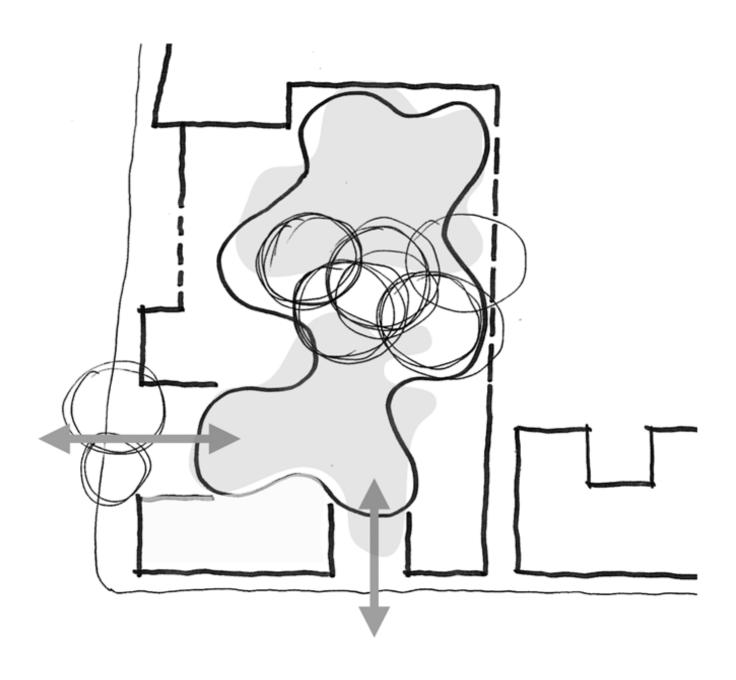
DARLINGTON PUBLIC SCHOOL REDEVELOPMENT

Appendix T — Civil Design Report

SSD-9914

Prepared by Meinhardt/Bonacci

For NSW Department of Education





Proposed Darlington Public School Re-development

Civil Design Report:

Utilities & Infrastructure, Water Cycle

Management

&

Drainage, Flooding and Stormwater

&

Sediment, Erosion and Dust Controls

Issued for:

State Significant Development Application

Revision:

11917-BON-CV-SSDRPT-02



Relevant SEARs Requirements

Relevant Secretary's Environmental Assessment Requirements (SEARs) for this development has been addressed throughout this Civil Schematic Design Report. Table 1-1 outlines the relevant sections report sections addressing the SEARs.

Key Civil Issues	Requirement	Relevant Report Section	
Utilities & Infrast Mana			
Obtain endorsement and/or appr the proposed development does water, waste water or stormwate including any easement or propo	Appendix A – Sydney Water Correspondence		
Drainage, Flood	ing and Stormwater		
Detail measures to minimize o surface waters and ground water	perational water quality impacts on r.	Section 4.4	
Stormwater plans detailing the p impacting on downstream prope	roposed methods of drainage without rties.	Section 4.3 & 4.5 & Appendix C drawing C031 & C032	
Assess, quantify and report on the runoff impacts during demolition, site preparation, bulk excavation, construction and construction – related work.		Section 4.8 & Appendix C drawing C004 & C005	
Identify flood risk – onsite (detailing the most recent flood studies for the project area) and consideration of any relevant provision of the NSW Floodplain Development Manual (2005), including the potential effects of climate change, sea level rise and an increase in rainfall intensity. If there is a material flood risk, include design solutions for mitigation		Section 4.6	
Sediment, Erosio	n and Dust Controls		
Provide a Sediment and Erosion	Control Plan	Appendix C drawing C004 & C005	
generation and off-site transm	res to minimise and manage the nission of sediment, dust and fine site preparation, bulk excavation, related work.	Section 4.8	

Table 1-1 Secretary's Environmental Assessment Requirements



Report Amendment Register

Rev. No.	Issue/Amendment	Author/In	thor/Initials Reviewer/Ini		itials	Date
00	Draft Issue	Eve Wu	EW	Jason Bomans	JB	06/04/2020
01	Amended as per Ethos Urban + MACE Comments	Eve Wu	EW	Jason Bomans	JB	19/04/2020
02	Updated document title as per MACE Comments	Eve Wu	EW	Jason Bomans	JB	20/04/2020

Prepared by: EW
Date: 20/04/2020
Project No: 11917

Issued for: Schematic Design Report for SSDA review

Discipline: Civil

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1. Executive Summary

Meinhardt - Bonacci has prepared this Civil Schematic Design report for the submission of State Significant Development Application for Darlington Public School at 417 Abercrombie Street Darlington within the City of Sydney Local Government Area. The proposed re-development consists of a new building to cater for increased population. The requirements from a civil perspective include the following in accordance with City of Sydney Council DCP, City of Sydney Technical Specifications A4 Stormwater Drainage Design, Sydney Water On-site Detention Guideline and Secretary's Environmental Assessment Requirements (SEARs):

- A. On-Site Detention (OSD) must be designed and constructed to store the run-off caused by a storm events up to 100 year Annual Recurrence Interval (ARI) from the site and control the rate of discharge to a prescribed rate to ensure downstream stormwater assets can cater for the run-off.
- B. To achieve the on site detention (OSD) design criteria, the OSD system must be designed to meet two requirements as set out by Sydney Water based on specific site characteristics:
 - Permissible Site Discharge (PSD): 248 L/s maximum
 - Site Storage Requirement (SSR): 124 m³ minimum
- C. To limit the flows discharging to Golden Grove Street to pre-development condition due to the existing constraints
- D. To limit the flows discharging to Abercrombie Street to 25 L/s during storm events up to 20 year ARI via a single kerb outlet
- E. Water quality post-development pollutant reduction rate according to the following:

- Gross Pollutants: 90%

- Total Suspended soils: 85%

Total Nitrogen: 45%

Total Phosphorous: 65%

F. Incorporate Water Sensitive Urban Design (WSUD) in water quality treatment train.

Preliminary findings from the hydrologic and hydraulic modelling of the site for the existing and proposed scenarios have been documented in this report. Water quantity, water quality and the flooding requirements have been modelled using DRAINS, MUSIC and TUFLOW computer software respectively and findings demonstrated that this development is possible to achieve the above criteria with the proposed civil works.



2. Introduction

Meinhardt - Bonacci (NSW) Pty Ltd has been engaged by NSW Department of Education (DoE) to describe the civil engineering elements associated with the proposed Darlington Public School re-development in Darlington, NSW.

This Civil Schematic Design Report addresses the proposed civil engineering works related to the redevelopment of Darlington Public School including the drainage network, water quality, water quantity control measures, sediment and control controls and bulk earthworks.

The following relevant existing documents have been referenced for the proposed design:

- Topographical survey by C.M.S Surveyors on 12th March 2020
- Geotechnical Report on Detailed Site Investigation for Contamination by Douglas Partners on February 2019, ref. 92277.01
- Remediation Action Plan by Douglas Partners on March 2020, ref. 92277.02
- Sydney Water advice regarding on-site detention requirements for Darlington Public School
- City of Sydney Council advice for stormwater discharging rate to Golden Grove Street
- Blackwattle Bay Catchment Floodplain Risk Management Plan Final Report, dated September 2015
- Tuflow flood model supplied by WMA Water in 2018



3. Site Description

3.1. Location

The proposed development is located in Darlington, NSW and within City of Sydney local government area. The site is bounded by Abercrombie Street to the south, Golden Grove Street to the west, a two-storey building on the northwest of the site and a private driveway and a student accommodation to the east. Refer to Figure 1 for a locality and aerial map of the proposed development.



Figure 1 Locality and Aerial Map of the Site (Source: Nearmaps)

3.2. Existing Topography and Drainage

The site is approximately 0.72 ha and generally slopes from the northwest corner of the site at RL 37.15 to the southeast corner of the site at RL 29.97 over 134 m which results in a steep gradient of approximately 5.4%. The site comprises of two basketball courts, teaching buildings and playgrounds. Most of the site (91%) is considered to be impervious (mixture of concrete and bitumen) with limited garden areas.

The existing internal drainage system appears to be discharging via 11 kerb outlets to the kerb and gutter system on Abercrombie Street and Golden Grove Street. The existing overland flow path is running in a north to south direction to Abercrombie Street.

Additional survey provided by C.M.S Surveyor on 12th March 2020 indicates that there is an existing 375mm concrete drainage pipe on Golden Grove Street, the pipe is running in a north-south direction. Survey also indicates that western portion of the site is currently discharging to Golden Grove Street via the kerb outlets,



the flows are expected to be captured by the kerb inlets pits further downstream, and eventually conveyed by the 375mm concrete drainage pipe mentioned previously.

No on-site detention structure, rainwater tank or water quality treatment devices have been identified on the survey plans.

