSTALLATION OF ELECTRICITY, GAS,TELECOMMUNICATION, WATER AND SEWER SERVICES.
5. ELECTRICITY, GAS AND TELECOMMUNICATION SERVICES ARE TO BE LAID FOLLOWING THE INSTALLATION OF STORMWATER, SEWER AND WATER SERVICES AND KERB AND GUTTER.
6. ALL UTILITY AUTHORITY REPRESENTATIVES TO INSPECT ROAD CROSSINGS PRIOR TO SEALING.
7. ALL ELECTRICAL ROAD CROSSINGS TO BE CLASS 6 (ORANGE) uPVC CONDUITS.
8. ALL GAS ROAD CROSSINGS TO BE uPVC GREY SEWER GRADE CONDUITS.
9. ALL STREET POLES TO BE POSITIONED THE APPROPRIATE DISTANCE FROM FACE OF KERB TO FACE OF POLE ACCORDING TO THE CURRENT NSW STREETS OPENING CONFERENCE GUIDE TO CODES AND PRACTICES FOR STREETS OPENING LITERATURE. CONTRACTOR TO ALLOW TO EXCAVATE AND BACKFILL TRENCH GENERALLY IN ACCORDANCE WITH NOTE 2.
10. ALL SERVICE PIT COVERS AND MARKERS ARE TO BE LAID WHOLLY WITHIN THE CONCRETE FOOTPATH. CONTACT SUPERINTENDANT SHOULD DIFFICULTIES ARISE.

TELSTRA - DUTY OF CARE NOTE

TELSTRA'S PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY.
THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY IT'S LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO IT'S PROPERTY AND LOSSES CAUSED TO TELSTRA AND IT'S CUSTOMERS.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

1. THE SITE SUPERINTENDENT/ENGINEER WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED.
2. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
   2.1. LOCAL AUTHORITY REQUIREMENTS
   2.2. EPA REQUIREMENTS
   2.3. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
3. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
5. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

6. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
   6.1. INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
   6.2. CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
   6.3. INSTALL SEDIMENT BASIN AS SHOWN ON PLAN
   6.4. INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN.
7. UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

8. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
9. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

10. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
11. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
12. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
13. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.

OTHER MATTERS

13. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
14. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
    14.1. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE
    14.2. ENSURING THAT NOTHING IS NAILED TO THEM
    14.3. PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS.
    14.4. ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER
    14.5. A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH
    14.6. CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

BULK EARTHWORKS NOTES

1. REFER SPECIFICATIONS NOTES FOR EARTHWORKS GENERAL REQUIREMENTS.
2. STRIP EXISTING TOPSOIL IN CONSULTATION WITH THE GEOTECHNICAL ENGINEER / REPORT. FOR THE PURPOSES OF EARTHWORKS CALCULATIONS A TOPSOIL STRIPPING DEPTH OF 300mm HAS BEEN ASSUMED. GROUND SLAB DEPTH OF 150mm HAS BEEN ASSUMED WHERE REQUIRED.
3. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS. NOTE ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.
4. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS; ie SERVICE TRENCHING, DETAILED EXCAVATION, FOOTINGS, RETAINING WALLS AND THE LIKE.
5. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.
6. BULK EARTHWORKS ARE BASED ON THE SETDOWN TO UNDERSIDE OF PAVEMENT BUILDUPS AS SPECIFIED FROM FINISHED SURFACE LEVELS.
7. SITE STRIPPING VOLUMES HAVE NOT BEEN INCLUDED IN BULK EARTHWORKS CALCULATIONS.

STORMWATER DRAINAGE NOTES

1. 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.
2. PIPES 300 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS '3' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
3. PIPES UP TO 300 DIA SHALL BE SEWER GRADE uPVC WITH SOLVENT WELDED JOINTS.
4. EQUIVALENT STRENGTH VCP OR FRC PIPES MAY BE USED.
5. ALL STORMWATER DRAINAGE LINES UNDER PROPOSED BUILDING SLABS TO BE uPVC PRESSURE PIPE GRADE 6. ENSURE ALL VERTICALS AND DOWNPIPES ARE uPVC PRESSURE PIPE, GRADE 6 FOR A MIN OF 3.0m IN HEIGHT.
6. PIPES TO BE INSTALLED TO TYPE HS3 (ROAD) HS2 (LOTS) SUPPORT IN ACCORDANCE WITH AS 3725 (2007) IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
7. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500 3.1 (2006) AND AS/NZS 3500 3.2 (2010).
8. PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY STANTEC.
9. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
10. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC SEWER GRADE PIPE IS TO BE USED.
11. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
12. GRATES AND COVERS SHALL CONFORM TO AS 3996.
13. ALL INTERNAL PIT DIMENSIONS TO CONFORM TO AS3500.3 TABLE 7.5.2.1
14. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.
15. ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.
16. THE CONTRACTOR IS TO ORGANISE AND STAGE CONSTRUCTION WORK AND UNDERTAKE ANY DIVERSION WORKS TO ENSURE THE EXISTING DRAINAGE IS ABLE TO CONVEY ALL STORMWATER FLOWS THAT MAY OCCUR DURING THE PERIOD OF THE CONSTRUCTION WORKS.
17. ANY DAMAGE TO THE WORKS DUE TO STORMWATER FLOWS OR FLOODING DURING THE CONSTRUCTION PERIOD IS AT THE CONTRACTOR'S RISK.
18. SETOUT POINTS FOR STORMWATER STRUCTURES ARE AS INDICATED IN THE DRAWINGS UNLESS OTHERWISE NOTED.
19. ALL PAVED SURFACE LEVELS AND GRADES TO BE COORDINATED WITH GULLY PIT LEVELS TO ENSURE NO UNDRAINED AREAS OCCUR.
20. THE SIDES OF ALL PIPE TRENCH EXCAVATIONS DEEPER THAN 1.0m SHALL BE FULLY SUPPORTED AT ALL TIMES AND HAVE APPROPRIATE EDGE PROTECTION.
21. ALL NEW PIPES TO BE LAID IN AN UPSTREAM DIRECTION. THE LINE, LEVEL AND LOCATION OF EXISTING SERVICES CROSSING THE LINE OF THE PROPOSED STORMWATER PIPE SHALL BE DETERMINED BY EXCAVATION PRIOR TO THE LAYING OF THE PIPE. IF CONFLICT IS APPARENT, THE ENGINEER SHALL BE NOTIFIED AND INSTRUCTIONS AS TO WHETHER THE EXISTING SERVICE IS TO BE ADJUSTED OR THE PROPOSED PIPE INVERT ALTERED WILL BE ISSUED.
22. PIPE BEDDING, HAUNCH AND BACKFILL TO BE AS SHOWN ON THE CIVIL DETAILS DRAWINGS AND THE CIVIL SPECIFICATION.
23. SUBSOIL DRAINAGE PIPES TO BE SLOTTED PIPE AND FILTER SOCK CLASS 1000 TO AS2439 PART 1 LAID AT PREFERABLE MINIMUM GRADE 1 IN 100 OR ABSOLUTE MINIMUM 1 IN 200 WHERE LIMITED BY OUTFALL LEVELS.
24. STORMWATER STRUCTURES ARE TO BE CONSTRUCTED PERPENDICULAR TO THE INCOMING PIPEWORK UNLESS OTHERWISE NOTED.
25. PRECAST COMPONENTS SHALL BE CONNECTED BY MEANS OF EPOXY OR CHEMICAL GROUTED BARS OF THE SAME DIAMETER AND SPACING AS THE SMALLER BARS IN THE RESPECTIVE COMPONENTS.
26. PRE-CAST PITS MUST HAVE LIFTING ANCHORS.
27. WORKING LOADS ARE THOSE DUE TO FILL MATERIAL AND STANDARD HIGHWAY VEHICLES AS PER AS3725. CONSTRUCTION LOADS HAVE NOT BEEN ALLOWED FOR.
28. ALL EXPOSED EDGES ON STORMWATER PITS TO BE ROUNDED TO 5mm RAD. UNO.

Notes

C	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.05.02
B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A	ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
Issued/Revision		By	Appd	YYYY.MM.DD

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HUNTER RIVER HIGH SCHOOL

HEATHERBRAE NSW 2324

File Name:HRHS-STNC-XX-XX-DR-C-007001.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
GENERAL NOTES

Project No.
301350957

Scale
-

Revision
C

Drawing No.
HRHS-STNC-XX-XX-DR-C-007001

Plotted: 2/05/2024 2:21:18 PM By: LAL, HASPAL
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ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

Notes

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Title
EXISTING CONDITIONS PLAN

Project No.
301350957

Scale
1:750

Revision
C

Drawing No.
HRHS-STNC-XX-XX-DR-C-050001

Plotted: 2/05/2024 2:31:39 PM By: LAL - HASPHL
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LEGEND

- SITE BOUNDARY
- EXISTING BUILDINGS
- AREAS TO BE DEMOLISHED
- TREES TO BE REMOVED
- EXISTING TREE TO BE RETAINED
- PROPOSED AREA APPROVED UNDER APPLICATION NUMBER 16-2023-259-1.

N

1:750 7.5 0 7.5 15 22.5 30 37.5 A1
1:1500 A3

Notes

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Title

DEMOLITION PLAN

Project No. 301350957

Scale 1:750

Revision C

Drawing No. **HRHS-STNC-XX-XX-DR-C-055001**

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LEGEND

- SITE BOUNDARY
- EXISTING BUILDING
- PROPOSED BUILDING
- PROPOSED PAVEMENT. REFER PAVEMENT PLAN
- DA PLANNING EXTENTS
- LANDSCAPED AREA
- SPORTS FIELD
- EXISTING CONTOURS
- RAINWATER TANK
- STORM CHAMBER
- SPEL HYDROSYSTEM
- GRASSED TABLE DRAIN
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- PROPOSED SWALE

1:750 7.5 0 7.5 15 22.5 30 37.5 A1
1:1500 A3

Notes

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Title
GENERAL ARRANGEMENT PLAN - SITE WIDE

Project No. 301350957
Scale 1:750
Revision C
Drawing No. **HRHS-STNC-XX-XX-DR-C-060001**

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JOINS SHEET 2

1
DP24914

9
DP24914

120mm THICK, SL72 MESH, 25MPa JOINTED CONCRETE PATHWAY ON 50mm COMPACTED BEDDING SAND. SURFACE FINISH TO LANDSCAPE ARCHITECTURAL SPECIFICATION.

NEW ACCESS ROAD. REQUIRES 450mm DEEP PAVEMENT CONSISTING OF 200mm DGB20 AND 250mm DSG40 ON COMPACTED SUBGRADE OF CBR 10%.

OPTION: 7mm PRIMER SEAL AND 50mm AC10 ASPHALT IF SEALED PAVEMENT IS REQUIRED

PROVIDE DRIVEWAY LAYBACK TO EXISTING ROLL KERB FOR NEW ACCESS ROAD

PACIFIC HIGHWAY

ADELAIDE STREET

BOLLARD

END 106.012
TP 101.741
CH 100
END 8.00
START 0.00
CH 60
TP 76.313
CH 80
END 68.073
START 0.000
TP 61.862
CH 40
CH 20
TP 43.701
TP 31.499
TP 18.814

LEGEND

- SITE BOUNDARY
- EXISTING BUILDING
- PROPOSED BUILDING
- DA PLANNING EXTENTS
- LANDSCAPE
- SPORTS FIELD
- PROPOSED PAVEMENT. REFER PAVEMENT PLAN
- PROPOSED SURFACE LEVELS (14.0)
- EXISTING CONTOURS (18.0)
- ROLLED KERB (RK)
- KERB ONLY (KO)
- FLUSH KERB (FK)
- DISH DRAIN (DD)
- PROPOSED GRATED DRAIN
- RAINWATER TANK
- STORM CHAMBER
- SPEL HYDROSYSTEM
- GRASSED TABLE DRAIN
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- PROPOSED SWALE

KEY PLAN
(SCALE 1:5000)
1:200 1:400
2 0 2 4 6 8 10 A1 A3

Notes

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Title
SITEWORKS PLAN - SHEET 1

Project No. 301350957
Scale 1:200
Revision C
Drawing No. HRHS-STNC-XX-XX-DR-C-060101

Plotted: 2/05/2024 7:53:05 PM By: LAL, SASHIL
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ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

EXISTING HALL

PROPOSED ADMIN

FFL 8.500

REFER TO LANDSCAPE ARCHITECT PAVEMENT PLAN FOR EXTENTS.
CONCRETE PATHWAYS: 120mm THICK, SL72 MESH, 25MPa JOINTED CONCRETE PATHWAY ON 50mm COMPACTED BEDDING SAND. SURFACE FINISH TO LANDSCAPE ARCHITECTURAL SPECIFICATION.
SURFACE FALLS AWAY FROM BUILDING AT 1.5% TO LANDSCAPED AREAS.

SSD

D

JOINS SHEET 3

JOINS SHEET 1

48 DP18666

46 DP18666

1 DP24914

ELKIN AVENUE

LEGEND

- SITE BOUNDARY
- EXISTING BUILDING
- PROPOSED BUILDING
- DA PLANNING EXTENTS
- LANDSCAPE
- SPORTS FIELD
- PROPOSED PAVEMENT. REFER PAVEMENT PLAN
- 14.0 PROPOSED SURFACE LEVELS
- 18.0 EXISTING CONTOURS
- RK ROLLED KERB
- KO KERB ONLY
- FK FLUSH KERB
- DD DISH DRAIN
- PROPOSED GRATED DRAIN
- RAINWATER TANK
- STORM CHAMBER
- SPEL HYDROSYSTEM
- GRASSED TABLE DRAIN
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- PROPOSED SWALE

KEY PLAN
(SCALE 1:5000)

1:200 2 0 2 4 6 8 10 A1
1:400 A3

Notes

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Title
SITEWORKS PLAN - SHEET 2

Project No. 301350957
Scale 1:200
Revision c
Drawing No. HRHS-STNC-XX-XX-DR-C-060102

Plotted: 2/05/2024 2:31:14 PM, By: J.AL. MARSHL
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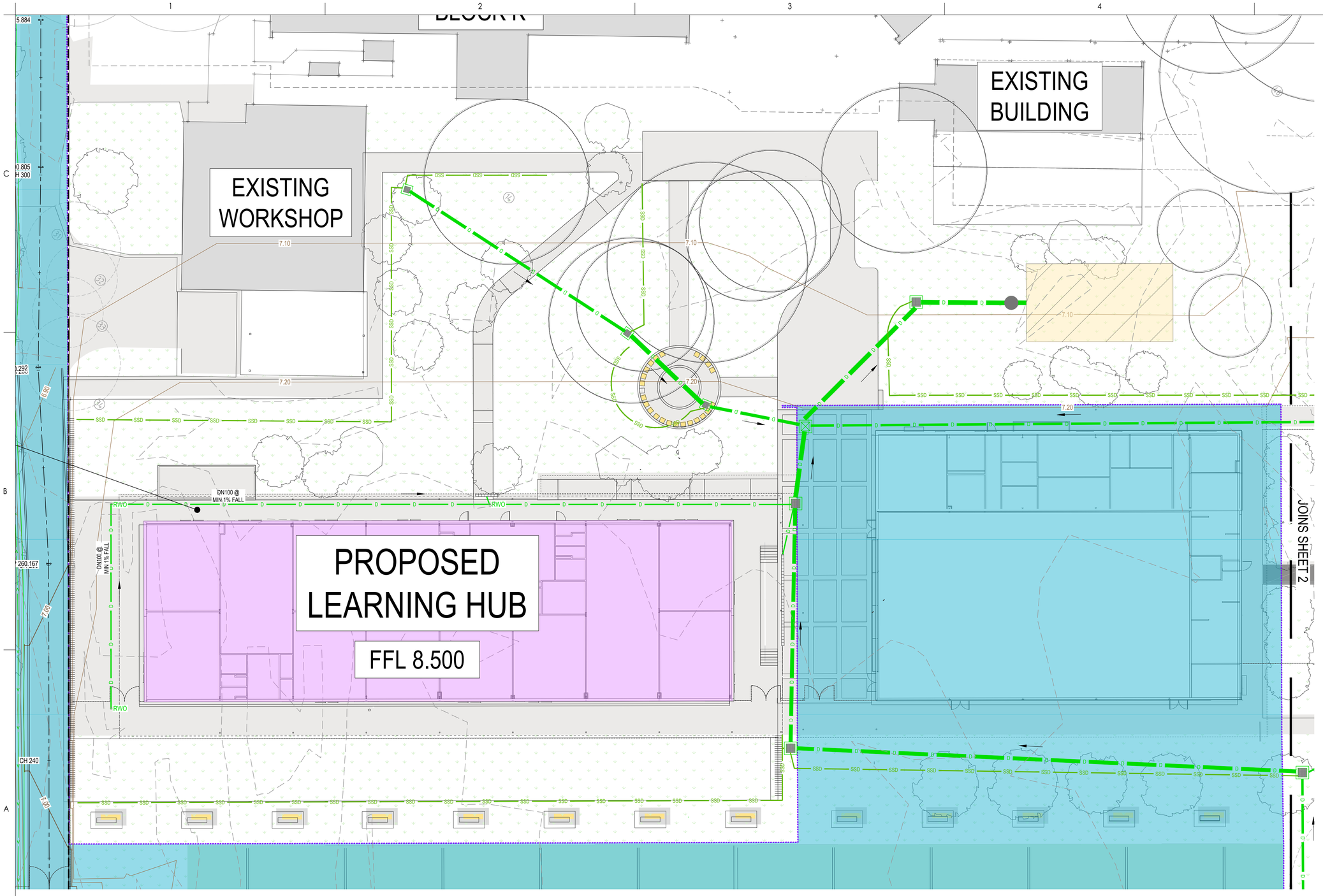

LEGEND

- SITE BOUNDARY
- EXISTING BUILDING
- PROPOSED BUILDING
- DA PLANNING EXTENTS
- LANDSCAPE
- SPORTS FIELD
- PROPOSED PAVEMENT. REFER PAVEMENT PLAN
- 14.0 PROPOSED SURFACE LEVELS
- 18.0 EXISTING CONTOURS
- RK ROLLED KERB
- KO KERB ONLY
- FK FLUSH KERB
- DD DISH DRAIN
- PROPOSED GRATED DRAIN
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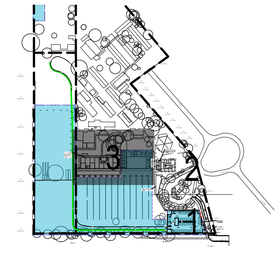
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- PROPOSED SWALE



KEY PLAN
(SCALE 1:5000)

1:200 2 0 2 4 6 8 10 A1
1:400 A3

Notes

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Title
SITEWORKS PLAN- SHEET 3

Project No.
301350957

Scale
1:200

Revision
C

Drawing No.
HRHS-STNC-XX-XX-DR-C-060103

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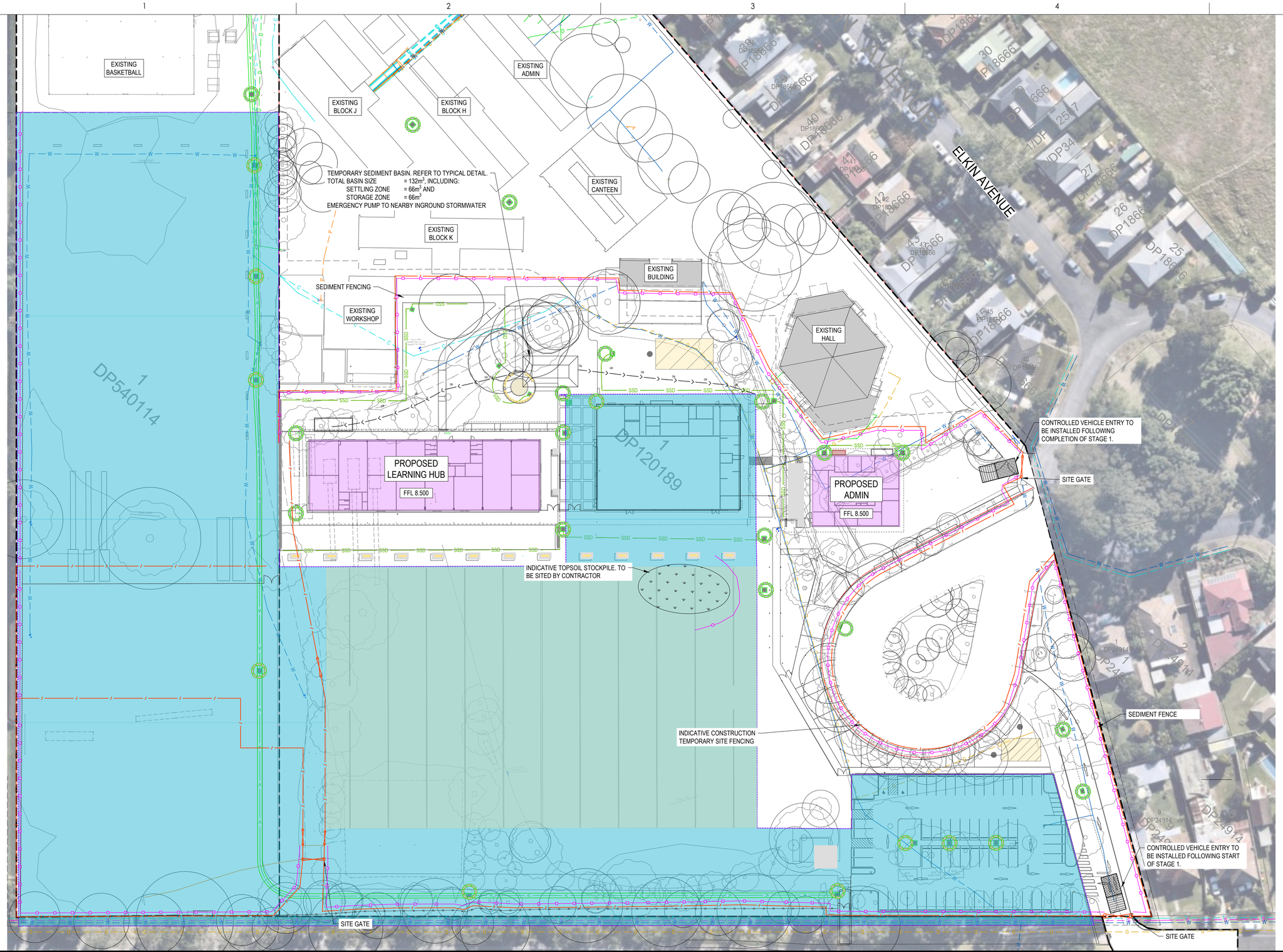

LEGEND

- SITE BOUNDARY
- EXISTING BUILDINGS
- PROPOSED BUILDING
- DA PLANNING EXTENTS
- EXISTING TELSTRA
- EXISTING ELECTRICAL
- EXISTING WATER
- EXISTING GAS
- EXISTING SEWER
- VEHICLE SHAKEDOWN DEVICE
- PROPOSED SILT FENCE
- PROPOSED SITE FENCE
- DIVERSION BANK
- SITE GATE
- PROPOSED GRATED DRAIN
- PROPOSED SWALE
- PROPOSED GRATED PIT
- PROPOSED JUNCTION PIT
- EXISTING KERB INLET PIT
- EXISTING STORMWATER PIT
- SANDBAG PIT PROTECTION
- SEDIMENT TRAP FOR KERB INLET PITS
- PROPOSED STOCKPILE
- PROPOSED SEDIMENT BASIN

NOTES

1. REFER DRAWING CI-076-01 FOR EROSION AND SEDIMENT CONTROL DETAILS.
2. MINIMISE THE AREA OF SITE BEING DISTURBED AT ANY ONE TIME.
3. WORKS IN PROXIMITY OF EXISTING TREES TO BE CARRIED OUT IN ACCORDANCE WITH ARBORIST CONSULTANT ADVICE.
4. SEDIMENT AND EROSION CONTROL PLAN IS INDICATIVE ONLY.

1:500 5 0 5 10 15 20 25 A1
1:1000 A3

Notes

C	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.05.02
B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A	ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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HEATHERBRAE NSW 2324

File Name:HRHS-STNC-XX-XX-DR-C-070001.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

EROSION AND SEDIMENT CONTROL - PLAN

Project No. 301350957

Scale 1:500

Revision C

Drawing No. **HRHS-STNC-XX-XX-DR-C-070001**

Plotted: 23/05/2024 2:54:07 PM By: LAL, MARVIL
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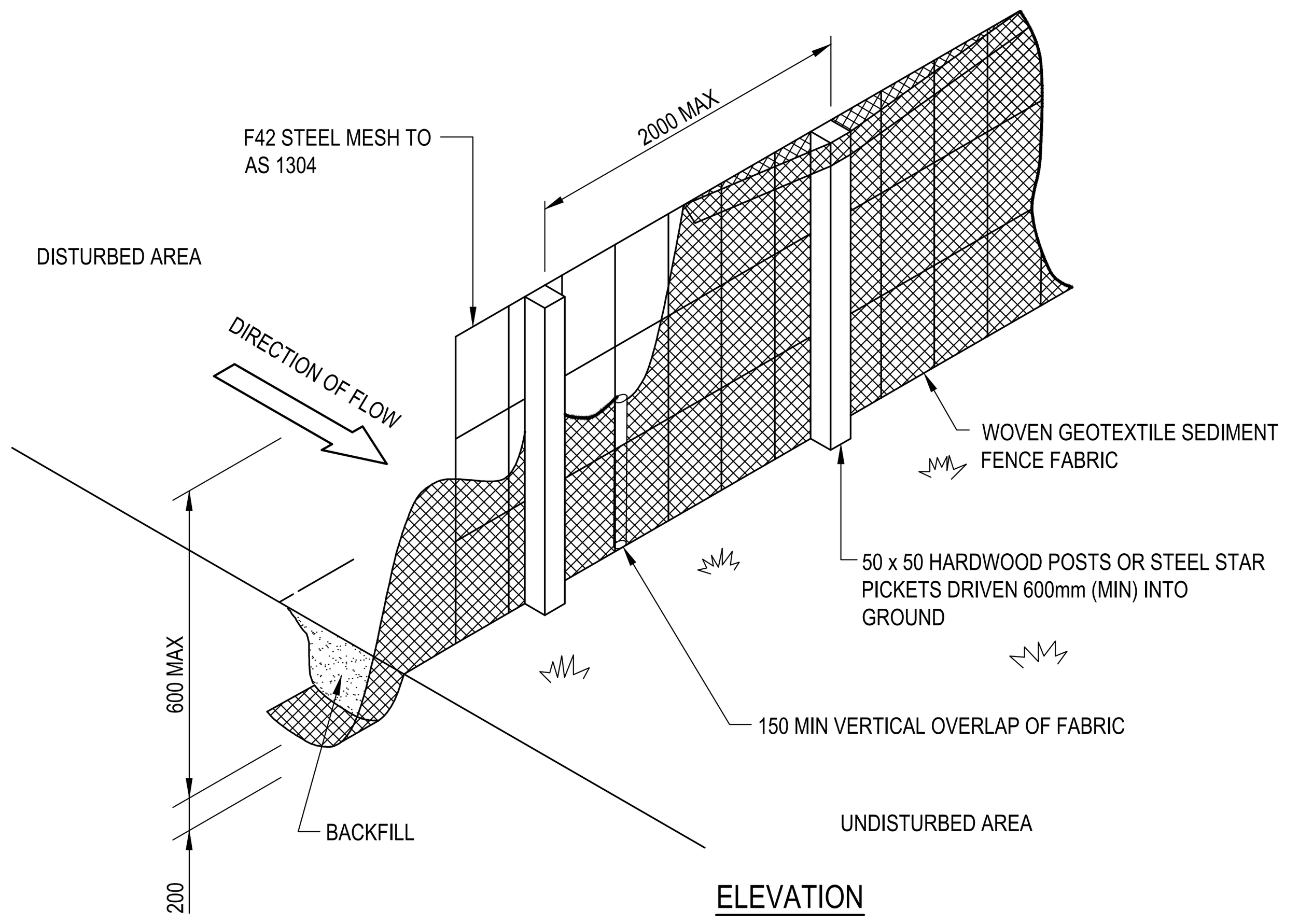
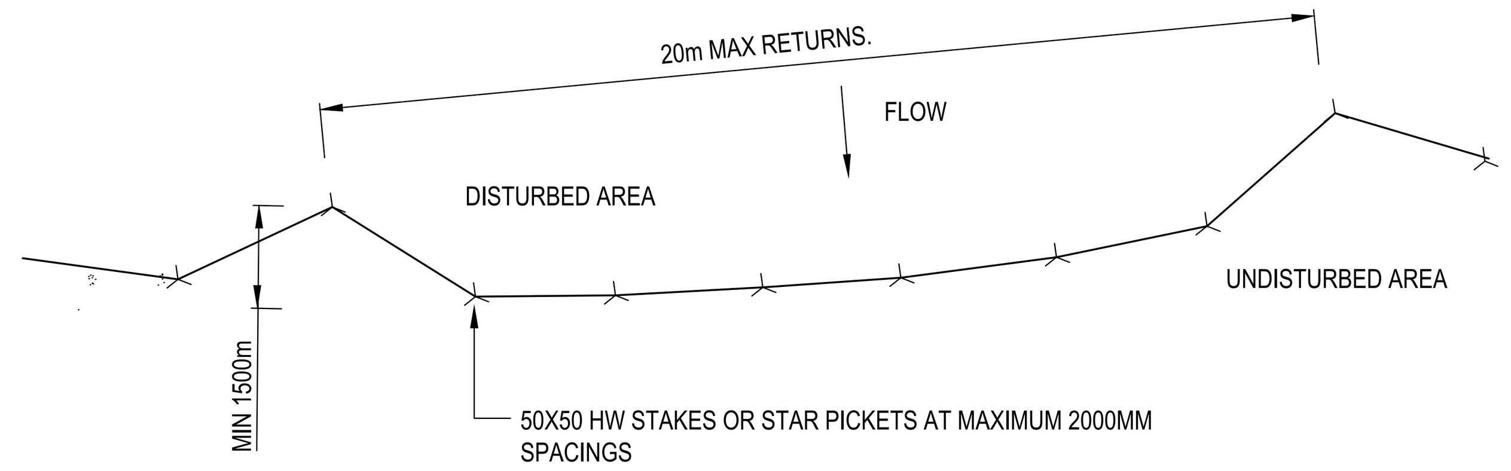
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

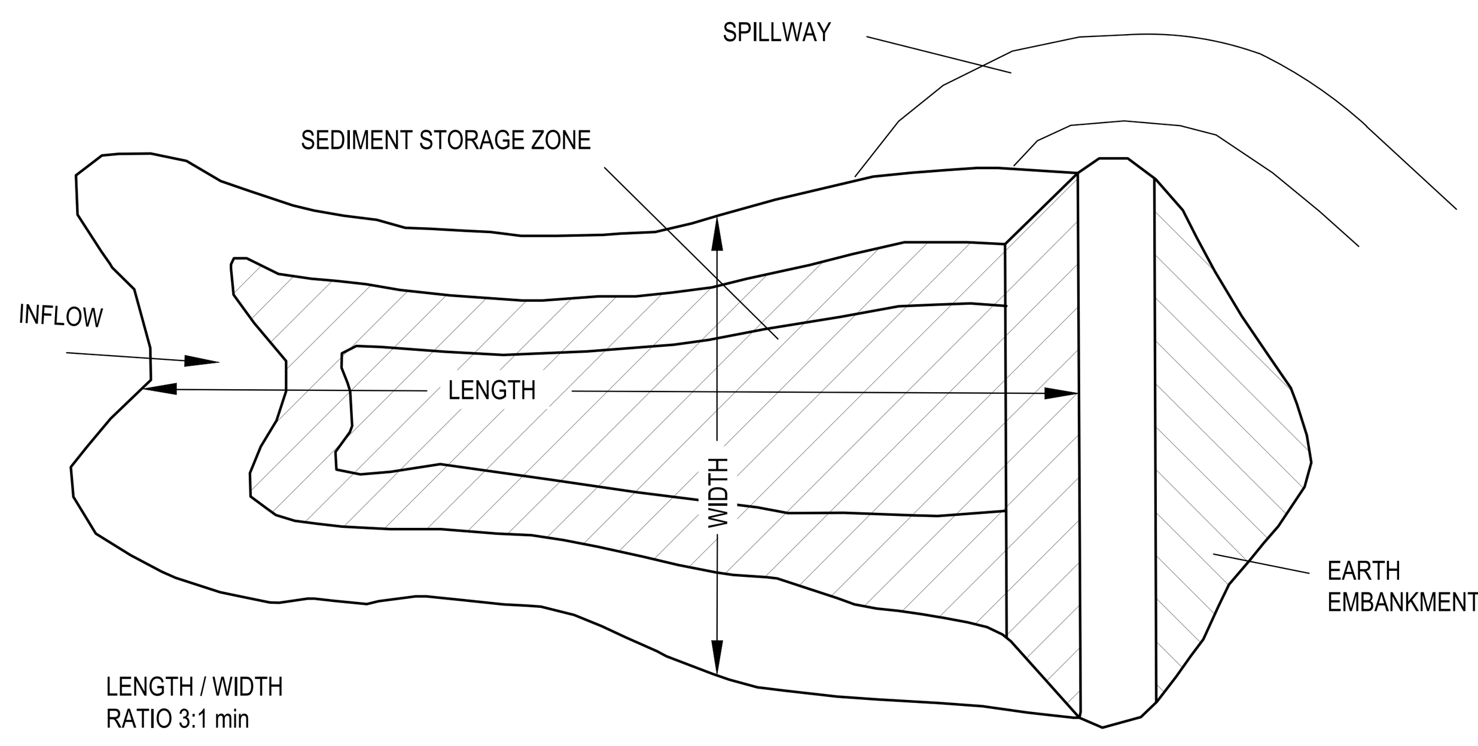
1 2 3 4 5



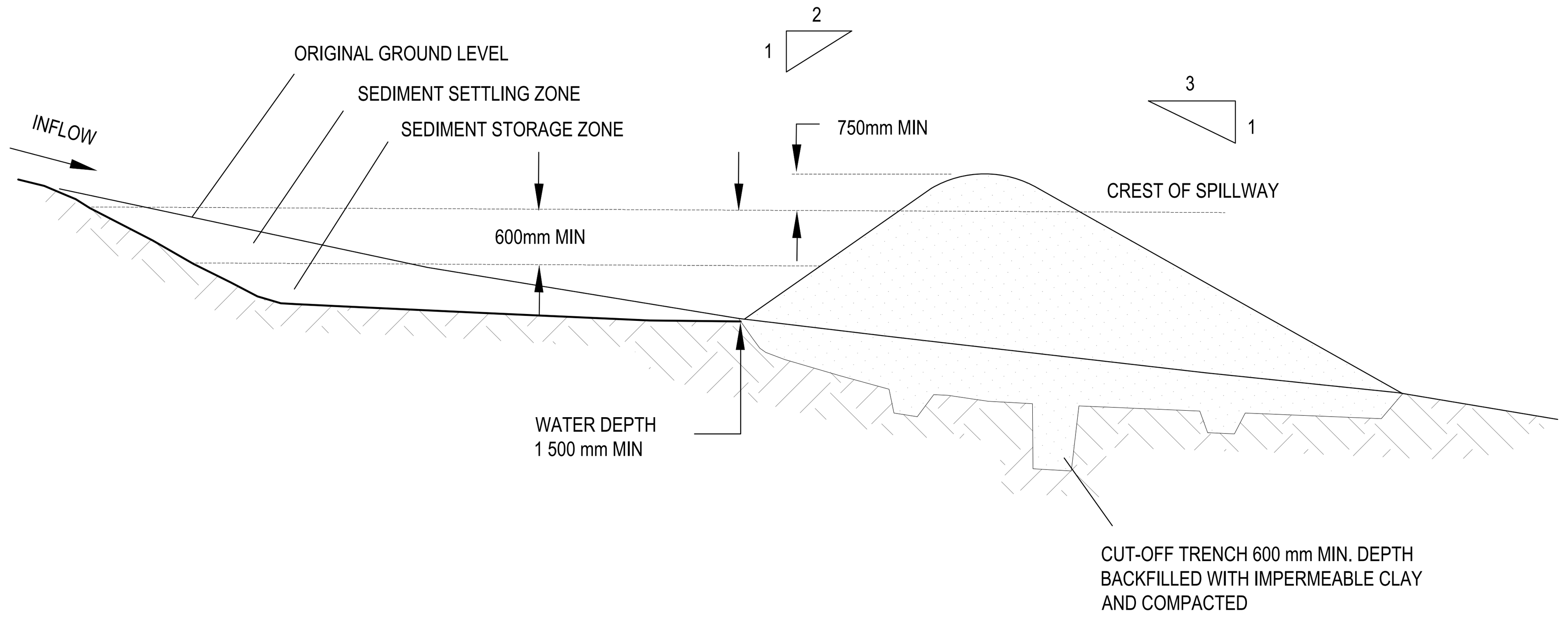
ELEVATION



PLAN



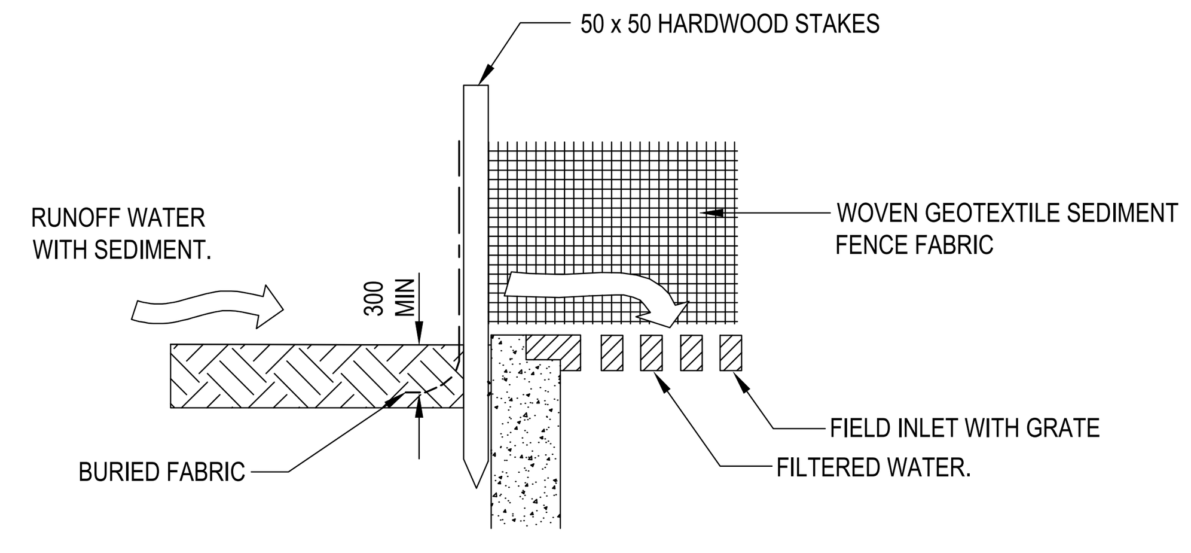
PLAN VIEW



CROSS-SECTION

WET SEDIMENT BASIN DETAIL

SCALE N.T.S



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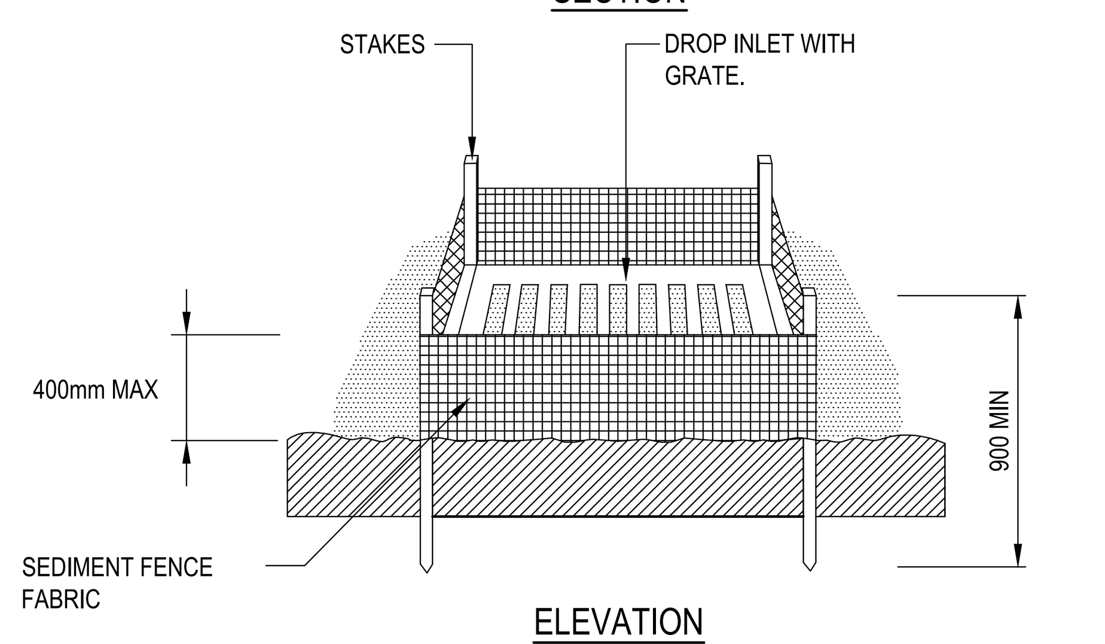


ELEVATION

GEOTEXTILE FILTER FABRIC

DROP INLET SEDIMENT TRAP

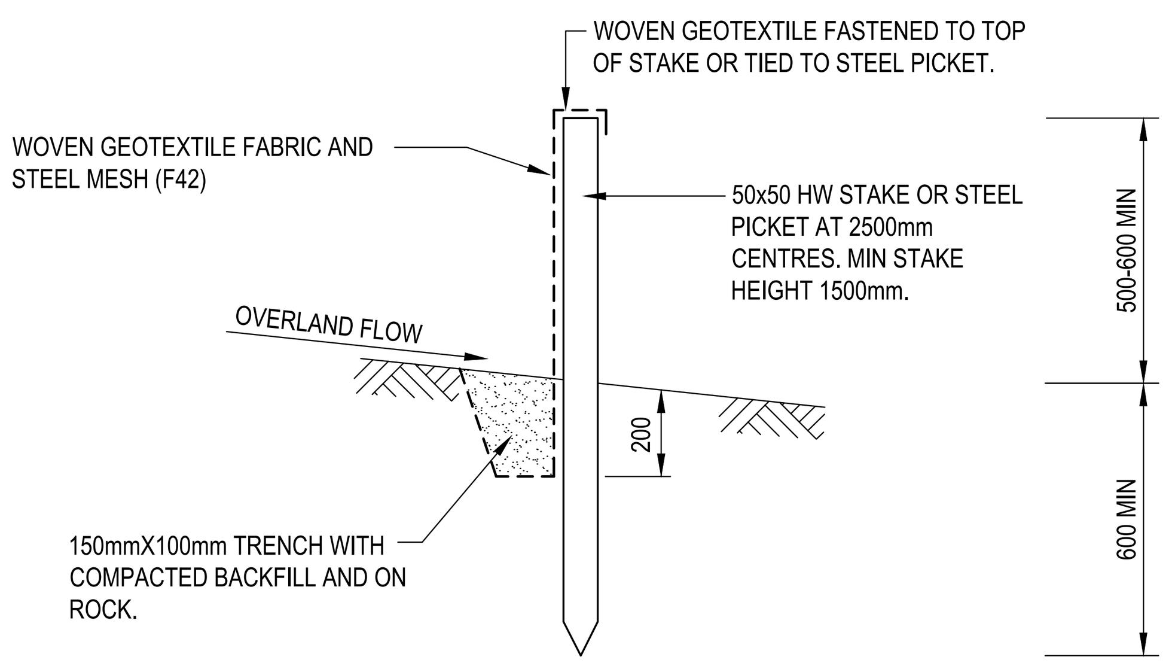
SCALE N.T.S.