A DBYD enquiry has been undertaken, the results show services located outside the site boundary on Golden Grove Street and Abercrombie Street. Survey also identified existing service lines including sewer, gas, water mains and electrical cables running through the site and under the proposed accessway. Relocation, adjustment or extension of the existing services may be required to suit the proposed development. Authorities' approval may be required to relocate, adjust or remove the existing services.



4. Proposed Re-development

The proposed development consists construction of a new building between 2 & 3 stories and new landscape areas. In order to keep the school functioning during the time of construction, staging is proposed.

4.1. Staging

The development is proposed to be undertaken in 2 stages. Stage 1 involves the construction of a new building, while southern portion of the site remains untouched during Stage 1. Stage 2 involves the construction of a new building in the southwest corner of the site. Refer to Figure 2 and Figure 3 for staging plans.



Figure 2 Stage 1 Construction Works (fjmt, 13.03.2020)



Figure 3 Stage 2 Construction Works (fjmt, 13.03.2020)

4.2. Lot Consolidation

As shown in Figure 4 below, information extracted from Six Maps indicates the site is currently comprised of two lots: Lot 100 DP623500 and Lot 592 DP752049. In accordance with City of Sydney DCP, if the lots remain unconsolidated, separate stormwater systems will be required for each lot. However, project manager and planner advised that lot consolidation will occur after stage 1 construction. Council Engineer has no objection on the approach of having one set of water quality/quantity/drainage treatment for this development for during the meeting held with Council on 17th March 2020.





Figure 4 Lot Boundaries (Six Maps)

4.3. Water Quantity

City of Sydney Council has advised that Sydney Water are to approve any additional discharge into the existing street stormwater network. In accordance with Sydney Water On-Site Stormwater Detention Guide (2014), an on-site detention system is required for all education buildings or structures, therefore because of the change in development, Sydney Water would view this a new development enquiry.

Sydney Water has been contacted and they advised that to determine the Permissible Site Discharge (PSD) and Site Storage Requirement (SSR), they required total site area, pre-development and post development areas are to be provided to Sydney Water. Based on the architectural plan by Fjmt Architects dated 21st November 2019, the following information was provided to Sydney Water:

Total site area: 7,260.65 m²

Pre-development impervious area: 5,711.81 m²
 Post development impervious area: 5,343.43 m²

Based on above information, Sydney Water advised a detention system with minimum volume of 124 m³ is to be placed on site to limit the peak flows discharging from the site and (with a Permissible Site Discharge of 248 L/s). Sydney Water further suggested approval for the OSD would only be given as part of the Section 73 application for this development. Correspondence with Sydney Water is shown in **Appendix A**. However, based on the flow restrictions discussed below, the detention system will be larger than required minimum site storage.

The architectural plan was last updated on 01st April 2020; however, the impermeable areas have not been changed significantly. Hence above advice of SSR and PSD from Sydney Water is still valid. The water quantity control measures for different stages have been outlined as below.

As outlined in the report on Detailed Site Investigation for Contamination by Douglas Partners dated February 2019, no free groundwater was observed in the bores during drilling for the short time that they were left open.



4.3.1.Stage 1 Water Quantity Control

A meeting has been held between City of Sydney Council and Meinhardt - Bonacci on 17th March 2020, Council's advice on OSD system has been sought to ensure the proposed design is adequately complying with Council's intended water quantity control.

As discussed in Section 5.1, staging is proposed for this development to maintain school operations, which will result in not having final stormwater quality and quantity control measures in place during stage 1. However, given that the existing stage 1 catchment is approximately 15% more impermeable than the proposed stage 1 catchment, it is anticipated that there is no increase in flow rates before the final installation of the OSD system. Council Engineer had no objection to this design approach.

4.3.2. Stage 2 Water Quantity Control

Following meeting with City of Sydney Council on 17th March to discuss options for stormwater discharge from the site, it was advised by Council engineer that the existing stormwater pit and pipe network on Golden Grove Street is currently at full capacity and undersized. To avoid overloading the existing public drainage system, the discharge rate from the site to Golden Grove Street will be limited to the pre-development condition. A hydraulic model has been set up in DRAINS to assess the existing and proposed drainage conditions.

Additionally, as per City of Sydney Technical Specifications A4 Stormwater Drainage Design, the maximum permitted discharge from any property to kerb outlet is 25 L/s for storms up to and including 20 year ARI. Technical specification advise the proposed development only permits on kerb outlet discharge.

As shown in the existing catchment plan in Figure 5. The catchments have been defined based on the existing points of discharge to Golden Grove Street and Abercrombie Street. As indicated in DRAINS model, the existing flows discharging from the site via the kerb outlets on Golden Grove Street is 60 L/s during 20 year ARI storm events. The existing discharging rate to Abercrombie Street is 288 L/s during 20 year ARI storm events.

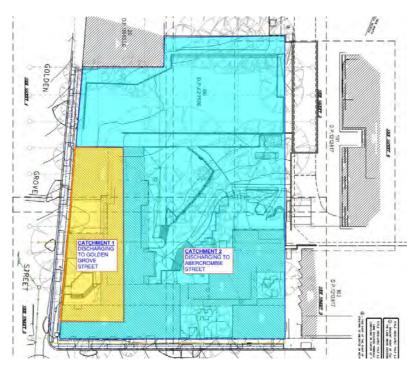


Figure 5 Existing Catchments

To limit the post-development flows to the extent outlined above, detention systems are required on site. 2 on-site detention (OSD) tanks are required – an OSD with an internal volume of 70 m³ OSD 1 discharging to Golden Grove Street and a second one with an internal volume of 120 m³ OSD 2 discharging to Abercrombie Street via a single kerb outlet as per Council guideline, refer to Figure 12 for OSDs locations.



DRAINS modelling results in Figure 6 and Figure 7.

The 2 OSD tank detention system is required for the following reasons:

- Additional survey of the existing drainage system on Golden Grove Street (received on 12th March 2020) confirmed the existing invert levels of the stormwater pipes to be higher than most of the southeast portion of the site, therefore it would be impossible to drain the entire site to one location, in this case more area will bypass OSD 1. In order to capture/treat as much stormwater as possible, OSD 2 is required on the lower end of the site and prevent a larger portion of the site from bypassing treatements.
- Demonstrating that no additional flows discharge to Golden Grove St to match the existing condition (60 L/s). Refer to DRAINS result shown in Figure 7 below, the flows discharging to the drainage line on Golden Grove Street is 30 L/s during 20 year ARI after treated by OSD 1, which reduces the flows rates to Golden Grove Street by half.
- City of Sydney have a maximum kerb outlet discharge rate 25 L/s. Refer to DRAINS result shown in Figure 7, the flows discharging to the single Kerb outlet on Abercrombie Street is 25 L/s during 20 year ARI after treated by OSD 2.
- Meeting the minimum Site Storage Requirement (SSR) of 124 m³ as advised by Sydney Water. With 190 m³ detention volume, this requirement is met. The OSD is sized up to accommodate the increased volume required to limit the flows as per the above two points.
- The Permissible Site Discharge (PSD) requirement set by Sydney Water is 248 L/s, with a total 81 L/s post development flow rate, this requirement is met with the proposed detention system.

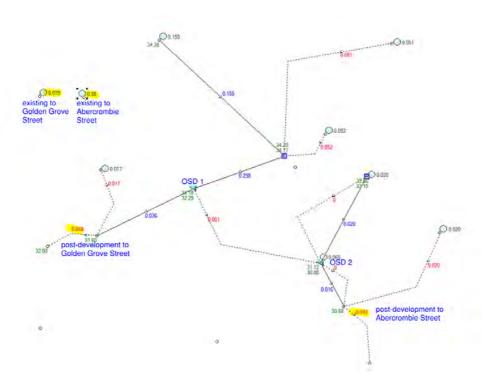


Figure 6 DRAINS Result - Proposed Development 100 Year ARI



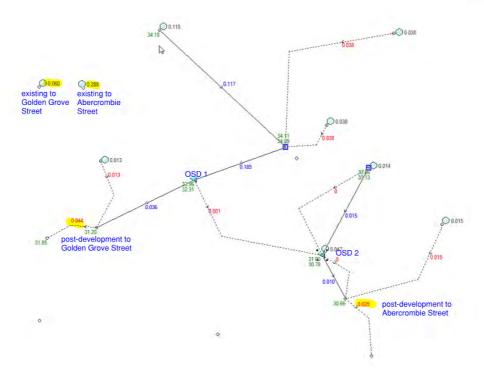


Figure 7 DRAINS Result - Proposed Development 20 Year ARI

4.4. Water Quality

To protect the ecology of City of Sydney, it is expected that this development will require to satisfy the water quality requirements of City of Sydney Council. *Sydney City Council DCP 2012 Section 3* outlines that any development greater than 1000m² must undertake a stormwater quality assessment to demonstrate that the development will achieve the post development pollutant load standards indicated below (Figure 8):

- (a) reduce the baseline annual pollutant load for litter and vegetation larger than 5mm by 90%;
- (b) reduce the baseline annual pollutant load for total suspended solids by 85%;
- (c) reduce the baseline annual pollutant load for total phosphorous by 65%; and
- (d) reduce the baseline annual pollutant load for total nitrogen by 45%. Figure 8 City of Sydney Pollution Reduction Target Rates (DCP 2012)

4.4.1. Water Quality Strategy

Proprietary water quality treatment products including Enviropods and stormfilter cartridges will be the main treatment measures to achieve Council's adopted pollutants reduction rates. Rainwater runoff from roof will be reticulated into the rainwater tank for landscape irrigation use. Rainwater re-use would also assist in meeting water quality requirements. The proposed development also demonstrates Water Sensitive Urban Design (WSUD), site constraints may not allow bio-retention, however other landscaped measures including swales and small raingarden(s) may be used as part of the water quality treatment train.

Similar to the water quantity control strategy, final water quality control measures will not be in place until the completion of stage 2, however, the pollutant source from the existing land use within the stage 1 extent is a mixture of bitumen pavement and roof while the proposed stage 1 pollutant source is roof and landscape. Therefore, the change of land use already provides water quality improvement to the existing situation.

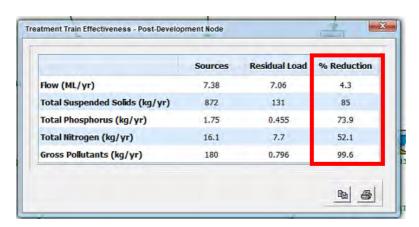


Above proposed water quality measures have been modelled using software MUSIC (version 6.3), the preliminary MUSIC layout is shown below in Figure 9.



Figure 9 MUSIC Modelling Layout (Background on Architectural Plan Issued 01.04.2020)

The results of MUSIC modelling show that stormwater has been treated and the pollutant removal rate achieves pollutant reduction targets adopted by City of Sydney Council. The results from the MUSIC model are shown in Figure 10. City of Sydney Council MUSIC link report is in **Appendix B**. The MUSIC result also indicates that the 30kL rainwater can meet 95% of the reuse demand.



 $\textit{Figure 10 MUSIC Modelling Results-Proposed Development with Final Water Quality Control Measures \\ \textit{Installed}$



Given that the stormwater treatment device Stormfilter cartridges will be installed within the OSD tank, similar discussion of staging/lot consolidation applies to water quality system as they will not be available during stage 1 construction.

4.5. Drainage

The re-development will need to install a major/minor stormwater system. Pits and pipes will capture and convey run-off generated from minor storm events up to the 20 year average recurrence interval (ARI) in accordance with Educational Facilities Standards & Guidelines (EFSG).

Stage 1 drainage system will make connection to the existing internal drainage line and eventually discharge via the kerb outlets to Abercrombie Street while stage 2 drainage system will partially make connection to the drainage system on Golden Grove Street after treated by OSD 1 and will partially discharge to Abercrombie Street via a single kerb outlet after treated by OSD 2.

A major system is also required for the proposed development in the form of overland flow paths. The major overland flow system is designed to convey flows surcharged from the underground drainage system for storm events up to and including 100 year ARI. The overland flow is to be directed away from the buildings towards the public road kerb and gutter system on Abercrombie Street provided that there are no adverse impacts on the downstream properties.

Refer to Figure 11 and Figure 12 for stormwater drainage system layout and overland flow path for stage 1 and for the final scheme.

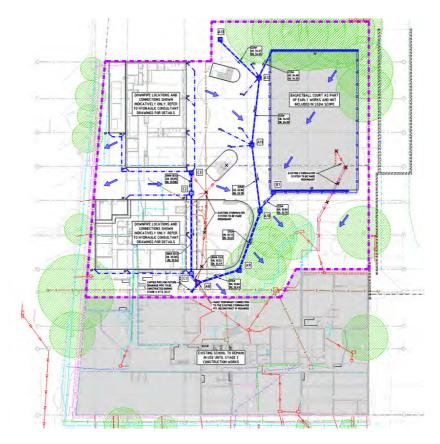


Figure 11 Stage 1 Stormwater Strategy

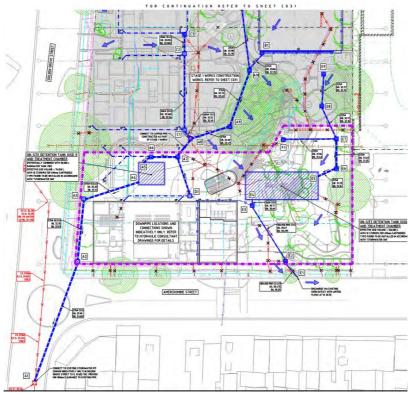


Figure 12 Overall Stormwater Strategy

4.6. Flooding

Based on the flood information from the City of Sydney, specifically the flood report Blackwattle Bay Catchment Floodplain Risk Management Plan by WBA Water dated September 2015, majority of the site is not subject to inundation during the 100 Average Recurrence Interval (ARI) event and Probably Maximum Flood (PMF) as shown in Figure 13 and Figure 14.



Figure 13 Flood Map – 100 Year ARI Design Flood Event (WBA Water dated September 2015)



Figure 14 Flood Map – PMF Design Flood Event (WBA Water on September 2015)

A flood model provided by WMA Water for the University of Sydney has been used to further check the flood conditions. A report for above development – *University of Sydney Flood Risk Management Stage 1 – Campus Flood Study Review* dated on December 2013 outlines that potential effects of climate change, sea level rise and an increase in rainfall intensity has been taken in consideration in the study/flood model.

As indicated below in the flood extent maps generated from above mentioned flood model, Figure 15 and Figure 16 - majority of site is not subject to 100 year ARI and the PMF flooding. However, the flood model shows there is a small batch of water at the western school entrance from Golden Grove Street, this is likely caused by an existing trapped low point. Given that the existing levels around low point is approximated at RL 33.05 while the immediate street level is at RL 34.12, during major storm event, the water from the street side tracks into the low point from the school entrance, the existing grated inlet pit at the low point is filled up and creates localised ponding.

This issue will be removed for the proposed development as the proposed level around the entrance will be higher (RL 34.3) than existing level, additionally, an overland flow path has been provided to Abercrombie Street from the entrance to avoid any trapped low point.



Figure 15 Flood Extent - 100 Year ARI (with 50mm Water Depth Cut-off)

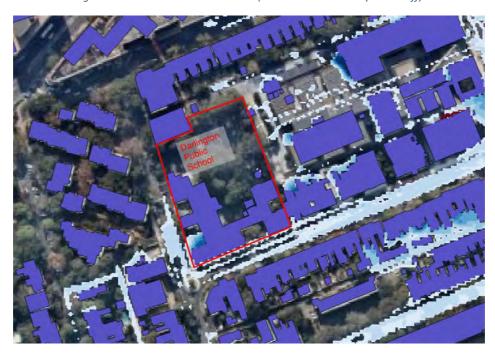


Figure 16 Flood Extent - PMF (with 50mm Water Depth Cut-off)

The above flood maps are produced with 50 mm rainfall cut-off style applied to distinguish flood flows from direct rainfall sheet flows, the results are consistent with the Blackwattle Bay Catchment Floodplain Risk Management Plan by WBA Water. Based on above discussion, it is believed the site is not flood affected and the existing localised trapped low point will be removed from the proposed development.

Additionally, during the meeting with City of Sydney Council, Council Engineer was not opposed to above design approach. Therefore, no further flood modelling will be carried out.



4.7. Bulk Earthworks

Bulk earthwork cut and fill will be required based on the level difference between the proposed surface levels and the existing ground levels. The earthworks cut/fill modelling undertaken in 12D modelling software indicate a volume of 1,675 m³ fill is required to import to the site. Refer to **Appendix C** Civil Drawings for anticipated bulk earthworks plan and longitudinal sections based on the landscape architectural plan layout issued on 31st March 2020.

The Remediation Action Plan (RAP) provided by the Douglas Partners on 23rd March 2020 outlined that there is TRH and naphthalene impact to fill in the central western portion of the site at a concentration exceeding adopted requirement, capping and containment is recommended for this area. The area will be over excavated to create a minimum clean soil depth of 1 m to reduce vapour risk. This remediation action has been reflected in the bulk earthworks plan.

Further investigation on the vapour risk is currently being prepared by Douglas Partner during the production of the report, the area may be re-classified so that only a 300 mm depth of capping is required. Final earthworks cut/fill volume is to be determined once the remediation action plan is confirmed by the Geotechnical Engineers.