NOTES

1. THIS PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS AND ANY WRITTEN INSTRUCTIONS THAT MAY BE ISSUED.
2. THE CONTRACTOR SHALL IMPLEMENT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO DISTURBANCE OF THE RELATED CATCHMENT AREA AND TO THE STANDARD OF 'MANAGING URBAN STORMWATER, SOIL & CONSTRUCTION' & COUNCIL SPECIFICATIONS.
3. ALL SUBCONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWN SLOPE AREAS.
4. LAND DISTURBANCE SHALL BE LIMITED TO THAT NECESSARY FOR IMPLEMENTATION OF THE PLANS OF WORKS. BUFFER ZONES AND LAND NOT TO BE DISTURBED SHALL BE CLEARLY MARKED WITH BARRIER FENCE. 'SILT' FENCE FOR STRAW BALE SEDIMENT TRAPS SHALL BE PLACED AT REGULAR INTERVALS IMMEDIATELY DOWNSLOPE OF ALL UNPROTECTED DISTURBED LANDS.
5. THE LOCATION OF 'SILT' FENCES, BARRIER FENCES, SEDIMENT TRAPS AND OTHER DEVICES ARE INDICATIVE ONLY AND FINAL LOCATIONS ARE TO BE DECIDED ON SITE. VARIATIONS WILL BE PERMITTED TO BEST SUIT THE CIRCUMSTANCES. CONTRACTOR TO PREPARE DETAILED CONSTRUCTION SEDIMENT AND EROSION CONTROL PLAN.
6. ALL SOIL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED FOLLOWING EACH STORM EVENT AND ANY NECESSARY MAINTENANCE WORK SHALL BE UNDERTAKEN TO ENSURE THEIR CONTINUED PROPER OPERATION. SEDIMENT SHALL BE REMOVED FROM THE SOIL EROSION & SEDIMENT CONTROL STRUCTURES WHEN
7. NO MORE THAN 40% CAPACITY HAS BEEN REACHED. THESE STRUCTURES SHALL CONTINUE IN PROPER OPERATION UNTIL ALL DEVELOPMENT ACTIVITIES HAVE BEEN COMPLETED AND THE SITE FULLY ESTABLISHED.
8. WHERE THE AREA TO BE DISTURB CONTAINS TREES TO REMAIN, AN ARBORIST CONSULTANT SHOULD PROVIDE ADVICE ON PROCEDURES AND MEASURES TO BE PLACED.
9. TEMPORARY REHABILITATION SHALL BE UNDERTAKEN WITHIN 14 WORKING DAYS BEFORE EITHER WORKS CONTINUE OR PERMANENT REHABILITATION IS UNDERTAKEN.
10. ALL OF THE SOIL STORAGE, REVEGETATION AND SEDIMENT AND EROSION CONTROL MANAGEMENT DEVICES/MEASURES SHALL BE IMPLEMENTED TO NSW ENVIRONMENT PROTECTION AUTHORITY (EPA) AND DEPARTMENT OF LAND AND WATER REQUIREMENTS.
11. ALL SEDIMENT AND EROSION CONTROL MANAGEMENT MEASURES/DEVICES SHOWN ON THE PLANS SHALL BE IMPLEMENTED PRIOR TO CONSTRUCTION, AND MAINTAINED DURING AND AFTER.

C

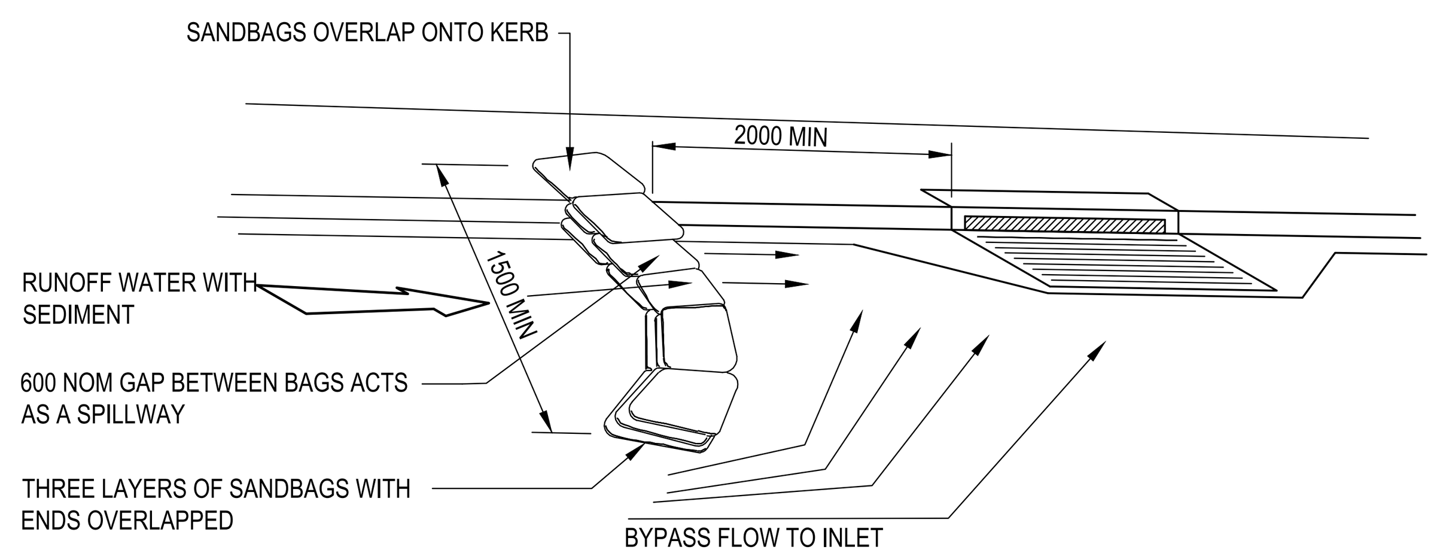
B



SECTION DETAIL

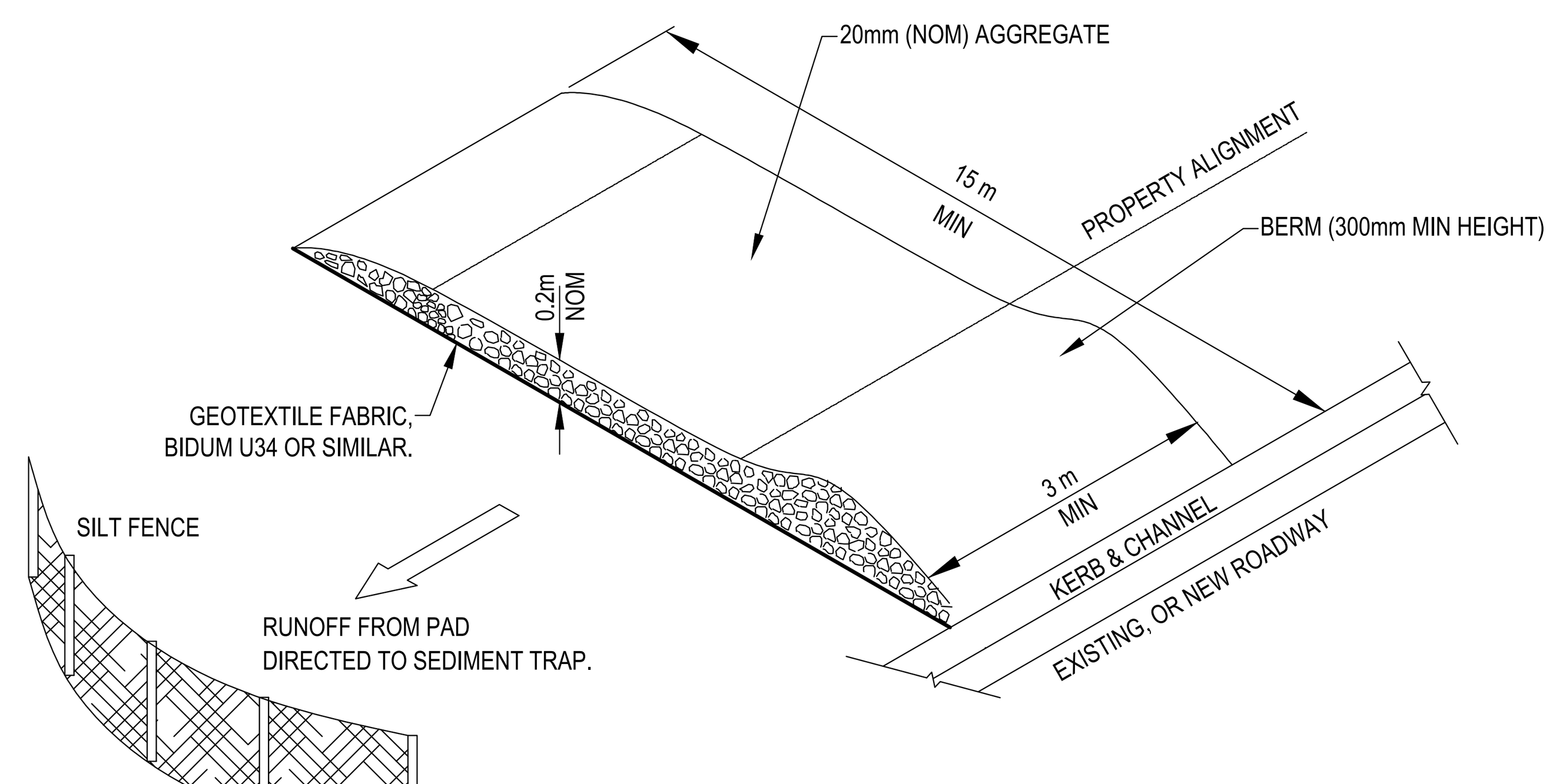
SEDIMENT FENCE DETAIL

SCALE N.T.S.



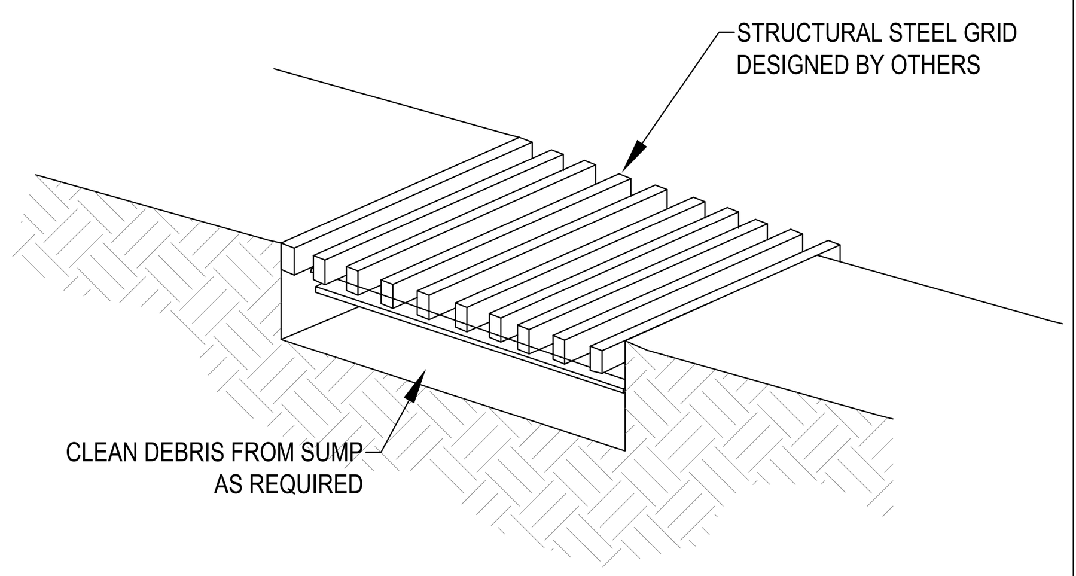
SANDBAG KERB INLET SEDIMENT TRAP

SCALE N.T.S.



TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP

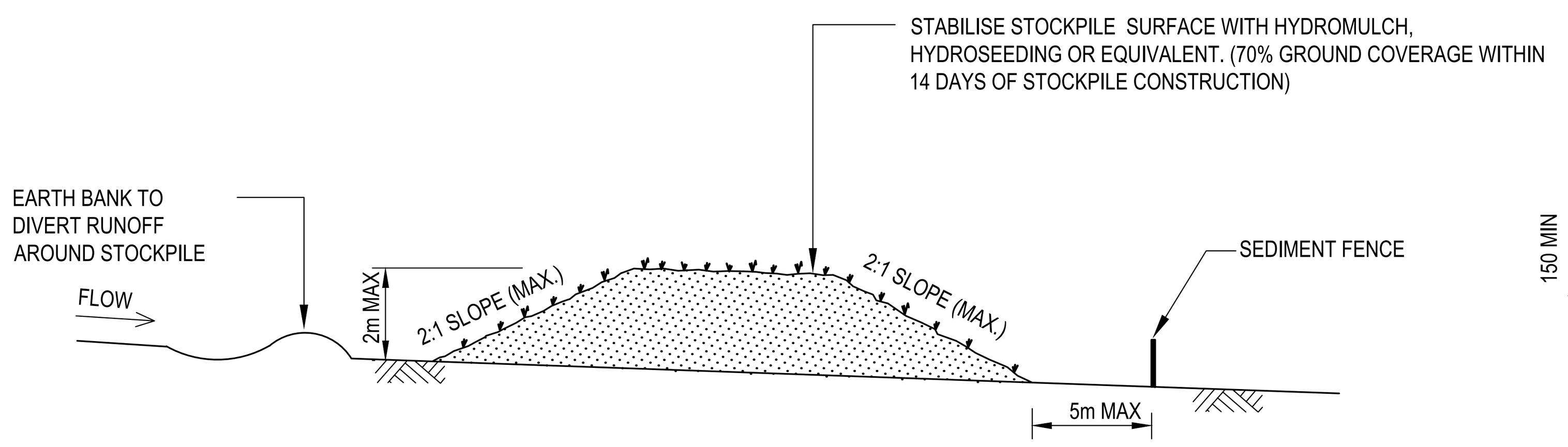
SCALE N.T.S.



SHARKER PAD

SCALE N.T.S

A

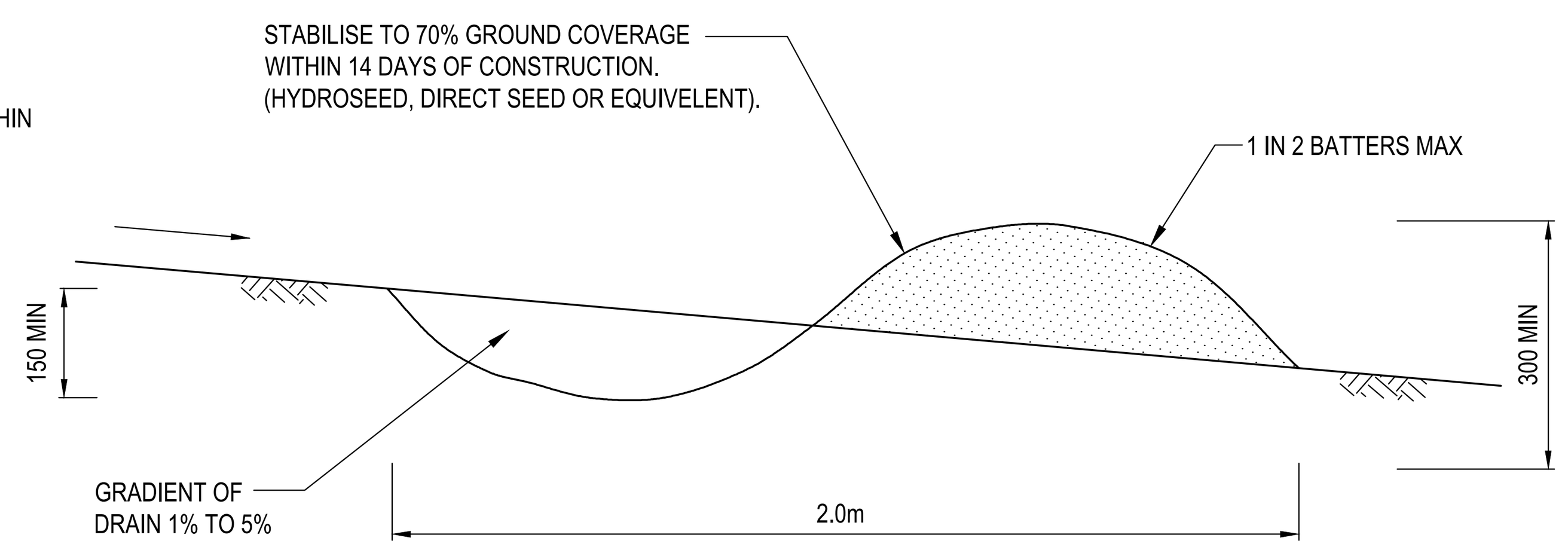


TYPICAL STOCKPILE CONFIGURATION

SCALE N.T.S.

NOTE:

1. LOCATE STOCKPILES AT TOP OF CATCHMENT ON FLAT GROUND AND NOT WITHIN 5m OF CONCENTRATED FLOW PATHS.

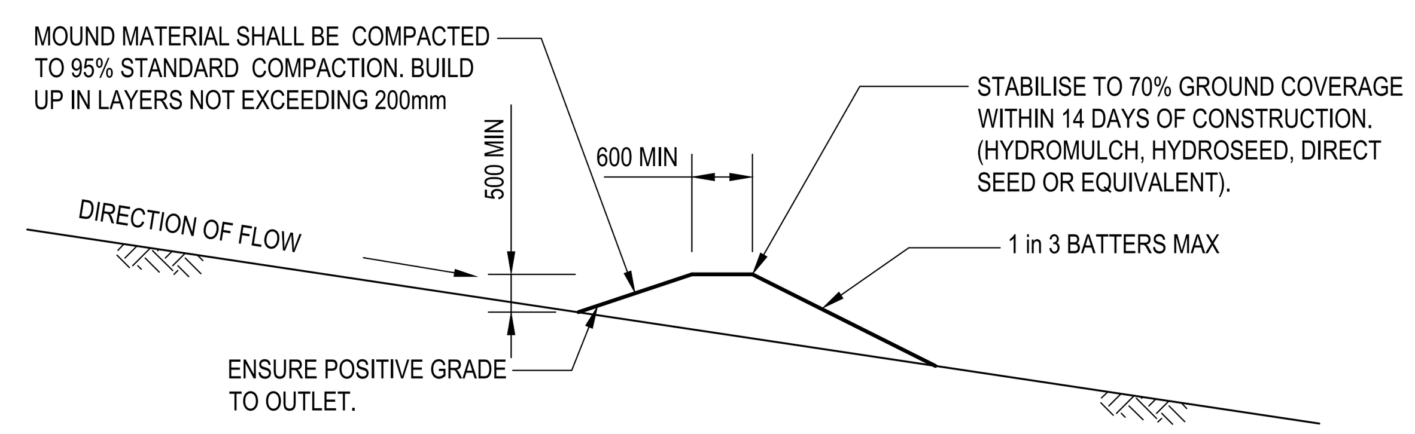


CATCH DRAIN / EARTH BANK DETAIL

SCALE N.T.S.

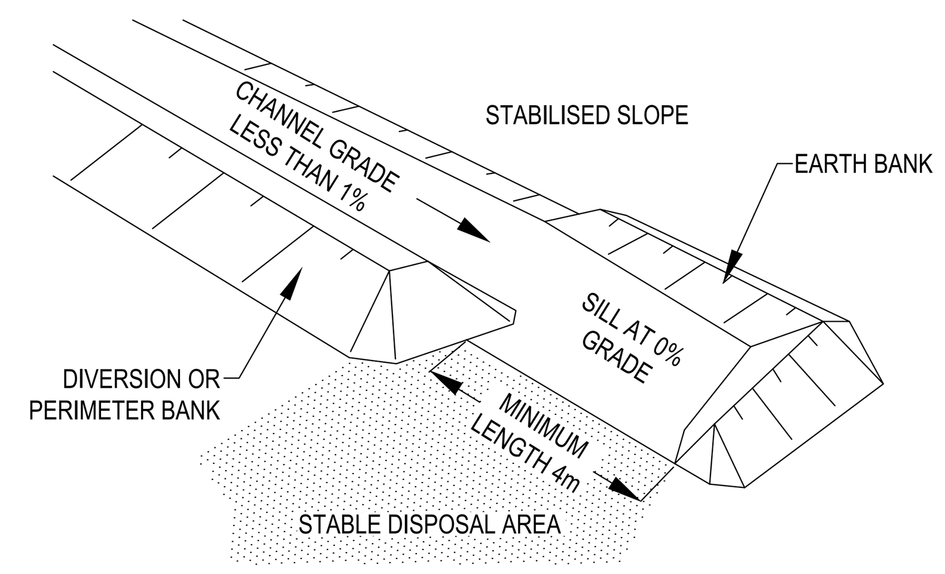
NOTES:

1. ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.
2. BUILD DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS RATHER THAN V SHAPED



DIVERSION CHANNEL/ BANK DETAIL

SCALE: NTS



LEVEL SPREADER (OR SILL)

SCALE N.T.S

Notes

C	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.05.02
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Issue Status

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HEATHERBRAE NSW 2324

File Name: HRHS-STNC-XX-XX-DR-C-076001.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

EROSION AND SEDIMENT CONTROL - DETAILS

Project No. 301350957

Scale 1:1000

Revision C

Drawing No. **HRHS-STNC-XX-XX-DR-C-076001**

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

LEGEND

- SITE BOUNDARY
- BULK EARTHWORKS AREA 1
- BULK EARTHWORKS AREA 2
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Color
1	-2.75	-2.50	
2	-2.50	-2.25	
3	-2.25	-2.00	
4	-2.00	-1.75	
5	-1.75	-1.50	
6	-1.50	-1.25	
7	-1.25	-1.00	
8	-1.00	-0.75	
9	-0.75	-0.50	
10	-0.50	-0.25	
11	-0.25	0.00	
12	0.00	0.25	
13	0.25	0.50	
14	0.50	0.75	
15	0.75	1.00	
16	1.00	1.25	
17	1.25	1.50	
18	1.50	1.75	

CUT AND FILL VOLUME - AREA 1
CUT: 670 m^3
FILL: 1,658 m^3
NET: 987 m^3 (FILL)

CUT AND FILL VOLUME - AREA 2
CUT: 3,057 m^3
CUT (SPOIL): 400 m^3
CUT (BUILDING Z)[6]: 237m^3
CUT (BUILDING X)[7]: 79m^3
FILL: 5,384 m^3
NET: 1,611 m^3 (FILL)

CUT AND FILL VOLUME - TOTAL
CUT: 4,443 m^3
CUT (SPOIL): 400 m^3
FILL: 8,300 m^3
NET: 3,857 m^3 (FILL)

NOTES:

1. VOLUMES ARE BASED ON A COMPARISON BETWEEN THE DESIGN SURFACE AND THE SURVEYED SURFACE.
2. STRIPPING OF 150mm ON THE EXISTING TERRAIN HAS BEEN APPLIED.
3. NO BULKING FACTORS HAVE BEEN APPLIED.
4. NO ALLOWANCE FOR PAVEMENT BOXING HAS BEEN APPLIED.
5. EXCAVATION IN VICINITY OF TREE PROTECTION ZONES TO BE COMPLETED IN ACCORDANCE WITH PROJECT ARBORIST'S REQUIREMENTS.
6. BUILDING Z (CUT) ACCOUNTS FOR STRIP FOOTING AND PIER FOOTING FOUNDATIONS.
7. BUILDING X (CUT) ACCOUNTS FOR STRIP FOOTING AND PIER FOOTING FOUNDATIONS.