The assumptions for the bulk earthworks are outlined below:

- The communal hall is sitting on fill as advised by the Fjmt Architects and is as in bulk earthworks plan as an option for quantity surveyor to review.
- The existing site is predominantly impervious paving, assumed a 300 mm sacrificial layer of stripping, this is included in the cut/fill volume calculation.

The net cut/fill volume is subject to change with final levels.

4.8. Sediment and Erosion Control (During Construction)

The erosion and sediment control measures for the site will be implemented during construction. The design of these measures are to be in accordance with the Landcom "Blue Book".

For erosion and sediment control of the site, the following measures are provided to minimise the risk of sediments laden runoff being discharged from the site:

- A sediment fence/hoarding to be provided around the site
- Catch drain (or diversion bund) diverting external catchment away from site
- Temporary access to site with shaker pad
- An indicative stockpile area with sediment fence around it during construction. The stockpile must be located out of water flow paths (and be protected by earth banks/drains as required).
- Geotextile inlet pit filters or sandbags to be placed around existing stormwater pits.
- Water cart to spray excavated surfaces to reduce dust pollution.
- All disturbed areas are to be stabilised within 14 working days of the completion of earthworks. All disturbed areas are to be protected so that the land is permanently stabilised within six months.
- Sediment removed from any sediment trapping device shall be relocated where further pollution to downslope lands and waterways cannot occur.
- Water shall be prevented from entering the permanent drainage system unless it is sediment free. Drainage pits are to be protected in accordance with the final approved Sediment and Erosion Control Plan.



- Trapped sediment shall be removed immediately from areas subject to runoff or concentrated flow.
- Trapped sediment shall be removed where the capacity of sedimentation trapping devices fall below 60%.
- Revegetation schemes are to be adhered to and any grass coverings are kept healthy, including watering and mowing.



5. Summary

The civil design works described in this report comply with City of Sydney Council DCP, City of Sydney Technical Specifications A4 Stormwater Drainage Design, Sydney Water OSD guideline, SEARs, Australian Standards and best-practiced principles.

The proposed stormwater strategy for this SSDA addresses water quantity by providing an on-site detention tanks to reduce peak flow limiting PSD for events up to and including 100 year ARI storm, but limited to existing constraints.

The proposed water quality improvement measures demonstrated that the development complies with the requirements outlined in from City of Sydney Council DCP.

The development removes the existing trapped low point around the entry area from Golden Grove Street.



Appendix A - Sydney Water Correspondence

Eve Wu

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

Sent: Wednesday, 27 November 2019 3:13 PM

To: Eve Wu; Stormwater

Subject: RE: Urgent - Darlington Public School - OSD requirements

[External Email] - Be Cautious with Links and Attachments.

Eve,

The On Site Detention requirements for the 7260.65 square meters site at Darlington Public School, are as follows:

On Site Detention 124 cubic meter

Permissible Site Discharge
 248 L/s

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

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

Best Regards

Jeya Jeyadevan

Senior Capability Assessor

Liveable City Solutions

Sydney Water, Level 7, 1 Smith Street, Parramatta NSW 2150





From: Eve Wu <ewu@bonaccigroup.com>
Sent: Monday, 25 November 2019 2:00 PM

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

Subject: RE: Urgent - Darlington Public School - OSD requirements

Hi Jeya,

Can you please urgently advise the OSD requirements based the following information:

- Development address: Darlington Public School, Golden Grove St, Chippendale NSW 2008
- Total site area: approximately 7260.65m²
- Existing pre-development impervious area: 5711.81m²
- Proposed post-development impervious area: 5343.43m²

Please let me know if above information is enough for PSD and SSR calculation.

Regards,

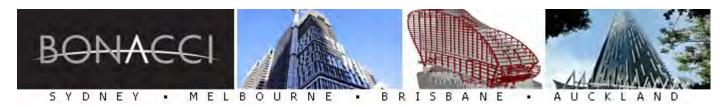
Eve Wu

Civil Design Engineer

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From: Eve Wu

Sent: Wednesday, 28 August 2019 4:56 PM

To: Stormwater < <u>Stormwater@sydneywater.com.au</u>>

Subject: Urgent - Darlington Public School - OSD requirements

Hi Jeya/Duncan,

We are working on the Darlington Public School for NSW Department of Education. The development involves the construction of new buildings and demolition of old buildings. We have the following information to calculate PSD and SSR:

- Development address: Darlington Public School, Golden Grove St, Chippendale NSW 2008
- Total site area: approximately 7246.6m^2
- Existing pre-development impervious area: 5711.81m²
- Proposed post-development impervious area: 4866.19m^2

Please let me know if above information is enough for PSD and SSR calculation.

Regards,

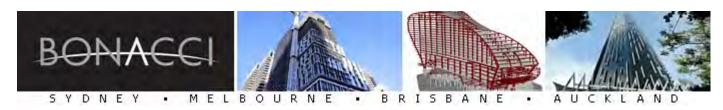
Eve Wu

Civil Designer Engineer

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Regards,

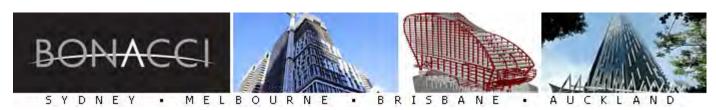
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Appendix B - MUSIC Link Report





Meinhardt - Bonacci

MUSIC-link Report

Project Details Company Details

Project: Darlington Public School

Report Export Date: 2/04/2020

Catchment Name: 200304 Concept design v3

Catchment Area:0.665haImpervious Area*:85.09%

Rainfall Station: 66062 SYDNEY

Modelling Time-step: 6 Minutes

Modelling Period: 1/01/1982 - 31/12/1986 11:54:00 PM

Mean Annual Rainfall:1278mmEvapotranspiration:1265mmMUSIC Version:6.3.0MUSIC-link data Version:6.33

 Study Area:
 City of Sydney Clay Soil

 Scenario:
 City Of Sydney Development

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

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: Post-Development Node	Reduction	Node Type	Number	Node Type	Number
Flow	4.32%	Rain Water Tank Node	1	Urban Source Node	7
TSS	85%	Detention Basin Node	2		
TP	73.9%	Swale Node	1		
TN	52.1%	Buffer Node	1		
GP	99.6%	Generic Node	2		
		GPT Node	5		

Company:

Contact:

Address:

Phone:

Email:

Comments

DPS





Node Type	Node Name	Parameter	Min	Max	Actua
Buffer	Buffer	Proportion of upstream impervious area treated	None	None	0.5
Detention	Detention Basin	% Reuse Demand Met	None	None	0
Detention	Detention Basin	% Reuse Demand Met	None	None	0
GPT	1x Enviropod 200 (BCC 2015)	Hi-flow bypass rate (cum/sec)	None	99	0.02
GPT	1x Enviropod 200 (BCC 2015)	Hi-flow bypass rate (cum/sec)	None	99	0.01
GPT	2 x Enviropod 200 (BCC 2015)	Hi-flow bypass rate (cum/sec)	None	99	0.04
GPT	2 x Enviropod 200 (BCC 2015)	Hi-flow bypass rate (cum/sec)	None	99	0.04
GPT	f 1x Enviropod 200 (BCC 2015)	Hi-flow bypass rate (cum/sec)	None	99	0.02
Post	Post-Development Node	% Load Reduction	None	None	4.32
Post	Post-Development Node	GP % Load Reduction	90	None	99.6
Post	Post-Development Node	TN % Load Reduction	45	None	52.1
Post	Post-Development Node	TP % Load Reduction	65	None	73.9
Post	Post-Development Node	TSS % Load Reduction	85	None	85
Rain	30kL Rainwater Tank	% Reuse Demand Met	None	None	94.91
Swale	Swale	Bed slope	0.01	0.05	0.03
Urban	BYPASS 310m2	Area Impervious (ha)	None	None	0.029
Urban	BYPASS 310m2	Area Pervious (ha)	None	None	0.001
Urban	BYPASS 310m2	Total Area (ha)	None	None	0.031
Urban	CAT2_ROOF 1200m2	Area Impervious (ha)	None	None	0.234
Urban	CAT2_ROOF 1200m2	Area Pervious (ha)	None	None	0
Urban	CAT2_ROOF 1200m2	Total Area (ha)	None	None	0.234
Urban	CAT3_basketball court 850m2	Area Impervious (ha)	None	None	0.085
Urban	CAT3_basketball court 850m2	Area Pervious (ha)	None	None	0
Urban	CAT3_basketball court 850m2	Total Area (ha)	None	None	0.085
Urban	CAT4_landscape 1000m2	Area Impervious (ha)	None	None	0.050
Urban	CAT4_landscape 1000m2	Area Pervious (ha)	None	None	0.049
Urban	CAT4_landscape 1000m2	Total Area (ha)	None	None	0.1
Urban	CAT4_landscape 579m2	Area Impervious (ha)	None	None	0.011
Urban	CAT4_landscape 579m2	Area Pervious (ha)	None	None	0.046
Urban	CAT4_landscape 579m2	Total Area (ha)	None	None	0.058
Urban	CAT5_landscape 1309m2	Area Impervious (ha)	None	None	0.131
Urban	CAT5_landscape 1309m2	Area Pervious (ha)	None	None	0
Urban	CAT5_landscape 1309m2	Total Area (ha)	None	None	0.131
Urban	CAT6_BYPASS 260 m2	Area Impervious (ha)	None	None	0.024
Urban	CAT6_BYPASS 260 m2	Area Pervious (ha)	None	None	0.001
Urban	CAT6_BYPASS 260 m2	Total Area (ha)	None	None	0.026





Node Type	Node Name	Parameter	Min	Max	Actua
Detention	Detention Basin	Evaporative Loss as % of PET	100	100	0
Detention	Detention Basin	Evaporative Loss as % of PET	100	100	0
Detention	Detention Basin	Total Nitrogen - k (m/yr)	500	500	0
Detention	Detention Basin	Total Nitrogen - k (m/yr)	500	500	0
Detention	Detention Basin	Total Phosphorus - k (m/yr)	6000	6000	0
Detention	Detention Basin	Total Phosphorus - k (m/yr)	6000	6000	0
Detention	Detention Basin	Total Suspended Solids - k (m/yr)	8000	8000	0
Detention	Detention Basin	Total Suspended Solids - k (m/yr)	8000	8000	0
Jrban	BYPASS 310m2	Field Capacity (mm)	127	127	144
Urban	BYPASS 310m2	Groundwater Daily Baseflow Rate (%)	10	10	50
Urban	BYPASS 310m2	Groundwater Daily Recharge Rate (%)	10	10	100
Urban	BYPASS 310m2	Pervious Area Infiltration Capacity coefficient - a	135	135	360
Jrban	BYPASS 310m2	Pervious Area Infiltration Capacity exponent - b	4	4	0.5
Urban	BYPASS 310m2	Pervious Area Soil Storage Capacity (mm)	187	187	350
Urban	CAT2_ROOF 1200m2	Field Capacity (mm)	127	127	144
Urban	CAT2_ROOF 1200m2	Groundwater Daily Baseflow Rate (%)	10	10	50
Jrban	CAT2_ROOF 1200m2	Groundwater Daily Recharge Rate (%)	10	10	100
Jrban	CAT2_ROOF 1200m2	Pervious Area Infiltration Capacity coefficient - a	135	135	360
Urban	CAT2_ROOF 1200m2	Pervious Area Infiltration Capacity exponent - b	4	4	0.5
Jrban	CAT2_ROOF 1200m2	Pervious Area Soil Storage Capacity (mm)	187	187	350
Urban	CAT3_basketball court 850m2	Field Capacity (mm)	127	127	144
Jrban	CAT3_basketball court 850m2	Groundwater Daily Baseflow Rate (%)	10	10	50
Jrban	CAT3_basketball court 850m2	Groundwater Daily Recharge Rate (%)	10	10	100
Jrban	CAT3_basketball court 850m2	Pervious Area Infiltration Capacity coefficient - a	135	135	360
Jrban	CAT3_basketball court 850m2	Pervious Area Infiltration Capacity exponent - b	4	4	0.5
Urban	CAT3_basketball court 850m2	Pervious Area Soil Storage Capacity (mm)	187	187	350
Urban	CAT4_landscape 1000m2	Field Capacity (mm)	127	127	144
Urban	CAT4_landscape 1000m2	Groundwater Daily Baseflow Rate (%)	10	10	50
Urban	CAT4_landscape 1000m2	Groundwater Daily Recharge Rate (%)	10	10	100
Urban	CAT4_landscape 1000m2	Pervious Area Infiltration Capacity coefficient - a	135	135	360
Urban	CAT4_landscape 1000m2	Pervious Area Infiltration Capacity exponent - b	4	4	0.5
Urban	CAT4_landscape 1000m2	Pervious Area Soil Storage Capacity (mm)	187	187	350
Jrban	CAT5_landscape 1309m2	Field Capacity (mm)	127	127	144
Jrban	CAT5_landscape 1309m2	Groundwater Daily Baseflow Rate (%)	10	10	50
Urban	CAT5_landscape 1309m2	Groundwater Daily Recharge Rate (%)	10	10	100
Jrban	CAT5_landscape 1309m2	Pervious Area Infiltration Capacity coefficient - a	135	135	360
Urban	CAT5_landscape 1309m2	Pervious Area Infiltration Capacity exponent - b	4	4	0.5
Urban	CAT5_landscape 1309m2	Pervious Area Soil Storage Capacity (mm)	187	187	350



Appendix C - Civil Drawings

1191701C - DARLINGTON PUBLIC SCHOOL

CIVIL DRAWING REGISTER					
DRAWING NUMBER	DRAWING TITLE				
C001	COVER PAGE				
C002	CONSTRUCTION NOTES				
C004	SOIL AND WATER MANAGEMENT PLAN - STAGE 1				
C005	SOIL AND WATER MANAGEMENT PLAN - STAGE 2				
C006	SOIL AND WATER MANAGEMENT DETAILS				
C011	BULK EARTHWORKS PLAN				
C021	BULK EARTHWORKS LONGITUDINAL SECTIONS SHEET 1				
C022	BULK EARTHWORKS LONGITUDINAL SECTIONS SHEET 2				
C023	BULK EARTHWORKS LONGITUDINAL SECTIONS SHEET 3				
C031	STORMWATER DRAINAGE PLAN - STAGE 1				
C032	STORMWATER DRAINAGE PLAN - STAGE 2				
C051	STORMWATER DRAINAGE DETAILS SHEET 1				
C052	STORMWATER DRAINAGE DETAILS SHEET 2				
C061	SITEWORKS AND PAVEMENT PLAN				
C071	SITEWORKS AND PAVEMENT DETAILS SHEET 1				
C072	SITEWORKS AND PAVEMENT DETAILS SHEET 2				



LOCALITY PLAN

NOT TO SCALE

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COVER PAGE

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cale -	Project Ref	Drawing No	Rev		
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- MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE SPECIFICATION, CURRENT SAA CODES, BUILDING REGULATIONS AND THE REQUIREMENTS OF ANY OTHER RELEVANT STATUTORY AUTHORITIES.
- THESE DRAWINGS MUST NOT BE SCALED. ALL DIMENSIONS ARE IN METERS. ALL SET OUT DIMENSIONS AND LEVELS, INCLUDING THOSE SHOWN ON THESE DRAWINGS SHALL BE IN ACCORDANCE WITH THE ARCHITECT'S DRAWINGS AND VERIFIED ON SITE.
- ALL SETOUT AND DIMENSIONS OF THE STRUCTURE INCLUDING KERBS AND RETAINING WALLS, AND BULK EARTHWORKS MUST BE TAKEN FROM THE ARCHITECT'S DRAWINGS. SETOUT OF THE STORMWATER PITS BY OTHERS. CONTRACTOR TO CONFIRM SETOUT OF SERVICE TRENCHING INCLUDING SUBSOIL ON SITE.
- G5 THE CONTRACTOR SHALL COMPLY WITH ALL REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THE WORKS. REFER TO GEOTECHNICAL REPORT BY 'DOUGLAS PARTNERS' PTY LTD PROJECT 92277.01 DATED FEBRUARY 2019
- G6 ALL DIMENSIONS AND REDUCED LEVELS MUST BE VERIFIED ON SITE BEFORE THE COMMENCEMENT OF ANY WORK.
- THE APPROVAL OF A SUBSTITUTION SHALL BE SOUGHT FROM THE SUPERINTENDENT BUT IS NOT AN AUTHORISATION OF A COST VARIATION. THE SUPERINTENDENT MUST APPROVE ANY COST VARIATION INVOLVED BEFORE ANY WORK STARTS.
- G8 ALL LEVELS SHOWN ARE TO THE AUSTRALIAN HEIGHT DATUM.
- G9 SERVICE INFORMATION SHOWN IS APPROXIMATE ONLY. PRIOR TO COMMENCEMENT OF ANY WORKS, THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND SERVICES AND COMPLY WITH ALL REQUIREMENTS OF THOSE AUTHORITIES.
- G10 EXISTING SURFACE CONTOURS, WHERE SHOWN, ARE INTERPOLATED AND MAY NOT BE ACCURATE.
- G11 UNLESS NOTED OTHERWISE, ALL VEGETATION SHALL BE STRIPPED TO A MINIMUM DEPTH OF 150mm UNDER ALL PROPOSED PAVEMENT AND BUILDING AREAS.
- G12 MAKE SMOOTH CONNECTION WITH ALL EXISTING WORKS