N

1:750 7.5 0 7.5 15 22.5 30 37.5 A1
1:1500 A3

Notes

C	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.05.02
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File Name: HRHS-STNC-XX-XX-DR-C-100001.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
BULK EARTHWORKS PLAN

Project No. 301350957
Scale 1:750
Revision C
Drawing No. **HRHS-STNC-XX-XX-DR-C-100001**

Plotted: 2/05/2024 2:34:51 PM By: LAL - HASKINS
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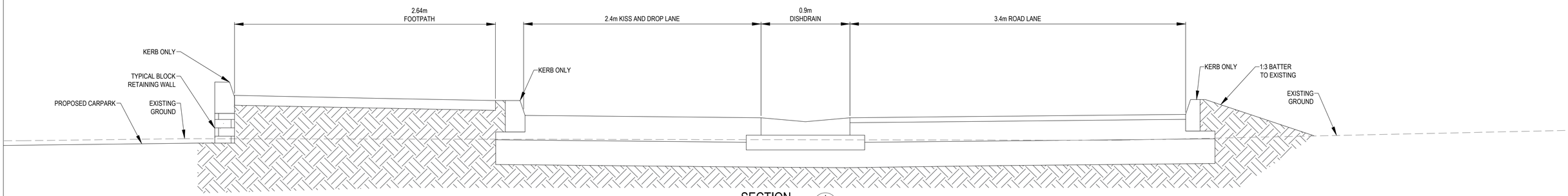
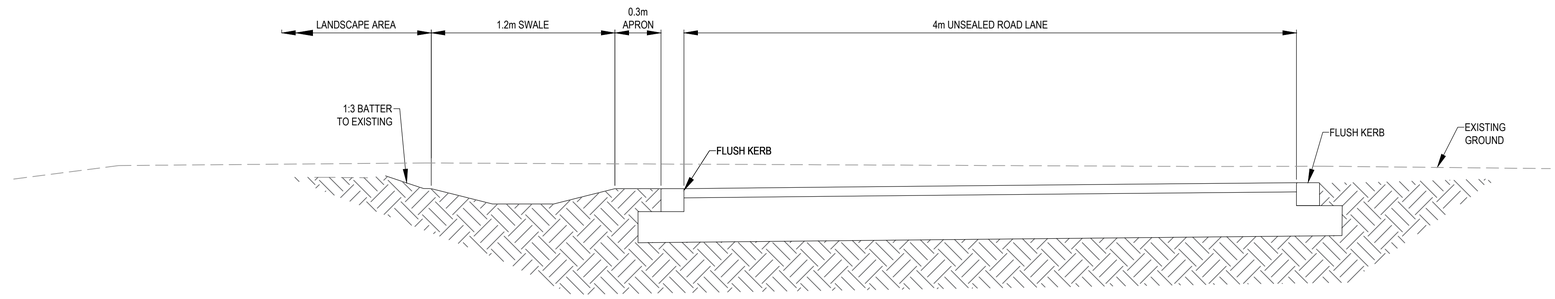
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



SECTION 1 (060001)

SCALE 1:20



SECTION 2 (060001)

SCALE 1:20

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1

1:40 A3

Notes

B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
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Issued/Revision		By	Appd	YYYY.MM.DD

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File Name: HRHS-STNC-XX-XX-DR-C-403001.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

ROADS TYPICAL SECTIONS

Project No. 301350957

Scale 1:20

Revision B

Drawing No. **HRHS-STNC-XX-XX-DR-C-403001**

Plotted: 3/05/2024 2:51:12 PM By: JAL MARSHL
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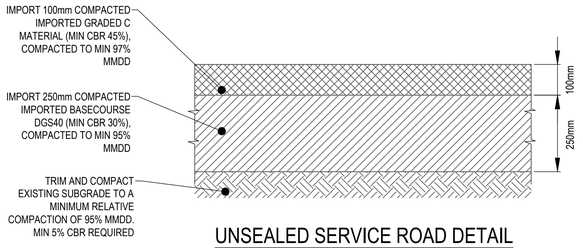
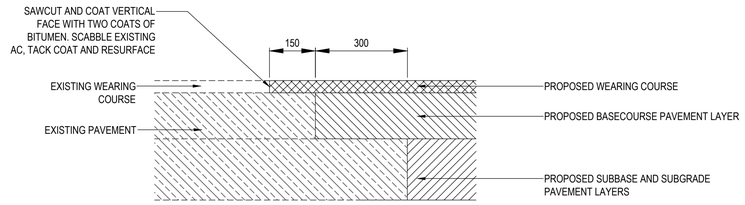
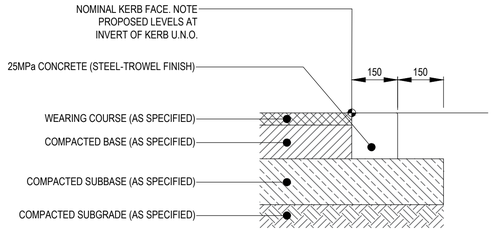


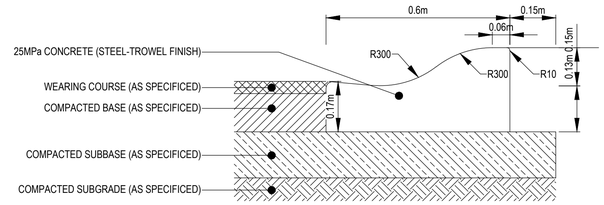
UNSEALED SERVICE ROAD DETAIL
(SCALE 1:10)



FULL DEPTH PAVEMENT CONNECTION TO EXISTING PAVEMENT
N.T.S



FLUSH KERB DETAIL (FK)
(SCALE 1:10)



ROLL KERB DETAIL
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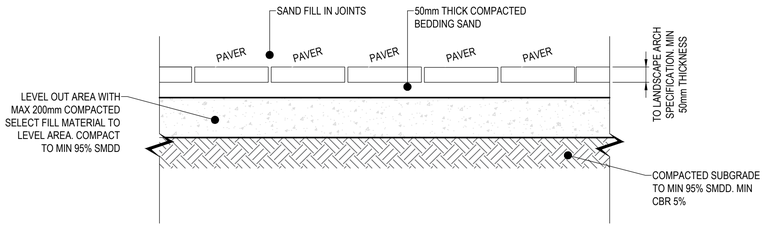
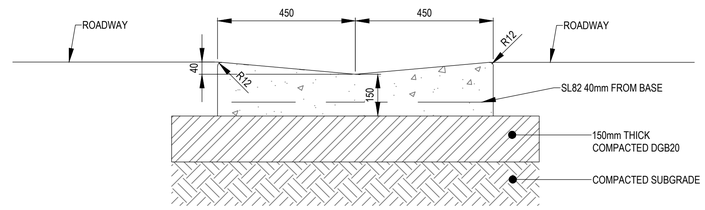
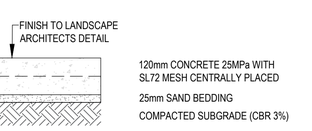


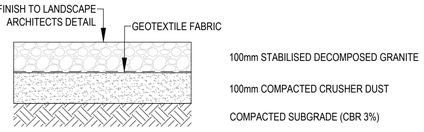
BRICK PAVING DETAIL
(SCALE 1:10)



DISH DRAIN (DD)
SCALE 1:10



CONCRETE FOOTPATH DETAIL
(SCALE 1:10)



CRUSHED GRANITE DETAIL
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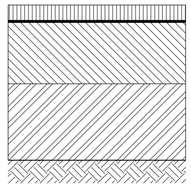
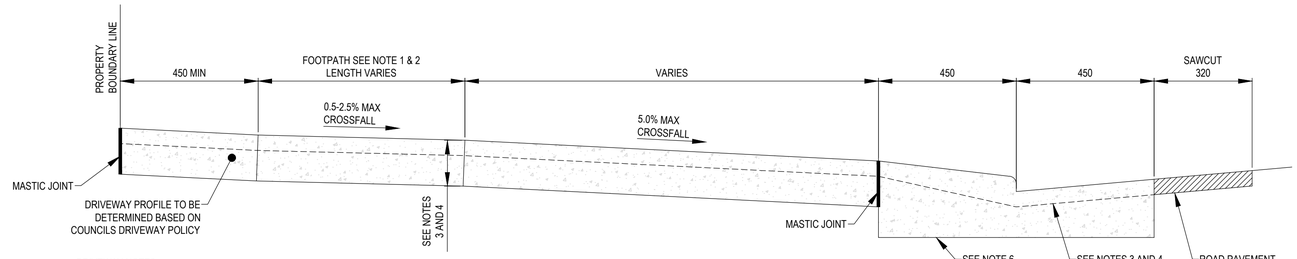
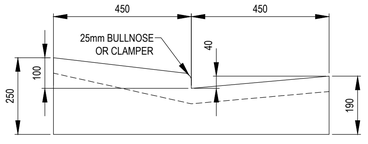


ASPHALT ACCESS ROAD PAVEMENT DETAIL
(SCALE 1:10)



SECTION 1 / -
SCALE 1:10

DRIVEWAY NOTES:
1. WHERE FOOTPATH MEETS THE DRIVEWAY, THE CROSS-FALL SHALL BE A MIN 0.5% AND MAX 2.5%, GRADED TOWARDS THE ROAD.
2. WHERE THE FOOTPATH MEETS THE DRIVEWAY, DUMMY JOINTS ARE TO BE PROVIDED. SAW CUT JOINTS WILL NOT BE ACCEPTABLE.
3. REDISDENTIAL DRIVEWAY - 110mm THICKNESS, 25MPa (MINIMUM) COMPRESSIVE STRENGTH AT 28 DAYS WITH SL62 MESH PLACED CENTRALLY AS PER SPECIFICATION.
4. INDUSTRIAL DRIVEWAY - 150mm THICKNESS, 25MPa (MINIMUM) COMPRESSIVE STRENGTH AT 28 DAYS WITH SL82 MESH PLACED CENTRALLY AS PER SPECIFICATION.
5. MATERIAL - DRIVEWAYS SHALL BE ALL CONSTRUCTED IN PLAIN CONCRETE. NO STENCILED, STAMPED, PATTERNED, COLOURED CONCRETE OR ANY OTHER TYPE OF COSMETIC FINISH IS PERMITTED.
6. EXISTING SUBBASE TO BE PROOF ROLLED WITH A SUITABLE ROLLER. AREAS WHICH SHOW VISIBLE HEAVE UNDER COMPACTION SHOULD BE OVER EXCAVATED FURTHER 300mm AND REPLACED WITH COMPACTED AND APPROVED FILL. BEDDING MATERIAL SHALL BE DGB20 (DENSELY GRADED BASE) 100mm LAYER COMPACTED TO 98%.
7. A MINIMUM 320mm WIDTH OF ASPHALT IN FRONT OF GUTTER IS TO BE REMOVED AND REPLACED WITH HOT MIX. APPLICANT CAN OBTAIN QUOTATION FROM COUNCIL.
8. ALL EXPOSED EDGES TO BE ROUNDED TO 10mm AND SURFACES BE BROOM FINISHED.
9. LAYBACK, GUTTER AND KERB SHALL BE STEEL TROWLED FINISHED.
10. IT IS THE RESPONSIBILITY OF THE OWNER TO ENGAGE THE SERVICES OF A QULAIFIED PROFESSIONAL TO DESIGN ALL DRIVEWAYS (INTERNAL AND EXTERNAL) IN ACCORDANCE WITH AS/NZS 2890.1 2004 OFF STREET CAR PARK STANDARDS.



LAYBACK DETAIL
SCALE 1:10

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

Notes

B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A	ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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HEATHERBRAE NSW 2324

File Name:HRHS-STNC-XX-XX-DR-C-406001.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
ROADS DETAILS - SHEET 1

Project No.
301350957

Scale
1:10

Revision
B

Drawing No.
HRHS-STNC-XX-XX-DR-C-406001

Plotted: 23/05/2024 2:55:24 PM By: LAL, MARSHL
U:\301350999\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\HRHS\SHEET SET\HRHS1
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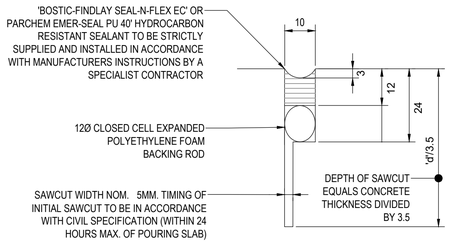
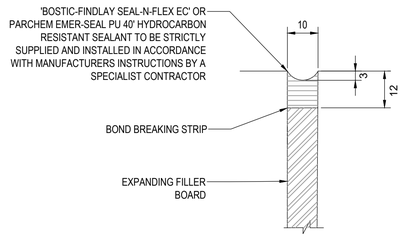


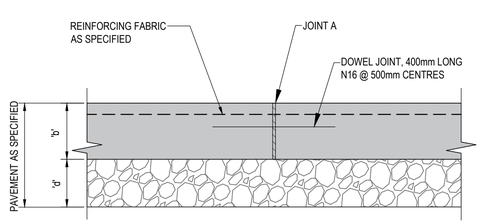
JOINT SEALANT DETAIL 'A'

1:1



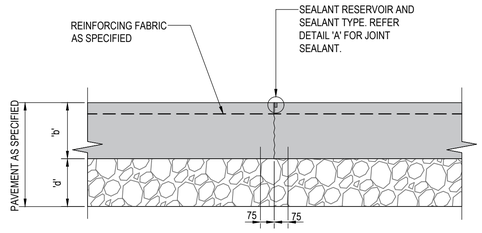
JOINT SEALANT DETAIL 'B'

1:1



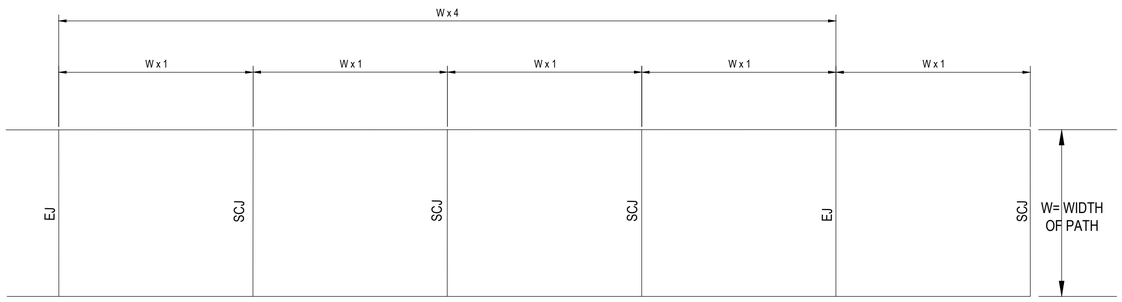
EXPANSION JOINT (EJ) DETAIL

(SCALE 1:10)



SAWN CONTRACTION JOINT

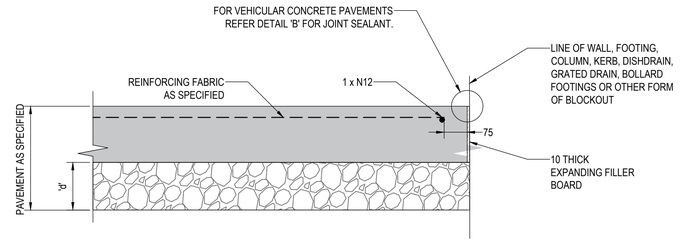
SHOWN AS 'SCJ' ON PLAN
N.T.S
'd'= SUBBASE THICKNESS TO MATCH DEPTH OF PAVEMENT SUBBASE, BUT NOT LESS THAN 30



TYPICAL JOINT PLAN FOR FOOTPATHS AND MEDIANS

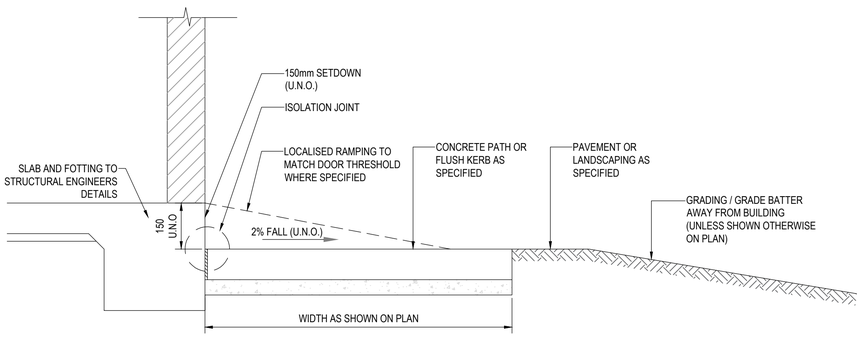
N.T.S

CONCRETE TO HAVE BROOM FINISH WITH SMOOTH TROWELLED EDGES.
SCJ- FOOTPATH SAWCUT JOINT. REFER TO DETAIL
EJ- FOOTPATH EXPANSION JOINT. REFER TO DETAIL



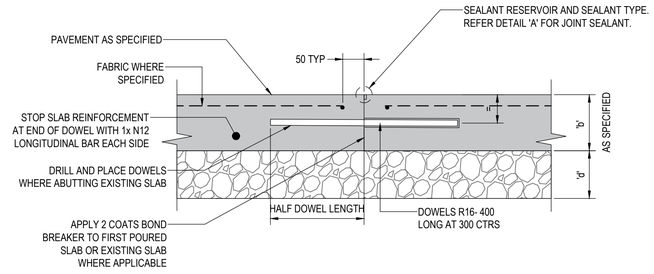
TYPICAL ISOLATION JOINT DETAIL

SHOWN AS 'IJ' ON PLAN
N.T.S
NOTE: TO ALSO BE CONSTRUCTED IN LOCATIONS WHERE CONCRETE PAVEMENTS ABUT FORMS OF BLOCKOUT AS SPECIFIED BY THIS ISOLATION JOINT DETAIL.
'd'= SUBBASE THICKNESS TO MATCH DEPTH OF PAVEMENT SUBBASE, BUT NOT LESS THAN 30



TYPICAL BUILDING PERIMETER/ SET DOWN

N.T.S



DOWELLED CONSTRUCTION JOINT (CONSTRUCTION AT POUR END)

SHOWN AS 'DCJ' ON PLAN
N.T.S
'd'= SUBBASE THICKNESS TO MATCH DEPTH OF PAVEMENT SUBBASE, BUT NOT LESS THAN 30

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

Notes

B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A	ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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HEATHERBRAE NSW 2324

File Name:HRHS-STNC-XX-XX-DR-C-406001.DWG	CPO	JMB	JMB	#########
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

ROADS DETAILS - SHEET 2

Project No. 301350957

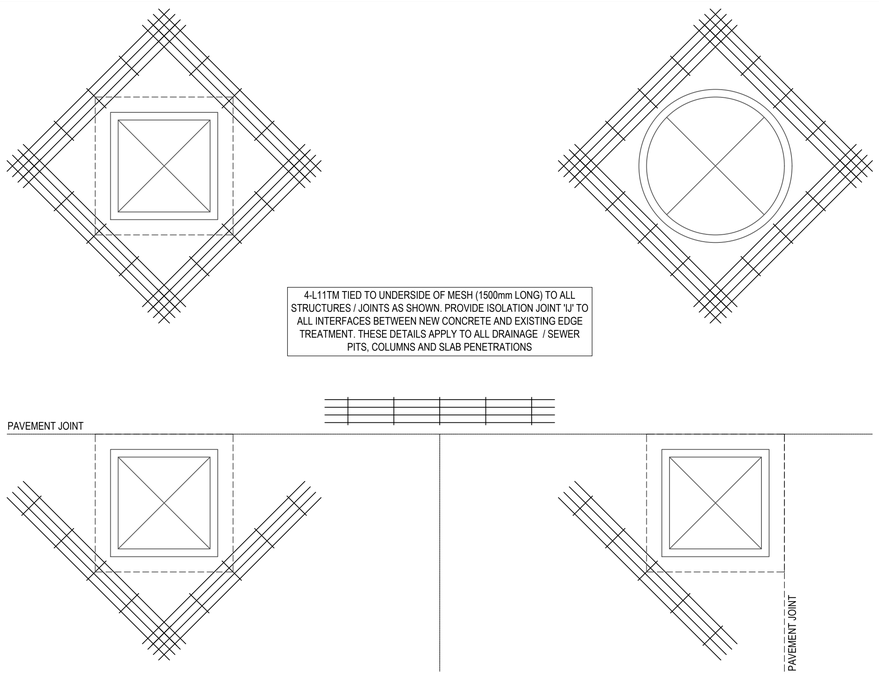
Scale 1:10

Revision B

Drawing No. **HRHS-STNC-XX-XX-DR-C-406002**

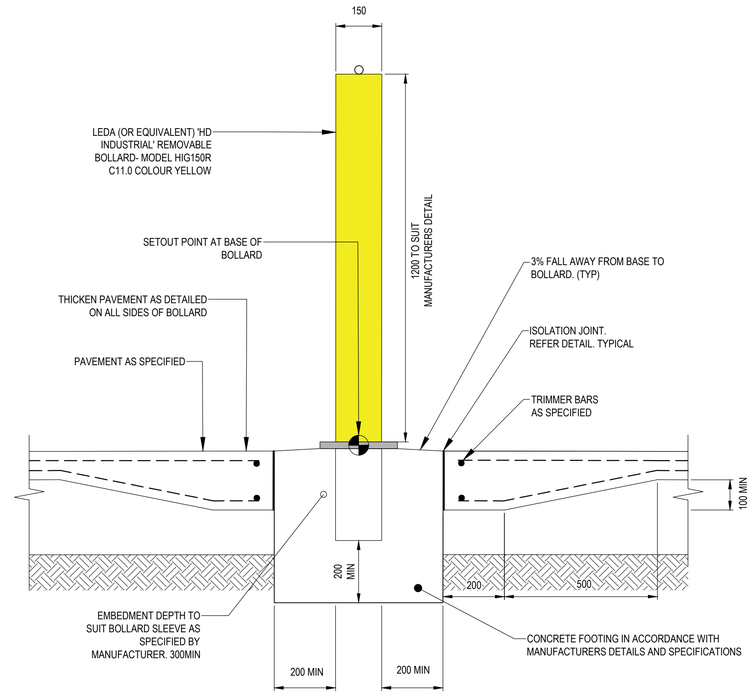
Plotted: 2/05/2024 2:55:27 PM By: LAL MARSHL
U:\301350969\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\HRHS\SHEET SET\HRHS1