SITEWORKS NOTES

- S1 PRIOR TO THE PLACEMENT OF ANY PAVEMENTS, BUILDINGS OR DRAINS THE EXPOSED SUBGRADE SHALL BE COMPACTED TO A MINIMUM OF 98% STANDARD COMPACTION IN ACCORDANCE WITH TEST 'E1.1' OF A.S. 1289 FOR THE TOP 300mm. ANY SOFT SPOTS SHALL BE REMOVED AND REPLACED WITH GRANULAR FILL TO THE ENGINEERS APPROVAL AND COMPACTED IN ACCORDANCE WITH THE COMPACTION REQUIREMENTS SET OUT BELOW. ON HIGHLY REACTIVE CLAY AREAS SITE EXCAVATED MATERIAL MAY BE USED WITH THE PRIOR AUTHORISATION OF THE ENGINEER.
- ALL FILL AND PAVEMENT MATERIALS SHALL BE COMPACTED IN ACCORDANCE WITH GEOTECHNICAL REPORT BY 'DOUGLAS PARTNERS' PTY LTD PROJECT 92277.01 DATED FEBRUARY 2019 MOISTURE CONTENT TO BE MAINTAINED AT +/- 2% OMC. MINIMUM COMPACTION REQUIREMENTS ARE DETAILED BELOW FOR (ALL REQUIREMENTS ARE TO VERIFIED BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER):

 LANDSCAPED AREAS 98% STD.

 FILL UNDER ANY FOOTINGS AND FLOOR SLABS FOR ANY STRUCTURE TO SUBGRADE LEVEL: FINE CRUSHED ROCK 98% STD. - SELECTED FILL WITHOUT CONSPICUOUS CLAY CONTENT 98% STD.

 BUILDING BASECOURSE 98% MOD

 FILL UNDER ROAD PAVEMENTS; - TO WITHIN 500mm OF FINISHED SUBGRADE LEVEL 98% STD. - UP TO FINISHED SUBGRADE LEVEL 98% STD.

 ROAD PAVEMENT MATERIALS; SUB BASE 98% MOD.

- BASE COURSE 98% MOD.

THE MAXIMUM COMPACTION IS TO BE NO GREAT THAN 4% ON TOP OF THE ABOVE MENTION VALUES

- GRADE EVENLY BETWEEN FINISHED SURFACE SPOT LEVELS. FINISHED SURFACE CONTOURS ARE SHOWN FOR CLARITY. WHERE FINISHED SURFACE LEVELS ARE NOT SHOWN, THE SURFACE SHALL BE GRADED SMOOTHLY SO THAT IT WILL DRAIN AND MATCH ADJACENT SURFACES OR STRUCTURES.
- UNLESS NOTED OTHERWISE.

S4 ALL DIMENSIONS GIVEN ARE TO FACE OF KERB, CENTER OF PIPE OR EXTERIOR FACE OF BUILDING

- ANY STRUCTURES, PAVEMENTS OR SURFACES DAMAGED, DIRTIED OR MADE UNSERVICABLE DUE TO CONSTRUCTION WORK SHALL BE REINSTATED TO THE SATISFACTION OF THE ENGINEER.
- S6 ANY FILL REQUIRED SHALL BE APPROVED BY THE ENGINEER / GEOTECHNICAL CONSULTANT
- CONTRACTOR IS TO ENSURE THAT ALL EXCAVATIONS ARE MAINTAINED IN A DRY CONDITION WITH NO WATER ALLOWED TO REMAIN IN THE EXCAVATIONS.
- S8 ALL FINISHES AND COLOURS TO BE IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS.
- S9 REFER TO STRUCTURAL DRAWINGS FOR CONCRETE, REINFORCEMENT AND RETAINING WALL DETAILS.
- S10 GENERALLY FOR TRENCHING WORKS THE CONTRACTOR MUST: A) COMPLY WITH THE GENERAL PROVISIONS OF PART 3.1 "MANAGING RISKS TO HEALTH AND SAFETY" OF NSW WORK AND HEALTH AND SAFETY REGULATION 2011
- B) COMPLY PART 6.3 DIVISION 3 "EXCAVATION WORK" OF NSW WORK HEALTH AND SAFETY REGULATION NSW 2011
- PRIOR TO THE EXCAVATION OF ANY TRENCH DEEPER THAN 1.5 METRES THE CONTRACTOR MUST: A) NOTIFY THE OCCUPATIONAL HEALTH AND SAFETY AUTHORITY ON THE APPROPRIATE FORM.

STORMWATER DRAINAGE NOTES

- SW1 UNLESS NOTED OTHERWISE BY HYDRAULIC ENGINEERS DRAWINGS, ALL DOWNPIPES & GRATED INLETS SHALL BE CONNECTED TO PITS OR MAIN STORMWATER DRAINS WITH 150 DIA. UPVC PIPES LAID AT A MINIMUM GRADE OF 1 IN 100. FOR SYPHONIC ROOF DRAINAGE SYSTEMS ALL DOWNPIPES CONNECTION DRAIN SIZES TO BE CONNECTED INTO MAIN STORMWATER DRAINS SHALL BE IN ACCORDANCE WITH HYDRAULIC ENGINEERS DRAWINGS.
- SW2 ALL MAIN STORMWATER DRAINS SHALL BE CONSTRUCTED USING MATERIALS AS SPECIFIED ON THE DRAWINGS IN ACCORDANCE WITH THE APPROPRIATE A.S. IF NOT SPECIFIED THEN CLASS 2 RRJ RCP SHALL BE USED FOR DIAMETERS > 225mm. SEWER CLASS SEH UPVC IN ACCORDANCE WITH AS1260 SHALL BE USED FOR Ø225mm OR SMALLER.
- SW3 ALL PIPEWORK TO BE INSTALLED IN ACCORDANCE WITH AS3725 FOR RCP AND AS2032 FOR PVC. ALL BEDDING TO BE TYPE H2 UNLESS NOTED OTHERWISE.
- SW4 FOR ALL PITS > 1.2m DEEP, STEP IRONS SHALL BE INSTALLED.

uPVC SEWER GRADE PIPE IS TO BE USED.

- SW5 PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY BONACCI GROUP.
- SW6 ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
- SW7 WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED
- SW8 GRATES AND COVERS SHALL CONFORM WITH AS 3996 AND AS 1428.1 FOR ACCESS REQUIREMENTS.
- SW9 CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES ARE NOT TO BE REDUCED WITHOUT APPROVAL.
- SW10 AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.
- SW11 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**

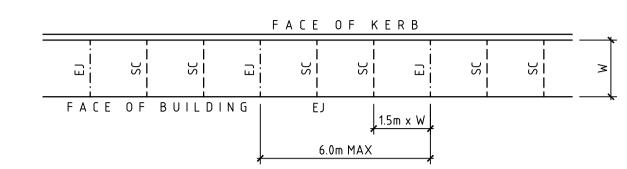
KERBING NOTES

- K1 ALL CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 32 MPa U.N.O.
- K2 ALL KERBS, GUTTERS, DISH DRAINS AND CROSSINGS TO BE CONSTRUCTED ON 75mm GRANULAR BASECOURSE COMPACTED TO A MINIMUM 98% MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289
- K3 EXPANSION JOINTS (EJ) TO BE FORMED FROM 10mm COMPRESSIBLE CORK FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE. EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX 12m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLAB.
- K4 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 SLAB.
- K5 BROOMED FINISH TO ALL RAMPED AND VEHICULAR CROSSINGS. ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.
- K6 IN THE REPLACEMENT OF KERBS:-
- 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.
- EXISTING KERBS ARE TO BE COMPLETELY REMOVED WHERE NEW KERBS ARE SHOWN.

JOINTING NOTES

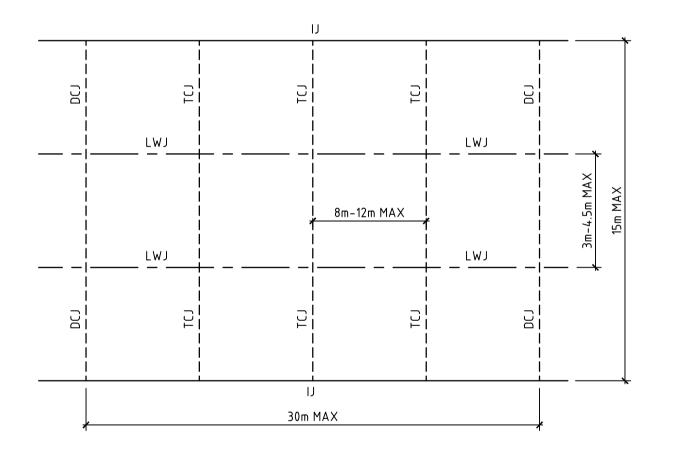
PEDESTRIAN FOOTPATH JOINTS

- EXPANSION JOINTS (EJ) ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT 6m CENTRES.
- SAWCUT JOINTS (SC) ARE TO BE LOCATED AT A MAX 1.5m x WIDTH OF PAVEMENT. THE TIMING OF THE SAWCUT IS TO BE CONFIRMED BY THE CONTRACTOR ON SITE. SITE CONDITIONS WILL DETERMINE HOW MANY HOURS AFTER THE CONCRETE POUR BEFORE THE SAW CUTS ARE COMMENCED.
- WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND / OR ADJACENT PAVEMENT
- PROVIDE 10mm WIDE FULL DEPTH EXPANSION JOINTS (EJ) BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVERS
- J5 ALL PEDESTRIAN FOOTPATH JOINTINGS AS FOLLOWS (U.N.O.).



VEHICULAR PAVEMENT JOINTS

- J6 ALL VEHICULAR PAVEMENTS TO BE JOINTED AS SHOWN ON DRAWINGS.
- LONGITUDINAL WARPING JOINTS (LWJ) SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 3m TO 4.5m MAX CENTERS. ALL LWJ's SHOULD BE TIED UP TO A MAXIMUM TOTAL WIDTH OF 30m.
- TRANSVERSE CONTRACTION JOINTS (TCJ) SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 8m TO 12m MAX CENTERS. TCJ's CAN BE SPACED AT SUITABLE INTERVALS UP TO A RECOMMENDED MAXIMUM LENGTH OF 15m.
- TRANSVERSE DOWELLED CONSTRUCTION JOINTS (DCJ) TO BE PROVIDED FOR PLANNED INTERRUPTIONS SUCH AS AT THE END OF EACH DAY'S OPERATIONS (POUR BREAK), AT BLOCK OUTS FOR BRIDGES AND INTERSECTIONS OR FOR UNEXPECTED DELAYS WHEN THE SUSPENSION OF OPERATIONS IS LIKELY TO CREATE A JOINT.
- J10 ISOLATION JOINTS WITH SUB-GRADE BEAM (IJ) TO BE PROVIDED AT INTERSECTIONS OR AT THE JUNCTION OF A POUR BREAK.
- J11 ALL VEHICULAR PAVEMENTS TO BE JOINTED IN ACCORDANCE WITH AUSTROADS AGPT02-12 GUIDE TO PAVEMENT TECHNOLOGY PART 2 STRUCTURAL PAVEMENT DESIGN AND SUPPLEMENT AP-T36-06 PAVEMENT DESIGN FOR LIGHT TRAFFIC
- J12 VEHICULAR PAVEMENT JOINTING AS FOLLOWS (U.N.O.)



WARNING

NO DRAINAGE WORKS SHALL COMMENCE

UNTIL THE CONTRACTOR CONFIRMS THE

I.L. OF ALL EXISTING DRAINS, AND

CONFIRMS IN WRITING WITH THE

ENGINEERING SUPERVISOR.

P1 70% SSDA REVIEW 03.04.20 JF Rev Description Date By A

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CONSTRUCTION NOTES

BEWARE OF UNDERGROUND SERVICES THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE.

www.1100.com.au The Essential First Step

ALL EXISTING PROPERTY SERVICES' LOCATIONS AND DEPTHS ARE APPROXIMATE AND MUST BE VERIFIED ON SITE. THE CONTRACTOR SHOULD SUPPLY PRECISE LOCATIONS AND DEPTHS TO THE ENGINEER FOR REVIEW PRIOR TO ANY WORKS THAT MAY AFFECT THESE SERVICES.

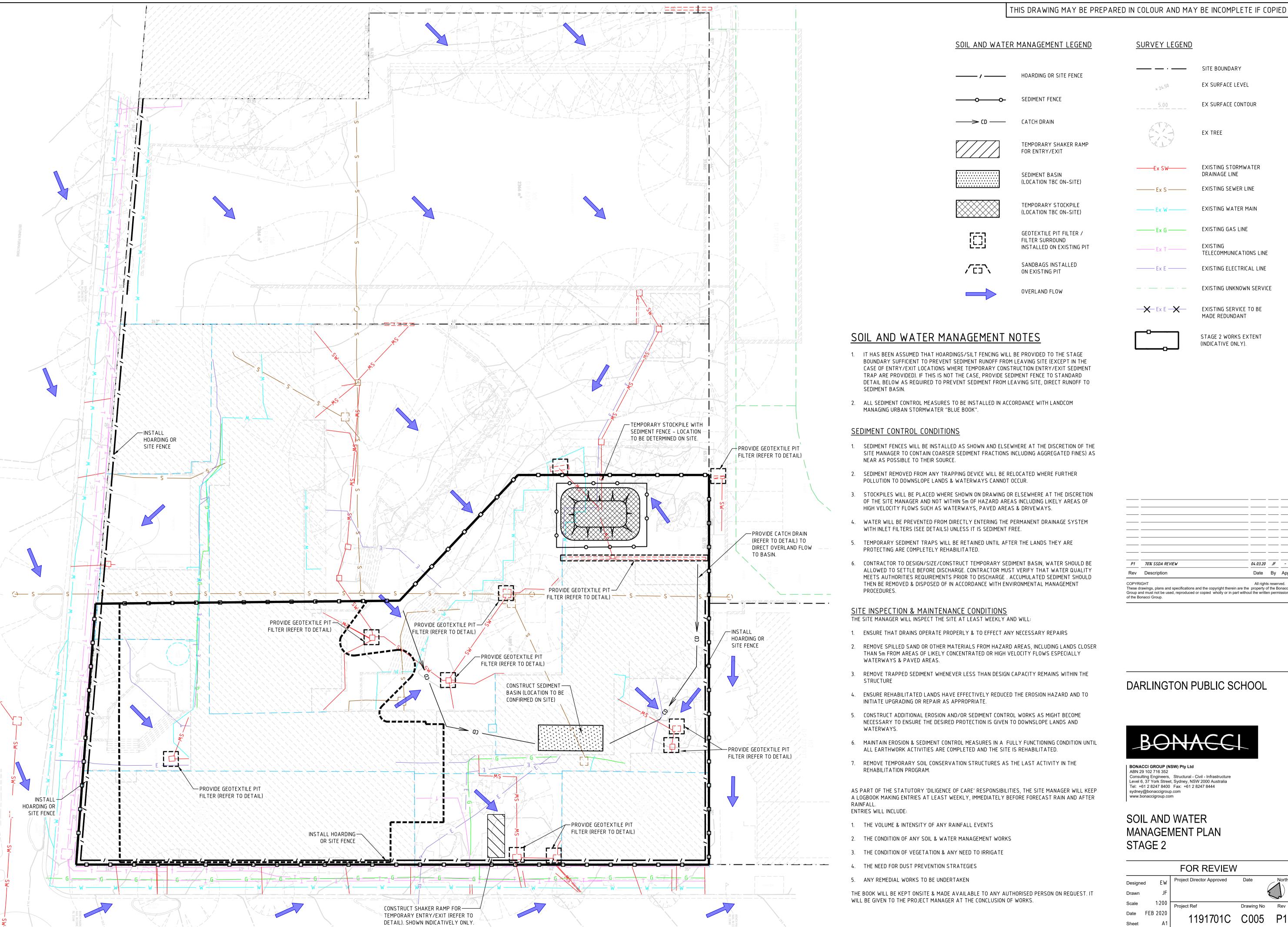
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Drawing No

WILL BE GIVEN TO THE PROJECT MANAGER AT THE CONCLUSION OF WORKS.



SURVEY LEGEND

SITE BOUNDARY

EX SURFACE CONTOUR

EX TREE

EXISTING STORMWATER ——Ex SW—— DRAINAGE LINE

EXISTING SEWER LINE

EXISTING ELECTRICAL LINE

04.03.20 JF

Date By A

EX SURFACE LEVEL

EXISTING WATER MAIN

EXISTING GAS LINE ——— E× G ——— EXISTING TELECOMMUNICATIONS LINE

EXISTING UNKNOWN SERVICE

—— Ex E ——

EXISTING SERVICE TO BE MADE REDUNDANT

STAGE 2 WORKS EXTENT (INDICATIVE ONLY).