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



TRIMMER BAR ARRANGEMENTS

(NOT TO SCALE)

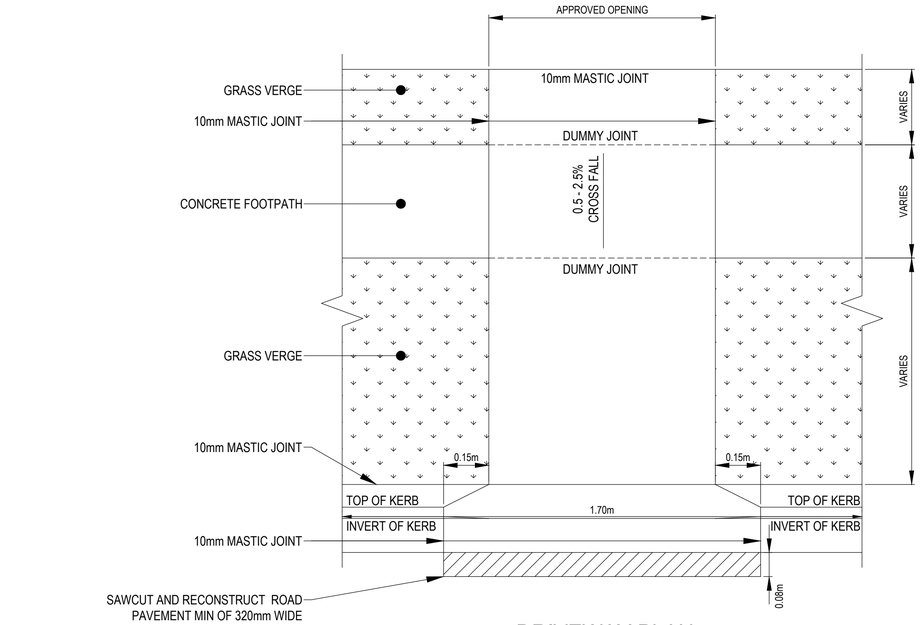


REMOVABLE STEEL BOLLARD 'TYPE B1' (CONCRETE PAVEMENT)

N.T.S

NOTE:

1. ALL ELEMENTS TO BE GALVANISED
2. CONTRACTOR TO CONFIRM SERVICES LOCATIONS ON SITE AND ENSURE BOLLARDS DO NOT CONFLICT WITH PROPOSED OR EXISTING SERVICES.
3. BOLLARD TO BE STRICTLY INSTALLED TO MANUFACTURERS DETAILS AND SPECIFICATIONS



DRIVEWAY PLAN

N.T.S

Notes

B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
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	Issued/Revision	By	Appd	YYYY.MM.DD

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HEATHERBRAE NSW 2324

File Name:HRHS-STNC-XX-XX-DR-C-406001.DWG	CPO	JMB	JMB	##########
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
ROADS DETAILS - SHEET 3

Project No.
301350957

Scale
1:10

Revision
B

Drawing No.
HRHS-STNC-XX-XX-DR-C-406003

Plotted: 22/05/2024 3:55:29 PM By: LAL MARSHL
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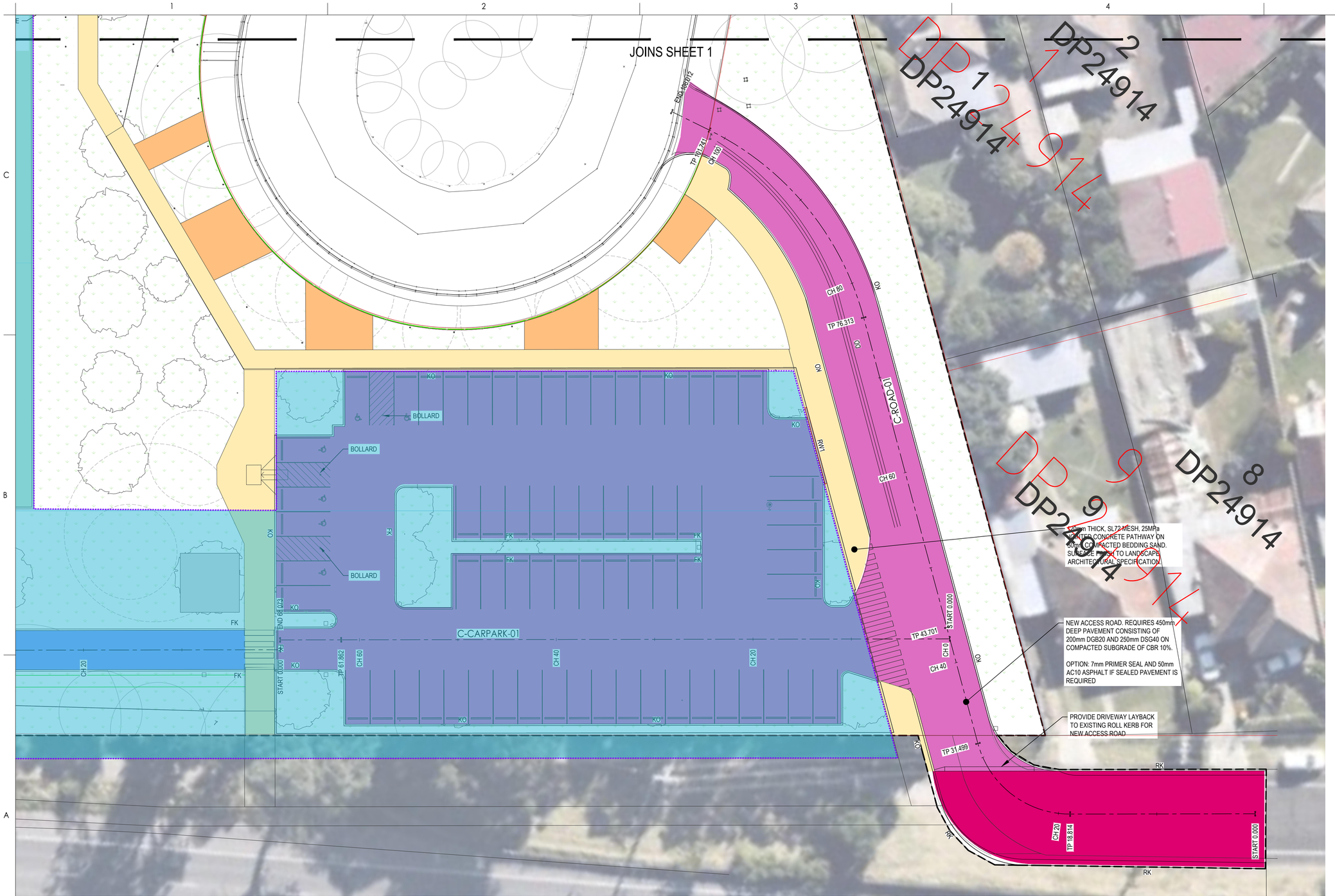
ORIGINAL SHEET - ISO A1 COORD - MGA/ITY-Zone DATUM - mAHD

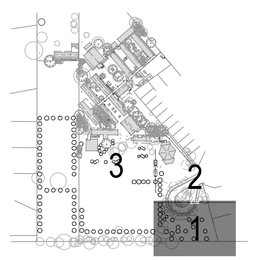


LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING
- DA PLANNING EXTENTS
- LANDSCAPE
- SPORTS FIELD
- ROAD PAVEMENT - ASPHALT SURFACING
- UNSEALED PAVEMENT
- EXISTING UNSEALED PAVEMENT TO BE MAINTAINED
- EXISTING PAVEMENT RE-SHEETED
- CONCRETE FOOTPATH
- EXISTING CONCRETE FOOTPATH
- CRUSHED GRANITE
- BRICK PAVING
- INTERFACE OF EXISTING PAVEMENT & PROPOSED PAVEMENT (1)

NOTES:

1. CUT NEATLY INTO EXISTING PAVEMENT & APPLY EXPANSION JOINT (EJ) DETAIL PER SHEET HRHS-STNC-XX-XX-DR-C-406002



KEY PLAN
(SCALE 1:5000)

1:200 2 0 2 4 6 8 10 A1
1:400 A3

Notes

C	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.05.02
B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A	ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
Issued/Revision		By	Appd	YYYY.MM.DD

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File Name: HRHS-STNC-XX-XX-DR-C-440101.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
PAVEMENT PLAN - SHEET 1

Project No.
301350957

Scale
1:200

Revision
C

Drawing No.
HRHS-STNC-XX-XX-DR-C-440101

Plotted: 2/05/2024 3:11:13 PM By: LAL, HASHIL
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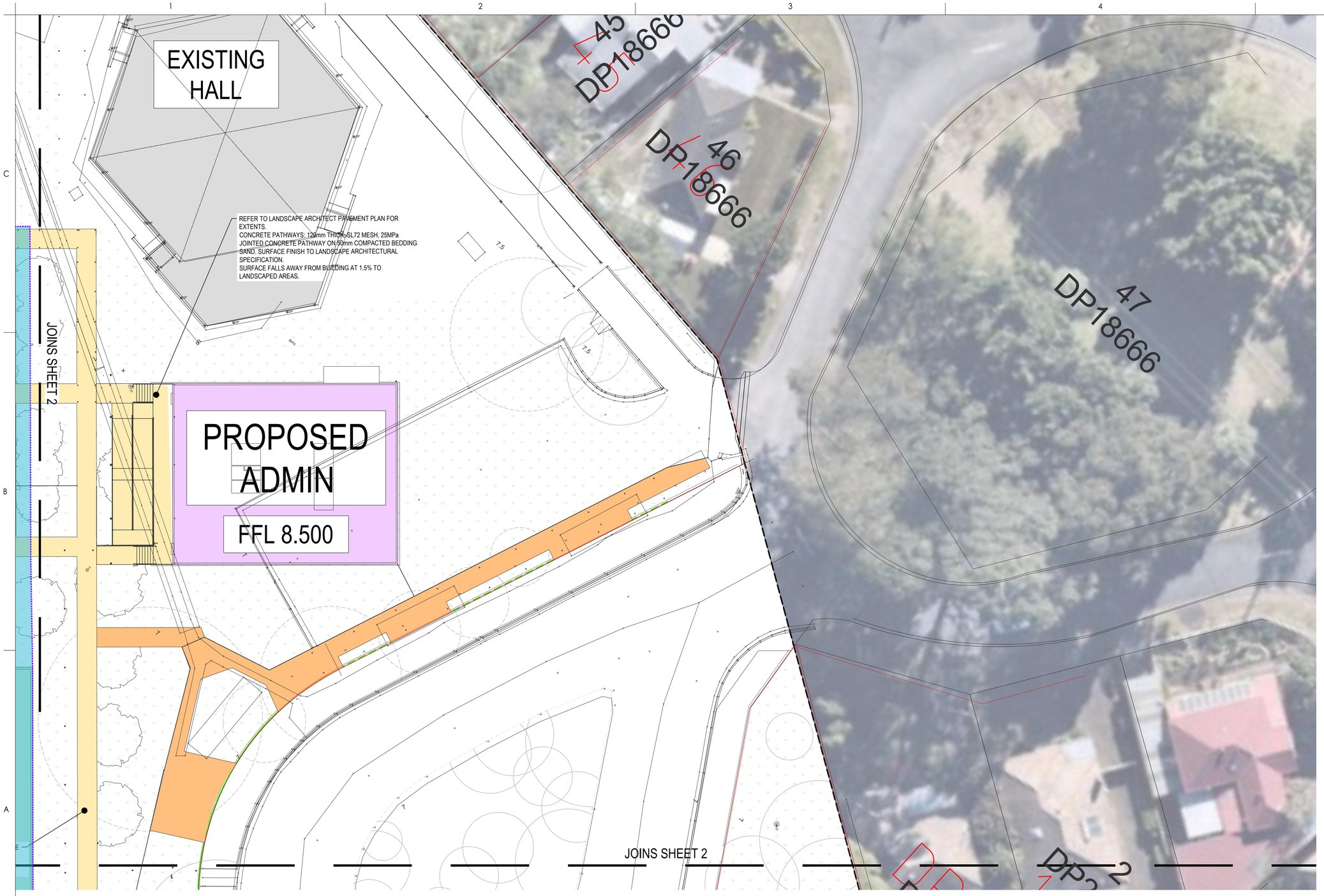
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

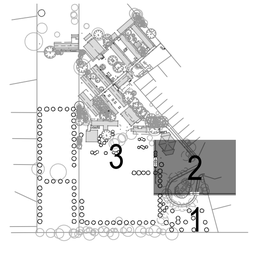


LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING
- DA PLANNING EXTENTS
- LANDSCAPE
- SPORTS FIELD
- ROAD PAVEMENT - ASPHALT SURFACING
- UNSEALED PAVEMENT
- EXISTING UNSEALED PAVEMENT TO BE MAINTAINED
- EXISTING PAVEMENT RE-SHEETED
- CONCRETE FOOTPATH
- EXISTING CONCRETE FOOTPATH
- CRUSHED GRANITE
- BRICK PAVING
- INTERFACE OF EXISTING PAVEMENT & PROPOSED PAVEMENT (1)

NOTES:

1. CUT NEATLY INTO EXISTING PAVEMENT & APPLY EXPANSION JOINT (EJ) DETAIL PER SHEET HRHS-STNC-XX-XX-DR-C-406002



KEY PLAN
(SCALE 1:5000)

1:200 2 0 2 4 6 8 10 A1
1:400 A3

Notes

C	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.05.02
B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
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File Name: HRHS-STNC-XX-XX-DR-C-440101.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
PAVEMENT PLAN - SHEET 2

Project No.
301350957

Scale
1:200

Revision
C

Drawing No.
HRHS-STNC-XX-XX-DR-C-440102

Plotted: 2/05/2024 3:11:21 PM, By: LAL, HARSHIL
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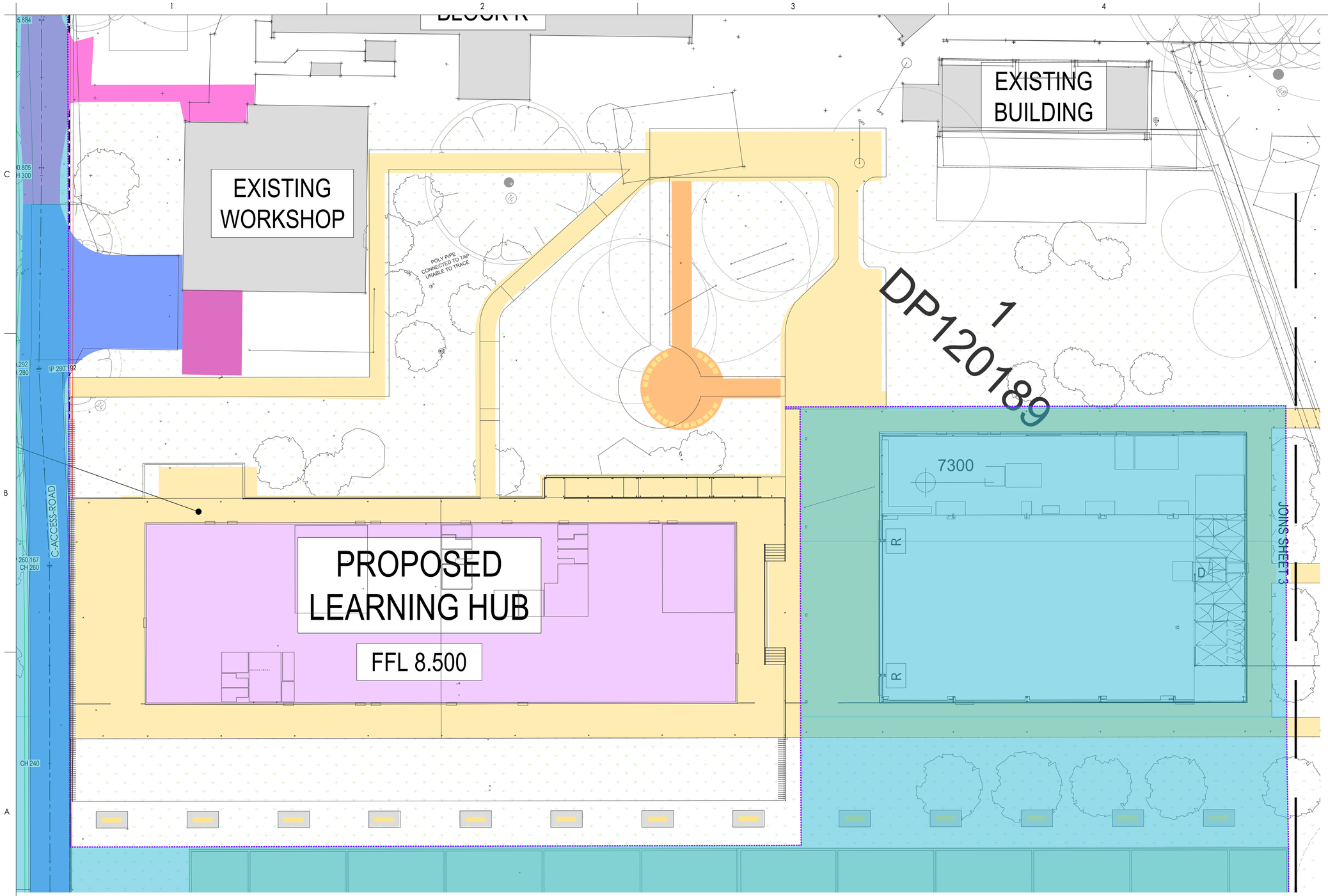

LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING
- DA PLANNING EXTENTS
- LANDSCAPE
- SPORTS FIELD
- ROAD PAVEMENT - ASPHALT SURFACING
- UNSEALED PAVEMENT
- EXISTING UNSEALED PAVEMENT TO BE MAINTAINED
- EXISTING PAVEMENT RE-SHEETED
- CONCRETE FOOTPATH
- EXISTING CONCRETE FOOTPATH
- CRUSHED GRANITE
- BRICK PAVING
- INTERFACE OF EXISTING PAVEMENT & PROPOSED PAVEMENT (1)

NOTES:

1. CUT NEATLY INTO EXISTING PAVEMENT & APPLY EXPANSION JOINT (EJ) DETAIL PER SHEET HRHS-STNC-XX-XX-DR-C-406002

KEY PLAN
(SCALE 1:5000)

1:200 / 1:400 — 2 0 2 4 6 8 10 — A1 / A3

Notes

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B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A	ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
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	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

PAVEMENT PLAN - SHEET 3

Project No. 301350957

Scale 1:200

Revision C

Drawing No. **HRHS-STNC-XX-XX-DR-C-440103**

Plotted: 22/05/2024 5:13:13 PM By: LAL, MARSHL
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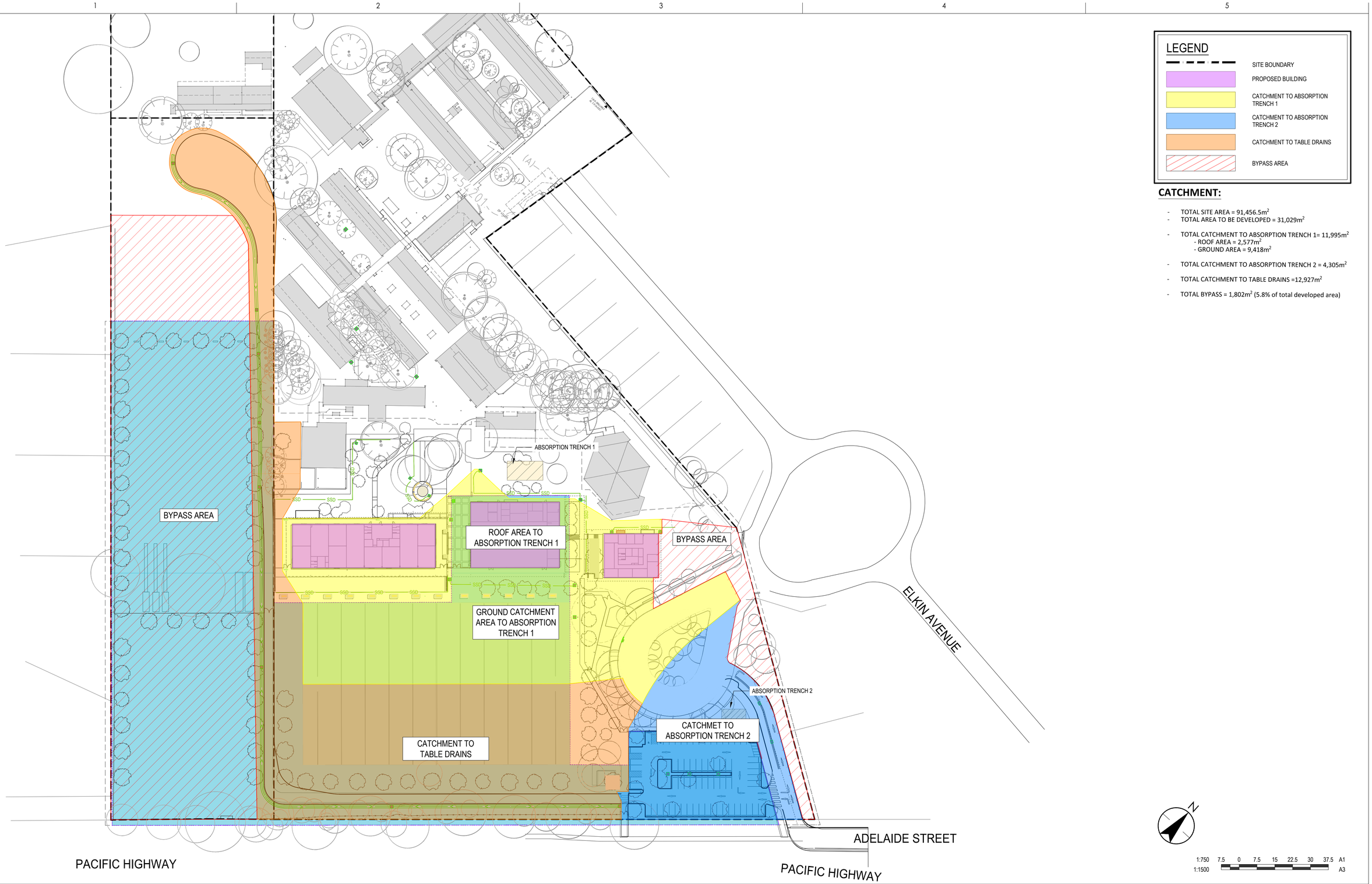

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File Name: HRHS-STNC-XX-XX-DR-C-500001.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE CATCHMENT PLAN

Project No.
301350957

Scale
1:750

Revision
C

Drawing No.
HRHS-STNC-XX-XX-DR-C-500001

Plotted: 2/05/2024 2:54:47 PM By: LAL - HASKIN
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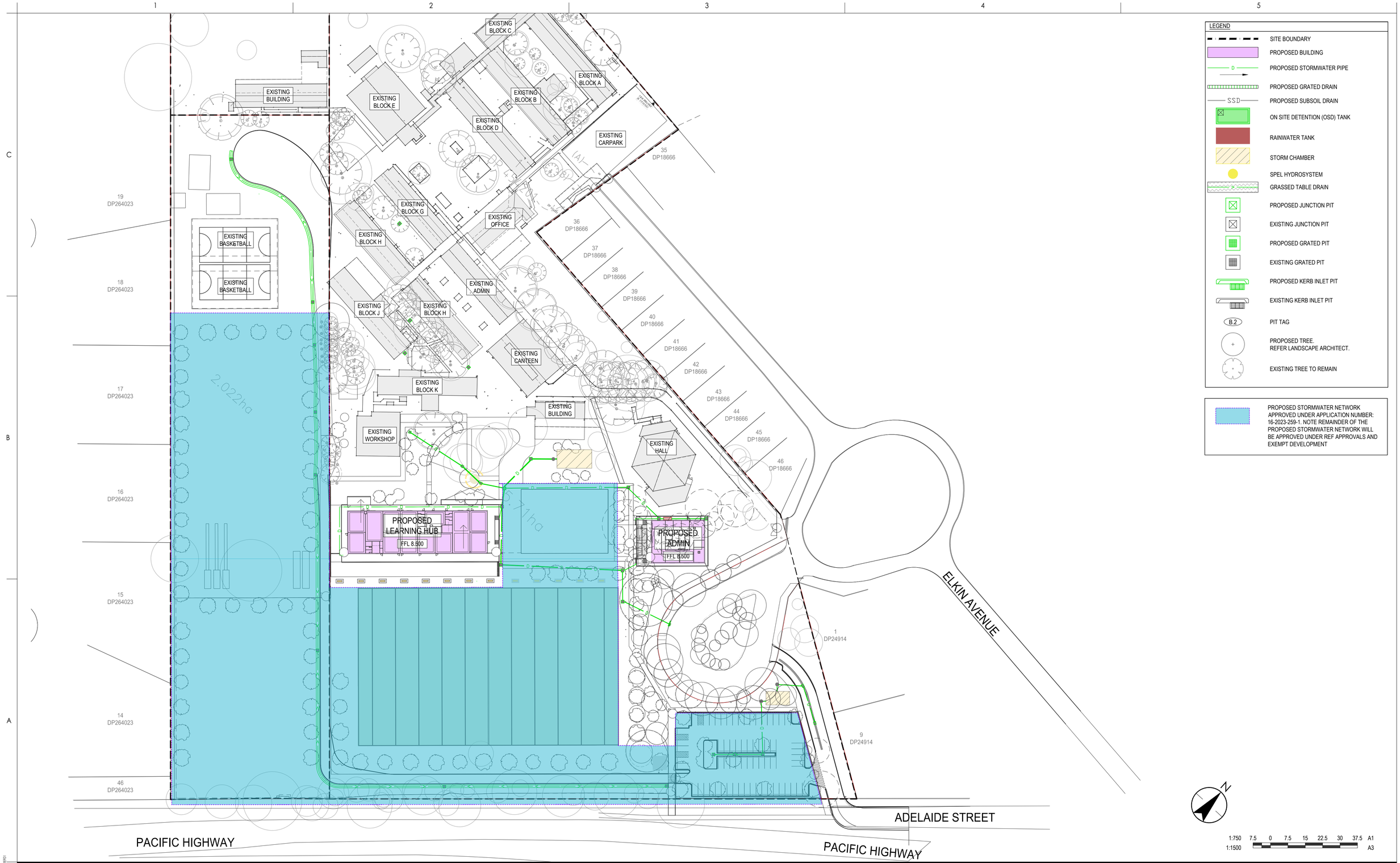
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING
- PROPOSED STORMWATER PIPE
- PROPOSED GRATED DRAIN
- PROPOSED SUBSOIL DRAIN
- ON SITE DETENTION (OSD) TANK
- RAINWATER TANK
- STORM CHAMBER
- SPEL HYDROSYSTEM
- GRASSED TABLE DRAIN
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- B.2 PIT TAG
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN

PROPOSED STORMWATER NETWORK APPROVED UNDER APPLICATION NUMBER: 16-2023-259-1. NOTE REMAINDER OF THE PROPOSED STORMWATER NETWORK WILL BE APPROVED UNDER REF APPROVALS AND EXEMPT DEVELOPMENT

N

1:750 7.5 0 7.5 15 22.5 30 37.5 A1
1:1500 A3

Notes

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HUNTER RIVER HIGH SCHOOL

HEATHERBRAE NSW 2324

File Name: HRHS-STNC-XX-XX-DR-C-520001.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

STORMWATER DRAINAGE PLAN - SITE WIDE

Project No. 301350957

Scale 1:750

Revision C

Drawing No. **HRHS-STNC-XX-XX-DR-C-520001**

Plotted: 2/07/2024 3:13:46 PM By: AL, HARSHIL
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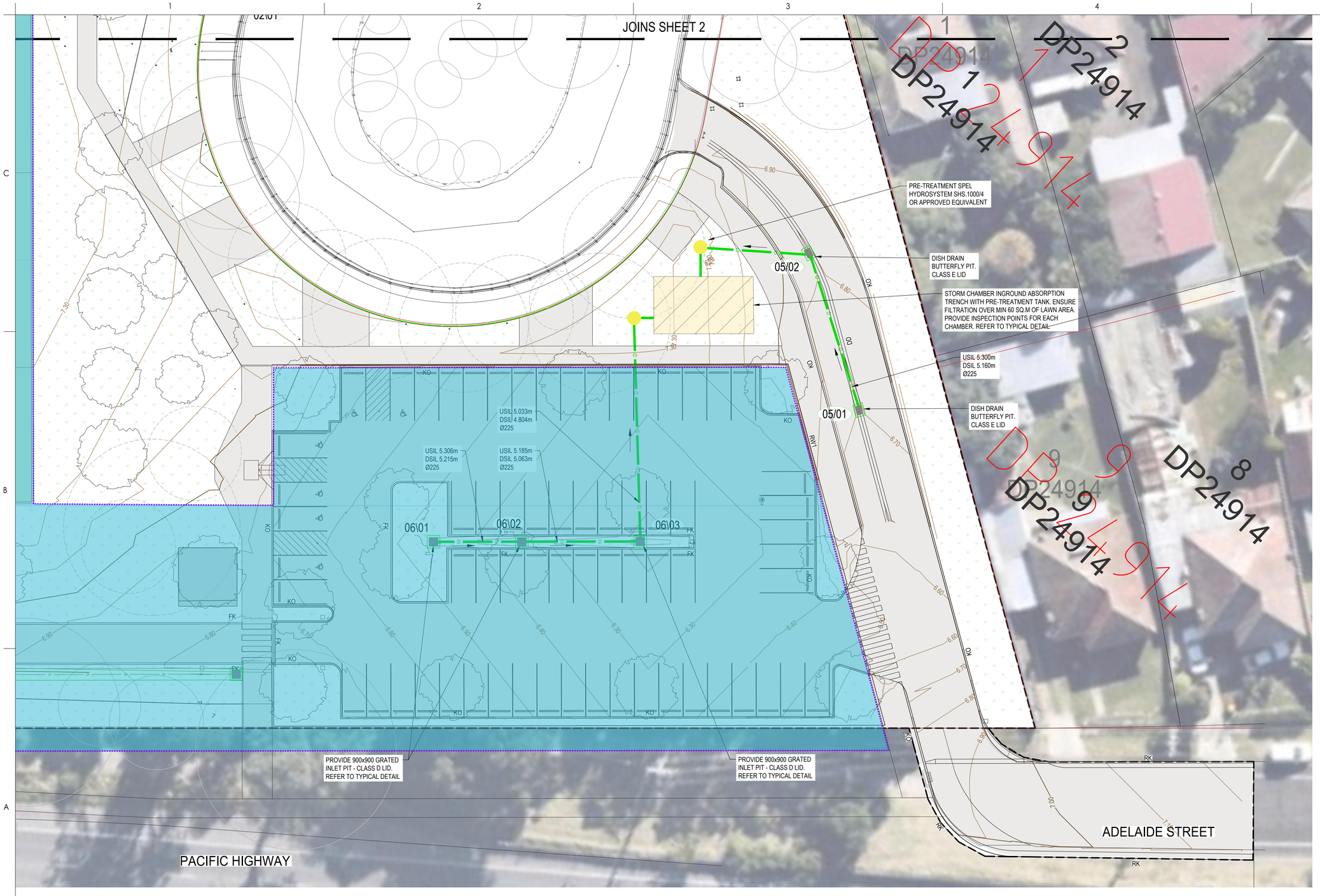
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

JOINS SHEET 2



LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING
- PROPOSED STORMWATER PIPE
- PROPOSED GRATED DRAIN
- PROPOSED SUBSOIL DRAIN
- ON SITE DETENTION (OSD) TANK
- RAINWATER TANK
- STORM CHAMBER
- SPEL HYDROSYSTEM
- GRASSED TABLE DRAIN
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- B.2 — PIT TAG
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN

3 | 2 | 1

KEY PLAN
(SCALE 1:5000)

1:200 2 0 2 4 6 8 10 A1
1:400 A3

Notes

C	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.05.02
B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A	ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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HUNTER RIVER HIGH SCHOOL

HEATHERBRAE NSW 2324

File Name: HRHS-STNC-XX-XX-DR-C-520101.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE PLAN - SHEET 1

Project No.
301350957

Scale
1:200

Revision
C

Drawing No.
HRHS-STNC-XX-XX-DR-C-520101

Plotted: 2/05/2024 9:16:01 PM By: LAL - HARSHIL
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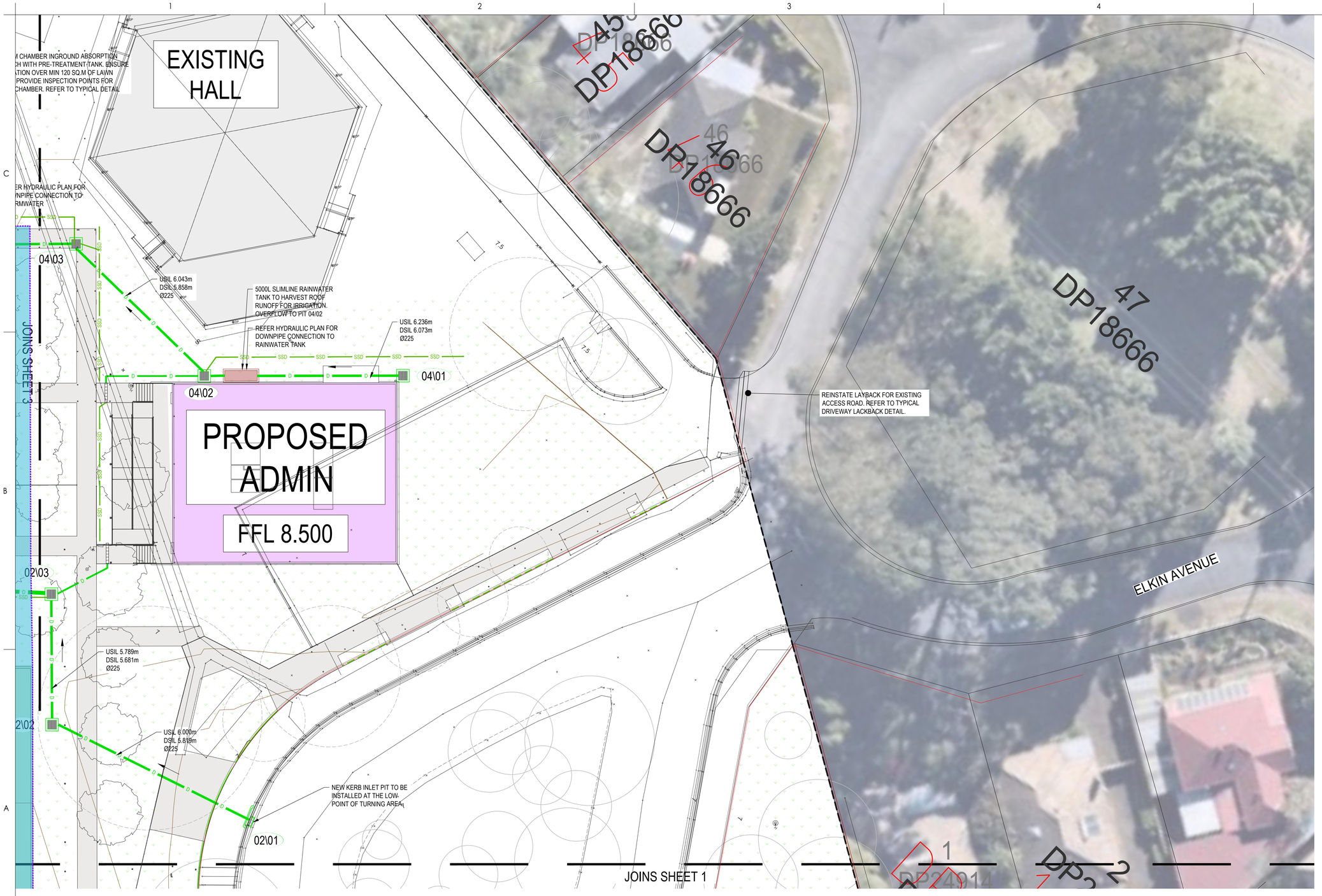

LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING
- PROPOSED STORMWATER PIPE
- PROPOSED GRATED DRAIN
- PROPOSED SUBSOIL DRAIN
- ON SITE DETENTION (OSD) TANK
- RAINWATER TANK
- STORM CHAMBER
- SPEL HYDROSYSTEM
- GRASSED TABLE DRAIN
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- B.2 PIT TAG
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN

3 2 1

KEY PLAN
(SCALE 1:5000)

1:200 2 0 2 4 6 8 10 A1
1:400 A3

Notes

C	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.05.02
B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
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Issued/Revision		By	Appd	YYYY.MM.DD

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HEATHERBRAE NSW 2324

File Name: HRHS-STNC-XX-XX-DR-C-520101.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE PLAN - SHEET 2

Project No. 301350957
Scale 1:200
Revision C
Drawing No. **HRHS-STNC-XX-XX-DR-C-520102**

Plotted: 2/05/2024 3:14:09 PM By: LAL, HAZHUE
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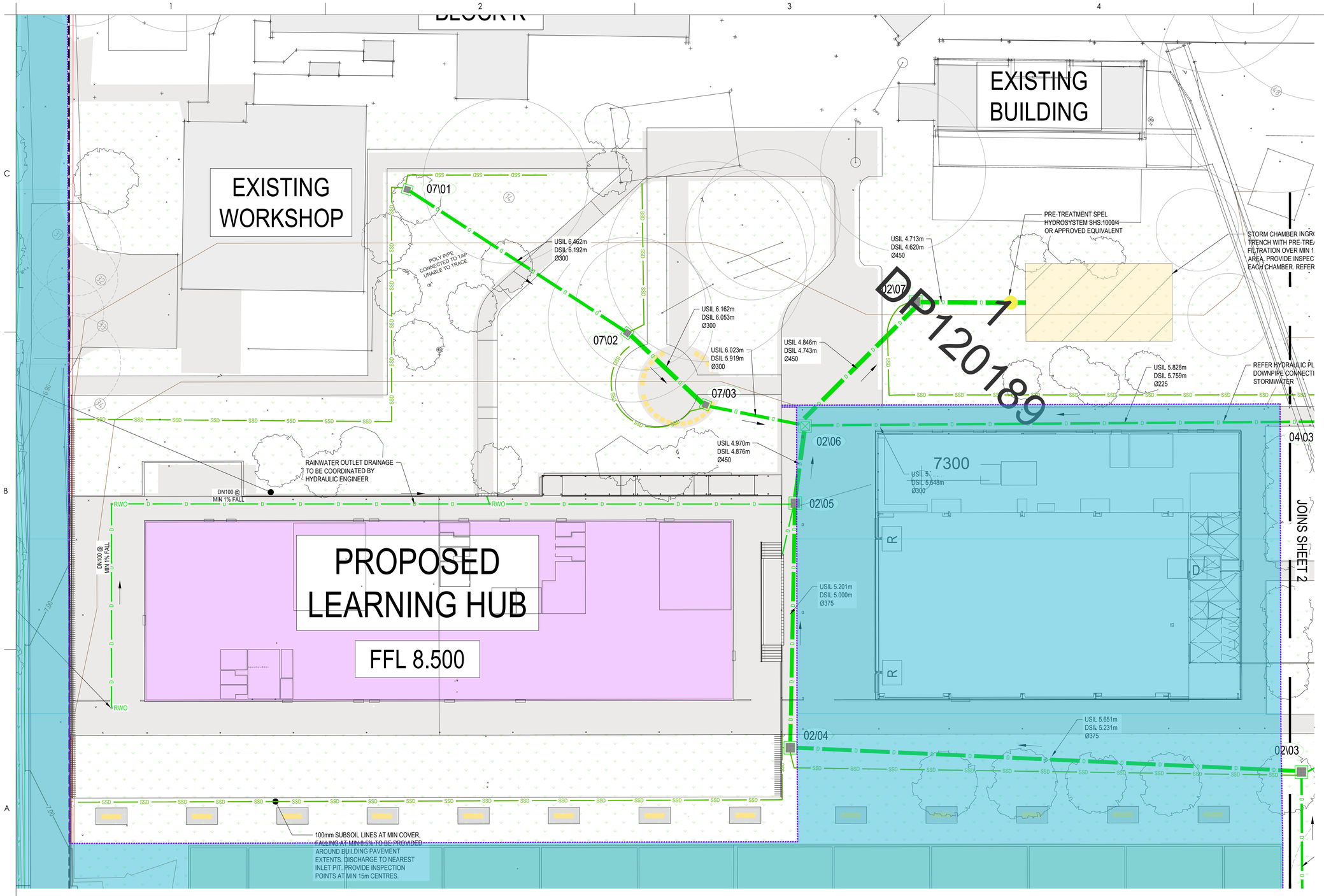

3 2 1

KEY PLAN
(SCALE 1:5000)

1:200 2 0 2 4 6 8 10 A1
1:400 A3

Notes

C	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.05.02
B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A	ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
Issued/Revision		By	Appd	YYYY.MM.DD

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HEATHERBRAE NSW 2324

File Name:HRHS-STNC-XX-XX-DR-C-520101.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE PLAN - SHEET 3

Project No.
301350957

Scale
1:200

Revision
C

Drawing No.
HRHS-STNC-XX-XX-DR-C-520103

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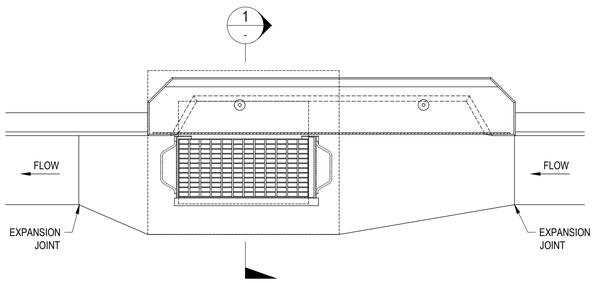
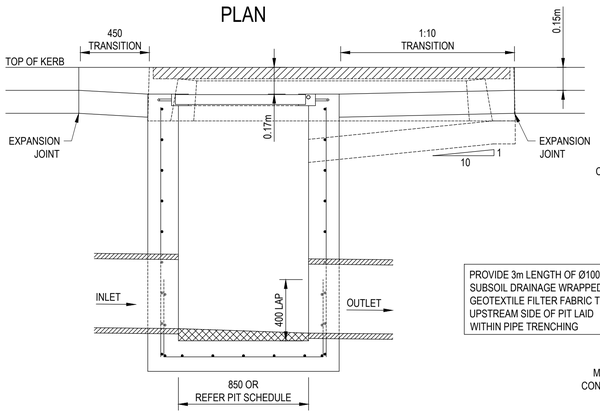
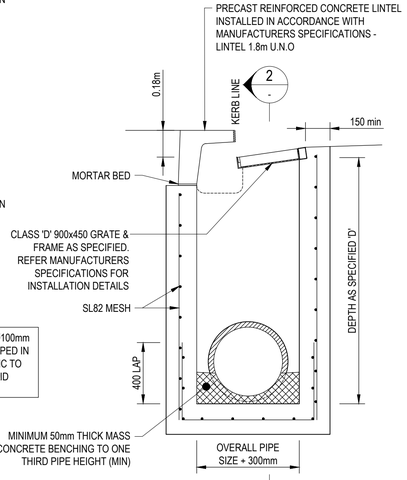


PLAN



SECTION 2 - SCALE 1:20

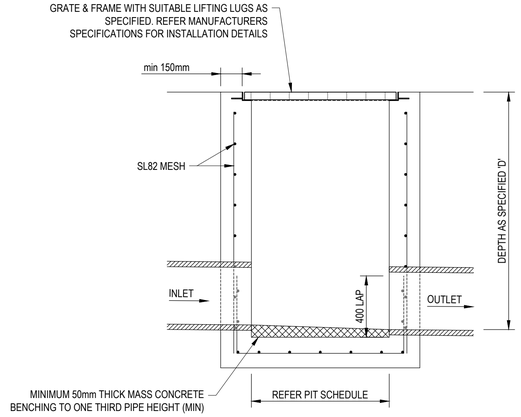


SECTION 1 - SCALE 1:20

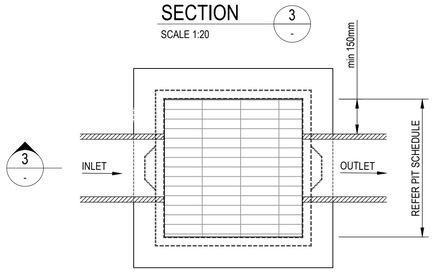
PROVIDE 3m LENGTH OF Ø100mm SUBSOIL DRAINAGE WRAPPED IN GEOTEXTILE FILTER FABRIC TO UPSTREAM SIDE OF PIT LAID WITHIN PIPE TRENCHING

KERB INLET PIT
SCALE 1:20

NOTE:
PITS TO BE:
- MINIMUM 150mm THICK WALLS AND BASE UNLESS NOTED OTHERWISE.
- CONCRETE = 32MPa
- MINIMUM 45mm COVER
- FOUNDED ON STIFF NATURAL MATERIAL ON MINIMUM 100kPa
- HAVE SUBSOIL DRAINAGE LINE
- INLET AND OUTLET TO HAVE MINUMUM 2N12 TRIMMER BARS CROSSING AT EACH OPENING



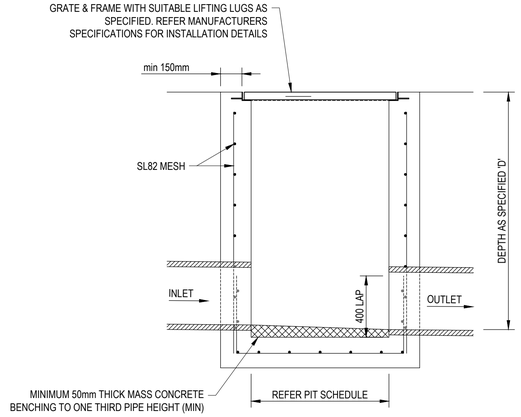
SECTION 3 - SCALE 1:20



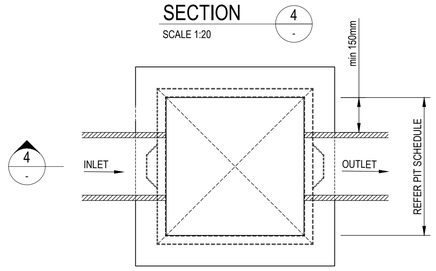
GRATED PIT PLAN
SCALE 1:20

NOTE:
PITS TO BE:
- MINIMUM 150mm THICK WALLS AND BASE UNLESS NOTED OTHERWISE.
- CONCRETE = 32MPa
- MINIMUM 45mm COVER
- FOUNDED ON STIFF NATURAL MATERIAL ON MINIMUM 100kPa
- HAVE SUBSOIL DRAINAGE LINE
- INLET AND OUTLET TO HAVE MINUMUM 2N12 TRIMMER BARS CROSSING AT EACH OPENING

PROVIDE 3m LENGTH OF Ø100mm SUBSOIL DRAINAGE WRAPPED IN GEOTEXTILE FILTER FABRIC TO UPSTREAM SIDE OF PIT LAID WITHIN PIPE TRENCHING

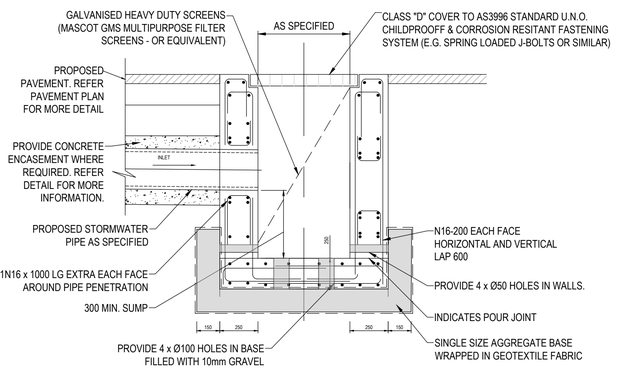


SECTION 4 - SCALE 1:20



JUNCTION PIT PLAN
SCALE 1:20

NOTE:
PITS TO BE:
- MINIMUM 150mm THICK WALLS AND BASE UNLESS NOTED OTHERWISE.
- CONCRETE = 32MPa
- MINIMUM 45mm COVER
- FOUNDED ON STIFF NATURAL MATERIAL ON MINIMUM 100kPa
- HAVE SUBSOIL DRAINAGE LINE
- INLET AND OUTLET TO HAVE MINUMUM 2N12 TRIMMER BARS CROSSING AT EACH OPENING



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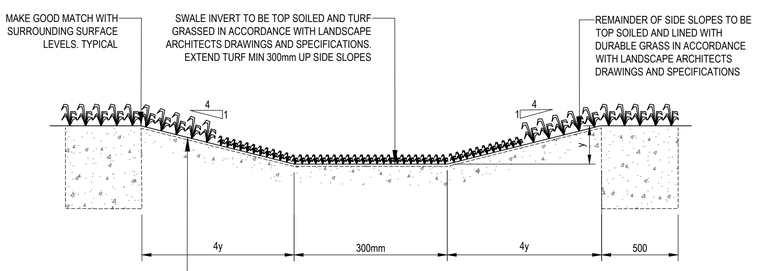
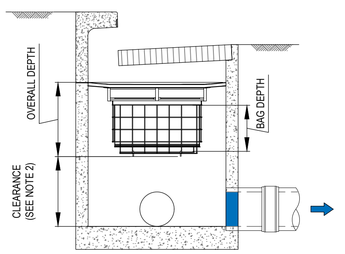
1:40

SILT ARRESTOR PIT DETAIL
A3 (NOT TO SCALE)

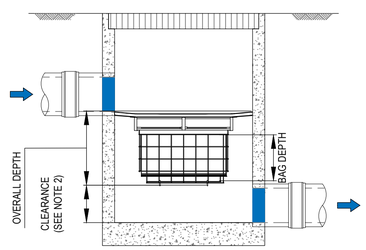


DRAINAGE SWALE- TYPE 1
NOT TO SCALE

NOTES:
1. SWALE INVERT LEVELS AS SPECIFIED ON PLAN. MINIMUM LONGITUDINAL GRADE 0.5% (U.N.O)



TYPICAL PIT INLET FILTER - SURFACE FLOW CONFIGURATION
SCALE 1:20



TYPICAL PIT INLET FILTER - PIPE FLOW CONFIGURATION
SCALE 1:20

Notes

B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A	ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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HUNTER RIVER HIGH SCHOOL

HEATHERBRAE NSW 2324

File Name:HRHS-STNC-XX-XX-DR-C-526001.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS - SHEET 1

Project No. 301350957
Scale AS SHOWN
Revision B
Drawing No. **HRHS-STNC-XX-XX-DR-C-526001**

Plotted: 22/05/2024 2:38:32 PM By: J.AL. HARVIE
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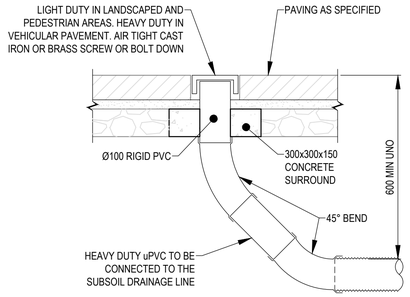
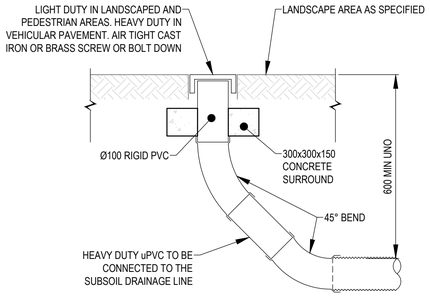
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



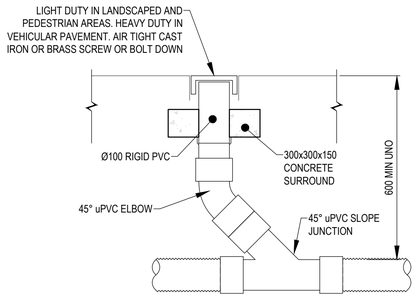
FLUSH OUT RISER IN PAVED AREAS

(SCALE 1:10)



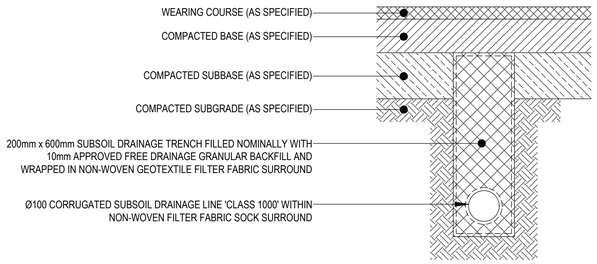
FLUSH OUT RISER IN LANDSCAPED AREAS

(SCALE 1:10)



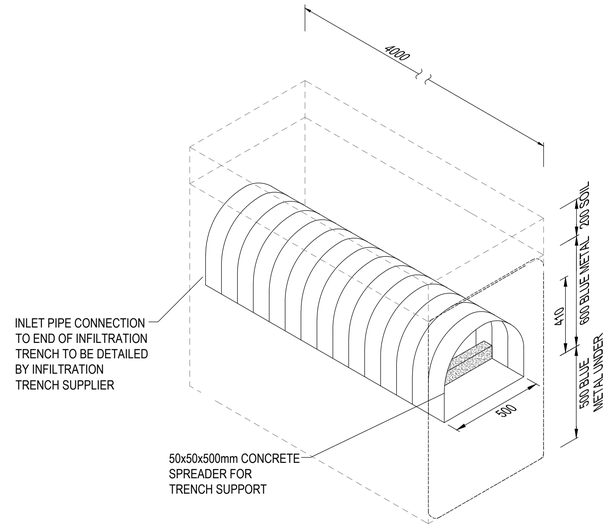
INTERMEDIATE FLUSH OUT RISER

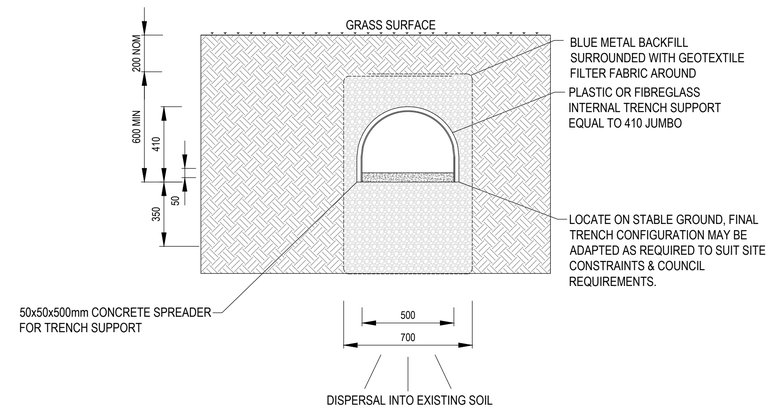
(SCALE 1:10)



SUBSOIL DRAINAGE TRENCH DETAIL

(SCALE 1:10)





TYPICAL INFILTRATION TRENCH DRAIN

SCALE N.T.S

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

Notes

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Issued/Revision		By	Appd	YYYY.MM.DD

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HUNTER RIVER HIGH SCHOOL

HEATHERBRAE NSW 2324

File Name:HRHS-STNC-XX-XX-DR-C-526001.DWG	CPO	JMB	JMB	#########
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

STORMWATER DRAINAGE DETAILS - SHEET 2

Project No. 301350957

Scale AS SHOWN

Revision B

Drawing No. **HRHS-STNC-XX-XX-DR-C-526002**

Plotted: 2/03/2024 2:08:35 PM, By: LAL, HARSHIL
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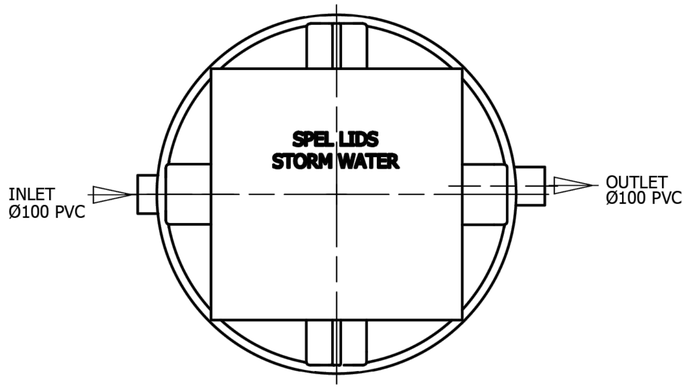
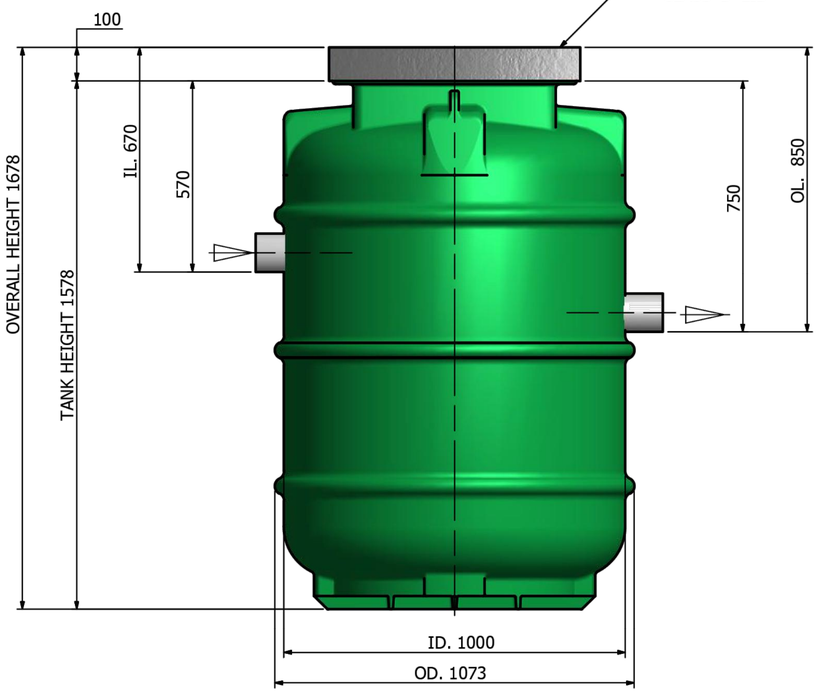
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

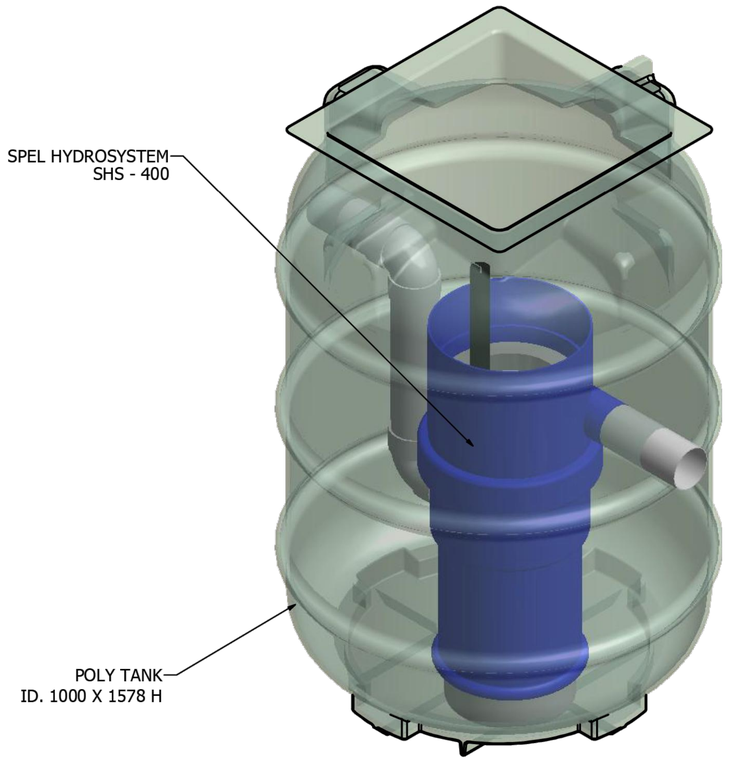
REVISION HISTORY				
REV	DESCRIPTION	AUTHOR	DATE	APPROVED
1	INITIAL RELEASE	M.MAKIN	01/09/2017	



PLAN VIEW



ELEVATION VIEW



ISOMETRIC VIEW

APPROVED.....

NAME.....

SIGNED.....

DATE...../...../.....

ISSUE FOR APPROVAL
NOT FOR CONSTRUCTION

TOLERANCE: ALL DIMENSIONS 10mm UNLESS OTHERWISE STATED.

CLIENT:

DISTRIBUTOR :

Drawn	M.MAKIN	1/09/2017
Check		Date
Verified		Date
Approved		Date
Request No.	RN3642	

SPEL ENVIRONMENTAL
INTEGRATED WATER SOLUTIONS
100 Silverwater Road Silverwater NSW 2128
PH: 1300 773 500 | E: sales@spel.com.au
www.spel.com.au

PROJECT :

TITLE SPEL HYDROSYSTEM 400
SHS.1200.400.1 - CLASS 'D'
LDPE TANK 1200 L. 1 HYDROSYSTEM 400B
GENERAL ARRANGEMENT

SCALE	SIZE	SHEET	REV
N.T.S	A3	1	1

CUSTOMER CODE : -

DWG No. SP17-HY37760-S

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Notes

B	ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A	ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
Issued/Revision		By	Appd	YYYY.MM.DD

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HUNTER RIVER HIGH SCHOOL

HEATHERBRAE NSW 2324

File Name:HRHS-STNC-XX-XX-DR-C-526001.DWG	CPO	JMB	JMB	##########
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS - SHEET 3

Project No. 301350957

Scale NTS

Revision B

Drawing No. **HRHS-STNC-XX-XX-DR-C-526003**

Plotted: 2/05/2024 2:38:38 PM By: LAL, HARSHIL
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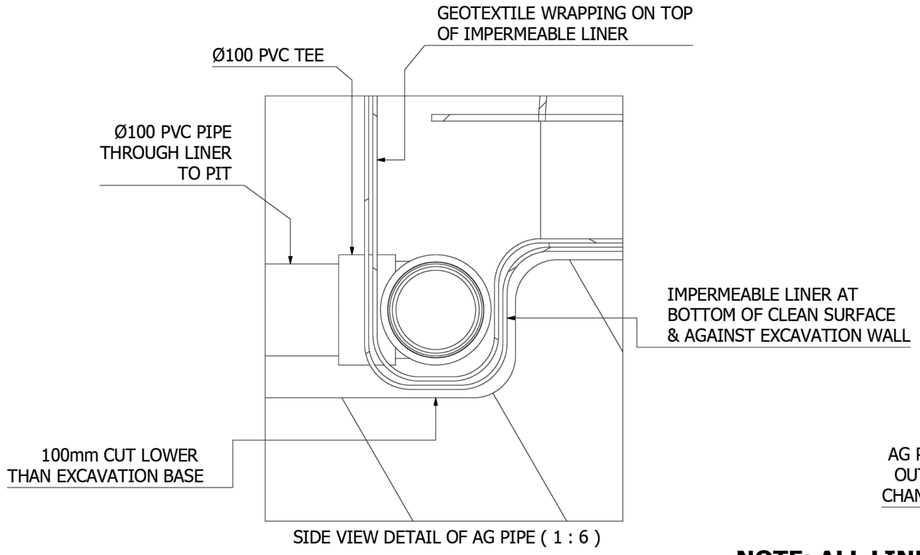
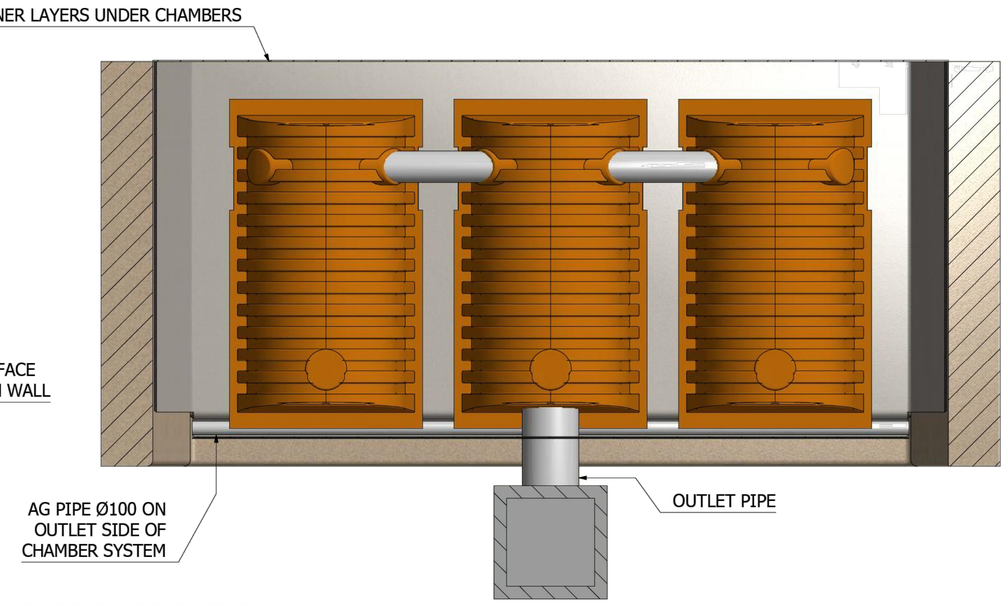
ORIGINAL SHEET - ISO A1 COORD - MGA/YYY-Zone DATUM - mAHD

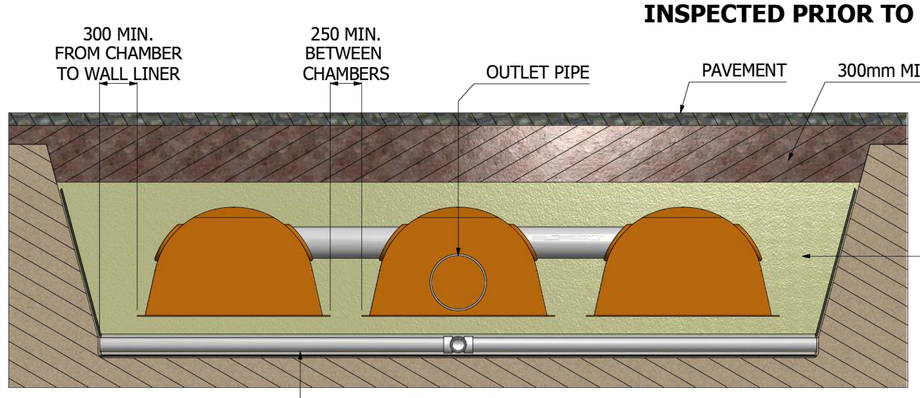


SIDE VIEW DETAIL OF AG PIPE (1 : 6)

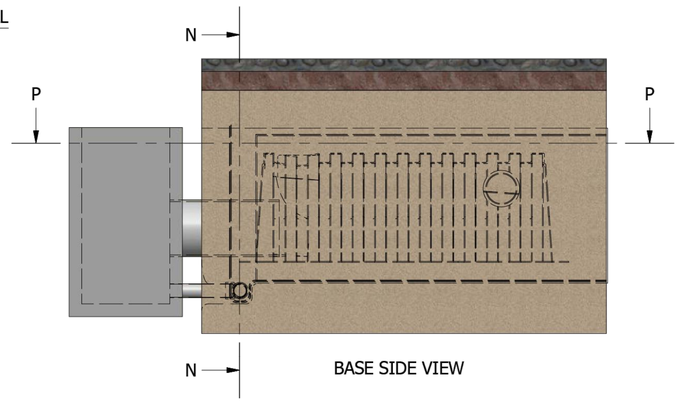


P-P (1 : 40)

NOTE: ALL LINER TO BE JOINED IN A WATER TIGHT FASHION & INSPECTED PRIOR TO INSTALLATION.



N-N (1 : 40)



BASE SIDE VIEW

TOLERANCE: ALL DIMENSIONS ±10mm UNLESS OTHERWISE STATED.

CLIENT:

AKS ENVIRONMENTAL SOLUTIONS

DRAWN BY: NG	DATE: 21/01/2015
CHECKED BY:	DATE:
VERIFIED BY:	DATE:
APPROVED BY:	DATE:
DRAWING REQUEST NUMBER: RN1102	

spelstormwater joy in water

TITLE:
SPEL STORMCHAMBER
-
INSTALLATION DETAIL
GENERAL ARRANGEMENT

PROJECT NUMBER:	SIZE:	SHEET:	REV:
PROJECT NUMBER	A3	1	1

SCALE:	DWG No:
N.T.S	SP15-SS2070-S

Notes

B ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
Issued/Revision	By	Appd	YYYY.MM.DD

Issue Status

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Notes

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NSW GOVERNMENT

The APP Group

Client/Project
SINSW

HUNTER RIVER HIGH SCHOOL

HEATHERBRAE NSW 2324

File Name: HRHS-STNC-XX-XX-DR-C-526001.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS - SHEET 4

Project No.
301350957

Scale
NTS

Revision
B

Drawing No.
HRHS-STNC-XX-XX-DR-C-526004

Plotted: 2/05/2024 2:28:41 PM By: AL, HASPAL
U:\301350\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\HRHS SHEET SET.DWG
ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

PIT SCHEDULE FOR: C-STRM

PIT NAME	PIT TYPE	SETOUT COORDS	INTERNAL DIM [mm]	INLET Ø [mm]	INLET INV [m]	OUTLET Ø [mm]	OUTLET INV [m]	PIT FIN RL	PIT DEPTH [m]	COMMENTS
02/01	Reinforced Concrete	E: 381533.043 N: 6372137.515	W: 650 L: 900			Ø 229	6.000	6.851	0.876	
02/02	Reinforced Concrete	E: 381511.292 N: 6372131.161	W: 900 L: 900	Ø 229	5.819	Ø 229	5.789	7.256	1.492	
02/03	Reinforced Concrete	E: 381502.241 N: 6372141.082	W: 900 L: 900	Ø 229	5.681	Ø 375	5.651	7.258	1.647	
02/04	Reinforced Concrete	E: 381461.765 N: 6372107.632	W: 900 L: 900	Ø 375	5.231	Ø 375	5.201	7.273	2.112	
02/05	Reinforced Concrete	E: 381445.246 N: 6372126.512	W: 900 L: 900	Ø 375	5.000	Ø 450	4.970	7.300	2.355	
02/06	Reinforced Concrete	E: 381440.687 N: 6372133.115	W: 900 L: 900	Ø 450 Ø 229 Ø 300	4.876 5.367 5.919	Ø 450	4.846	7.200	2.379	
02/07	Reinforced Concrete	E: 381440.607 N: 6372150.127	W: 900 L: 900	Ø 450	4.743	Ø 450	4.713	7.121	2.456	
04/01	Reinforced Concrete	E: 381513.868 N: 6372181.816	W: 900 L: 900			Ø 229	6.236	7.292	1.056	
04/02	Reinforced Concrete	E: 381498.817 N: 6372168.114	W: 900 L: 900	Ø 229	6.073	Ø 229	6.043	7.297	1.254	
04/03	Reinforced Concrete	E: 381479.940 N: 6372169.284	W: 900 L: 900	Ø 229	5.858	Ø 229	5.828	7.274	1.446	
05/01	Reinforced Concrete	E: 381607.855 N: 6372148.046	W: 600 L: 900			Ø 229	5.811	6.665	0.854	
05/02	Reinforced Concrete	E: 381593.181 N: 6372156.496	W: 600 L: 900	Ø 229	5.642	Ø 229	5.612	6.794	1.183	
06/01	Reinforced Concrete	E: 381584.590 N: 6372108.674	W: 900 L: 900			Ø 229	5.306	6.160	0.854	
06/02	Reinforced Concrete	E: 381591.313 N: 6372114.749	W: 900 L: 900	Ø 229	5.215	Ø 229	5.185	6.244	1.059	
06/03	Reinforced Concrete	E: 381600.281 N: 6372122.963	W: 900 L: 900	Ø 229	5.063	Ø 229	5.033	6.179	1.146	
07/01	Reinforced Concrete	E: 381394.167 N: 6372123.571	W: 600 L: 600			Ø 300	6.462	7.293	0.831	
07/02	Reinforced Concrete	E: 381420.780 N: 6372127.910	W: 600 L: 600	Ø 300	6.192	Ø 300	6.162	7.200	1.038	
07/03	Reinforced Concrete	E: 381431.699 N: 6372127.833	W: 600 L: 600	Ø 300	6.053	Ø 300	6.023	7.200	1.177	

1:500 5 0 5 10 15 20 25 A1
1:1000 A3

Notes

C ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.05.02
B ISSUE FOR SCHEMATIC DESIGN - REF 01	HAL	JMB	2024.04.17
A ISSUE FOR SCHEMATIC DESIGN - REF 01	MK	JMB	2024.04.04
Issued/Revision	By	Appd	YYYY.MM.DD

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HEATHERBRAE NSW 2324

File Name:HRHS-STNC-XX-XX-DR-C-527001.DWG	CPO	JMB	JMB	2024.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE
PIT SCHEDULE

Project No.
301350957

Scale
AS SHOWN

Revision
C

Drawing No.
HRHS-STNC-XX-XX-DR-C-527001

Plotted: 2/05/2024 2:31:06 PM By: LAL, MARSHL
U:\301350959\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\HRHSSHEET SETUP.RVT

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

Appendix B Existing Flood Information

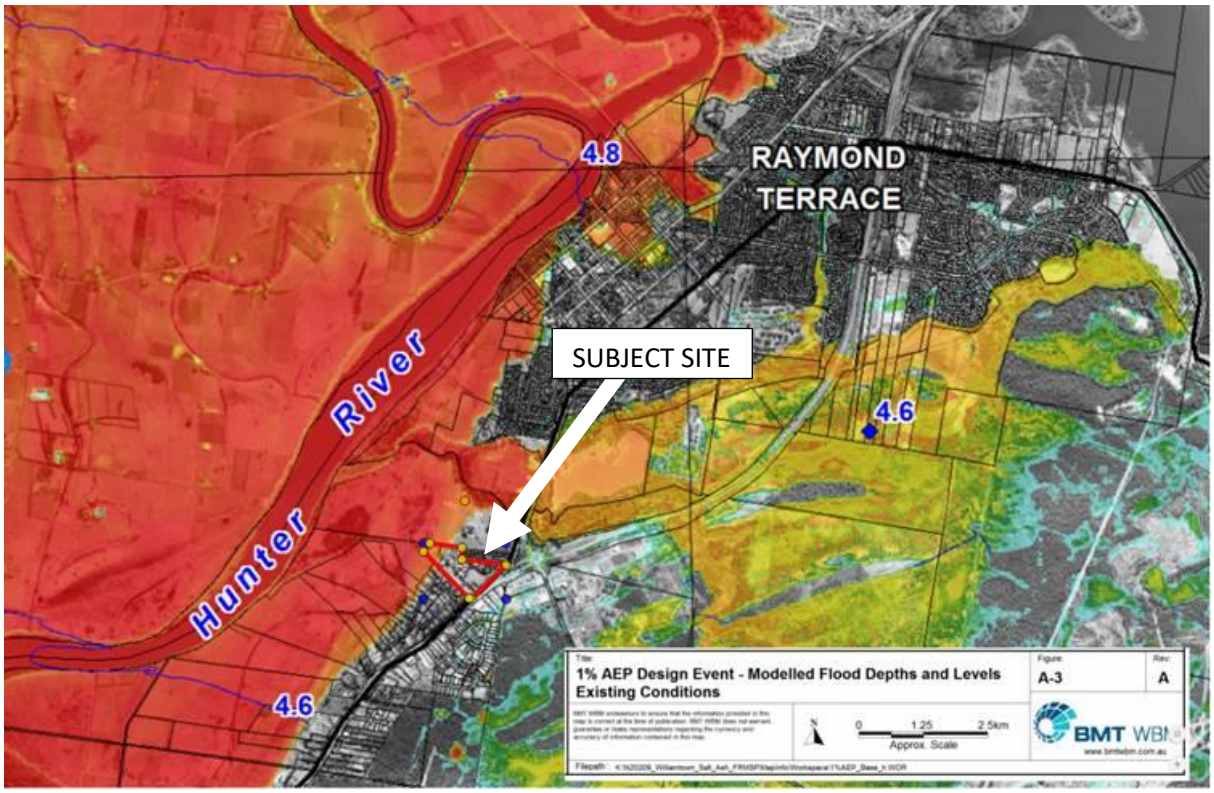

Figure 1 - 1% AEP design event flood depths

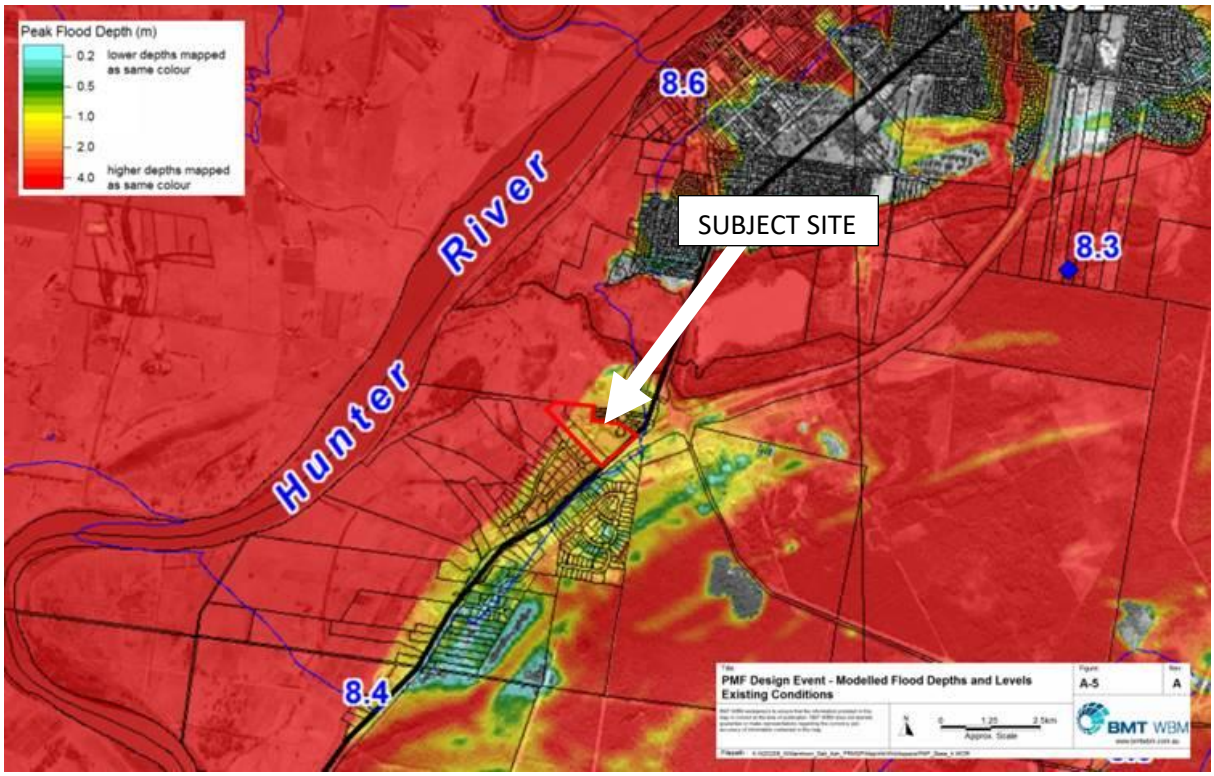

Figure 2 – PMF design event flood depths

Appendix C MUSIC Link Report

PORT STEPHENS COUNCIL

music@link

MUSIC-*link* Report

Project Details		Company Details	
Project:	301350957 Hunter River PS	**Company:**	Stantec Australia
Report Export Date:	13/04/2023	**Contact:**	Jackson Bramley
Catchment Name:	230116 Elkin C Revised	**Address:**	Lvl 9, 203 Pacific Hwy St Leonards
Catchment Area:	3.023ha	**Phone:**	0421193028
Impervious Area*:	40.32%	**Email:**	jackson.bramley@stantec.com
Rainfall Station:	WILLIAMTOWN RAAF - Station 061078 - Zone C		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1998 - 31/12/2007 11:54:00 PM		
Mean Annual Rainfall:	1238mm		
Evapotranspiration:	1394mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.34		
Study Area:	Raymond Terrace		
Scenario:	Default Catchment - Sandy soils		

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

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: LPOD 90/60/45	**Reduction**	**Node Type**	**Number**	**Node Type**	**Number**
Flow	54.4%	Swale Node	1	Urban Source Node	13
TSS	92.2%	Infiltration System Node	2		
TP	78.1%	Generic Node	2		
TN	66.8%	GPT Node	5		
GP	100%				

Comments

No compliances identifed in relation to high flow and swale min grade. High flow is not an issue on this site due to absorption method of stormwater disposal. Swale min grade required to be 0.5% due to alignment of existing topography, minimising excavation in potentially contaminated existing material and sandy soil substrate minimising risks to ponded water issues.

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
GPT	1/SPEL Stormsacks	Hi-flow bypass rate (cum/sec)	None	99	0.15
GPT	10/SPEL Stormsacks	Hi-flow bypass rate (cum/sec)	None	99	0.15
GPT	5/SPEL Stormsacks	Hi-flow bypass rate (cum/sec)	None	99	0.09
Infiltration	MC-3500 (infiltration)	Area (sqm)	None	None	244.6
Infiltration	MC-3500 (infiltration)	Area (sqm)	None	None	244.6
Infiltration	MC-3500 (infiltration)	Filter area (sqm)	None	None	193.2
Infiltration	MC-3500 (infiltration)	Filter area (sqm)	None	None	193.2
Infiltration	MC-3500 (infiltration)	Hi-flow bypass rate (cum/sec)	None	None	100
Infiltration	MC-3500 (infiltration)	Hi-flow bypass rate (cum/sec)	None	None	100
Receiving	LPOD 90/60/45	% Load Reduction	None	None	54.4
Receiving	LPOD 90/60/45	GP % Load Reduction	90	None	100
Receiving	LPOD 90/60/45	TN % Load Reduction	45	None	66.8
Receiving	LPOD 90/60/45	TP % Load Reduction	60	None	78.1
Receiving	LPOD 90/60/45	TSS % Load Reduction	90	None	92.2
Urban	Hardstand (100% Imp - 3092 sqm)	Area Impervious (ha)	None	None	0.309
Urban	Hardstand (100% Imp - 3092 sqm)	Area Impervious (ha)	None	None	0.309
Urban	Hardstand (100% Imp - 3092 sqm)	Area Pervious (ha)	None	None	0
Urban	Hardstand (100% Imp - 3092 sqm)	Area Pervious (ha)	None	None	0
Urban	Hardstand (100% Imp - 3092 sqm)	Total Area (ha)	None	None	0.309
Urban	Hardstand (100% Imp - 3092 sqm)	Total Area (ha)	None	None	0.309
Urban	Landscape (0% imp - 11109 sqm)	Area Impervious (ha)	None	None	0
Urban	Landscape (0% imp - 11109 sqm)	Area Pervious (ha)	None	None	1.11
Urban	Landscape (0% imp - 11109 sqm)	Total Area (ha)	None	None	1.11
Urban	Landscape (0% Imp - 1745 sqm)	Area Impervious (ha)	None	None	0
Urban	Landscape (0% Imp - 1745 sqm)	Area Pervious (ha)	None	None	0.175
Urban	Landscape (0% Imp - 1745 sqm)	Total Area (ha)	None	None	0.175
Urban	Landscape (0% imp - 2346 sqm)	Area Impervious (ha)	None	None	0
Urban	Landscape (0% imp - 2346 sqm)	Area Impervious (ha)	None	None	0
Urban	Landscape (0% imp - 2346 sqm)	Area Pervious (ha)	None	None	0.235
Urban	Landscape (0% imp - 2346 sqm)	Area Pervious (ha)	None	None	0.235
Urban	Landscape (0% imp - 2346 sqm)	Total Area (ha)	None	None	0.235
Urban	Landscape (0% imp - 2346 sqm)	Total Area (ha)	None	None	0.235
Urban	Landscape (0% imp - 2835 sqm)	Area Impervious (ha)	None	None	0
Urban	Landscape (0% imp - 2835 sqm)	Area Pervious (ha)	None	None	0.284
Urban	Landscape (0% imp - 2835 sqm)	Total Area (ha)	None	None	0.284
Urban	Paved (100% Imp - 2250 sqm)	Area Impervious (ha)	None	None	0.225
Urban	Paved (100% Imp - 2250 sqm)	Area Pervious (ha)	None	None	0
Urban	Paved (100% Imp - 2250 sqm)	Total Area (ha)	None	None	0.225
Urban	Paved (100% Imp - 2500 sqm)	Area Impervious (ha)	None	None	0.25
Urban	Paved (100% Imp - 2500 sqm)	Area Pervious (ha)	None	None	0

Only certain parameters are reported when they pass validation

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	Paved (100% Imp - 2500 sqm)	Total Area (ha)	None	None	0.25
Urban	Paved (100% Imp - 950 sqm)	Area Impervious (ha)	None	None	0.095
Urban	Paved (100% Imp - 950 sqm)	Area Impervious (ha)	None	None	0.095
Urban	Paved (100% Imp - 950 sqm)	Area Pervious (ha)	None	None	0
Urban	Paved (100% Imp - 950 sqm)	Area Pervious (ha)	None	None	0
Urban	Paved (100% Imp - 950 sqm)	Total Area (ha)	None	None	0.095
Urban	Paved (100% Imp - 950 sqm)	Total Area (ha)	None	None	0.095
Urban	Roof (100% Imp - 3401 sqm)	Area Impervious (ha)	None	None	0.34
Urban	Roof (100% Imp - 3401 sqm)	Area Impervious (ha)	None	None	0.34
Urban	Roof (100% Imp - 3401 sqm)	Area Pervious (ha)	None	None	0
Urban	Roof (100% Imp - 3401 sqm)	Area Pervious (ha)	None	None	0
Urban	Roof (100% Imp - 3401 sqm)	Total Area (ha)	None	None	0.34
Urban	Roof (100% Imp - 3401 sqm)	Total Area (ha)	None	None	0.34

Only certain parameters are reported when they pass validation

Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
GPT	Isolator Row	Hi-flow bypass rate (cum/sec)	None	99	100
GPT	Isolator Row	Hi-flow bypass rate (cum/sec)	None	99	100
Infiltration	MC-3500 (infiltration)	Evaporative Loss as % of PET	100	100	0
Infiltration	MC-3500 (infiltration)	Evaporative Loss as % of PET	100	100	0
Swale	Swales (6 spans)	Bed slope	0.01	0.05	0.005

Only certain parameters are reported when they pass validation

Design with
community in mind

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For more information please visit
www.stantec.com

Stantec