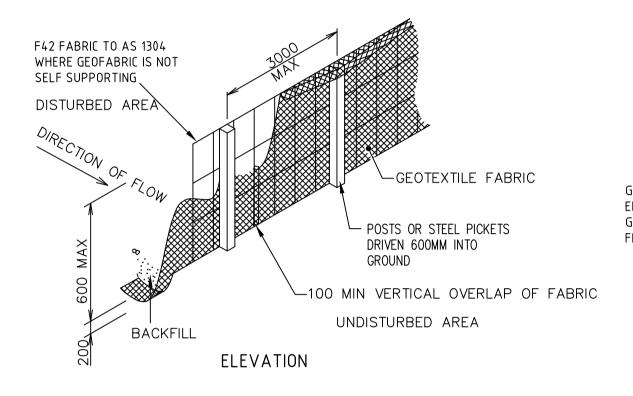
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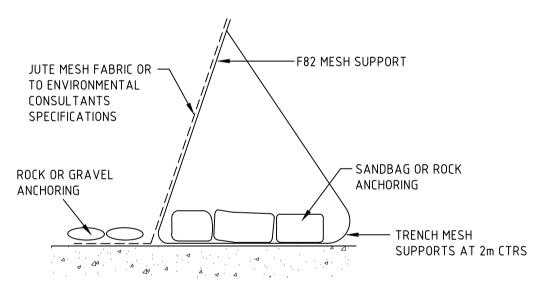
SOIL AND WATER MANAGEMENT PLAN STAGE 2

FOR REVIEW						
Designe	d EW	Project Director Approved	Date	North		
Orawn	JF					
Scale	1:200	Project Ref	Drawing No	Rev		
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SEDIMENT FENCE

NOT TO SCALE



ALTERNATIVE SEDIMENT FENCE

NOT TO SCALE

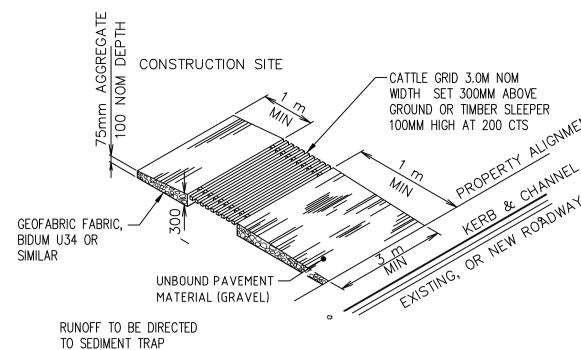
ALTERNATIVE SEDIMENT FENCE NOTES

1. INSTALL THIS TYPE OF SEDIMENT FENCE WHEN USE OF SUPPORT POSTS IS NOT DESIRABLE OR NOT POSSIBLE. SUCH CONDITIONS MIGHT APPLY, FOR EXAMPLE, WHERE APPROVAL IS GRANTED FROM THE APPROPRIATE AUTHORITIES TO PLACE THESE FENCES IN HIGHLY SENSITIVE ESTUARINE AREAS.

2. LISE BENT TRENCH MESH TO SUPPORT THE ER2 WELDED MESH EACING AS SHOWN ON THE DRAWING.

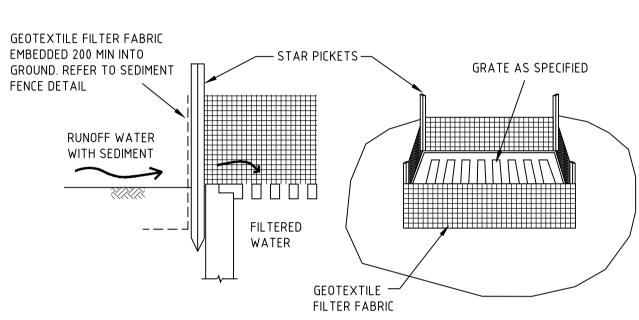
STABILITY OF THE STRUCTURE IN THE DESIGN STORM EVENT, USUALLY THE 10 YEAR EVENT.

USE BENT TRENCH MESH TO SUPPORT THE F82 WELDED MESH FACING AS SHOWN ON THE DRAWING ABOVE. ATTACH THE JUTE MESH TO THE WELDED MESH FACING USING UV-RESISTANT CABLE TIES.
 STABILISE THE WHOLE STRUCTURE WITH SANDBAG OR ROCK ANCHORING OVER THE TRENCH MESH AND THE LEADING EDGE OF THE JUTE MESH. THE ANCHORING SHOULD BE SUFFICIENTLY LARGE TO ENSURE



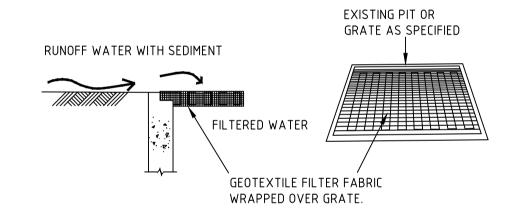
TEMPORARY CONSTRUCTION VEHICLE ENTRY/EXIT SEDIMENT TRAP

NOT TO SCALE



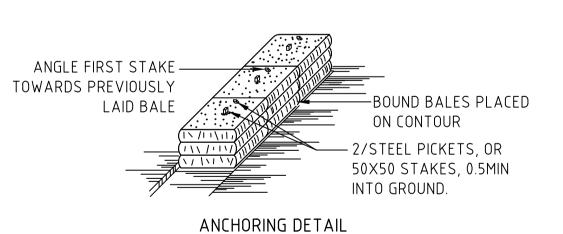
GEOTEXTILE PIT FILTER 1

NOT TO SCALE



GEOTEXTILE PIT FILTER 2

NOT TO SCALE



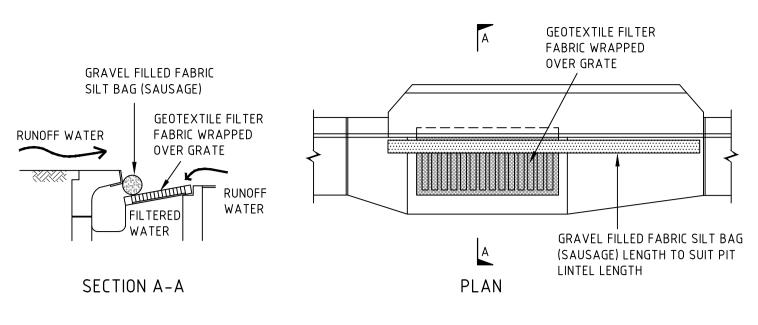
FLOW



BEDDING DETAIL

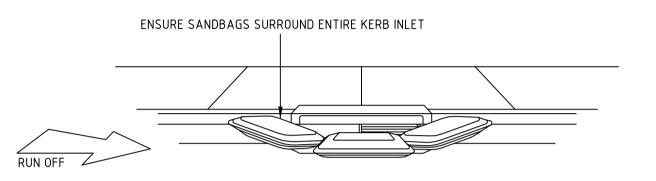
STRAW BALE BANK SEDIMENT CONTROL

NOT TO SCALE



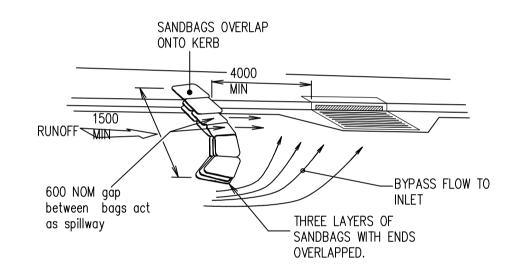
KERB INLET SEDIMENT TRAP

NOT TO SCALE



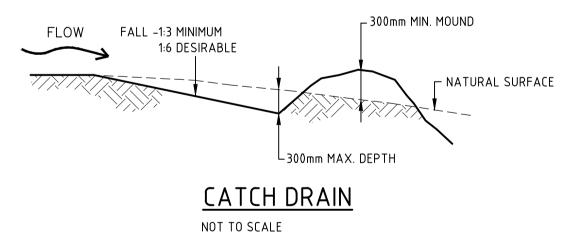
SANDBAG KERB INLET SEDIMENT TRAP

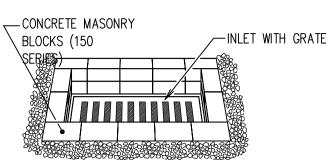
NOT TO SCALE

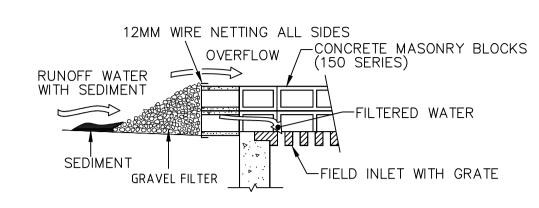


ON GRADE KERB INLET SEDIMENT TRAP

NOT TO SCALE

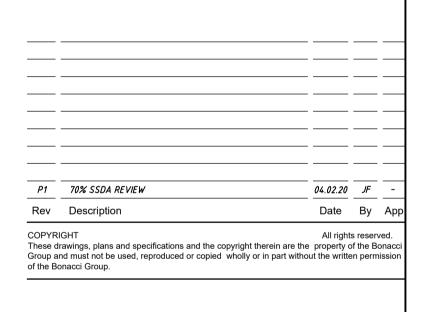






FIELD INLET SEDIMENT TRAP

NOT TO SCALE



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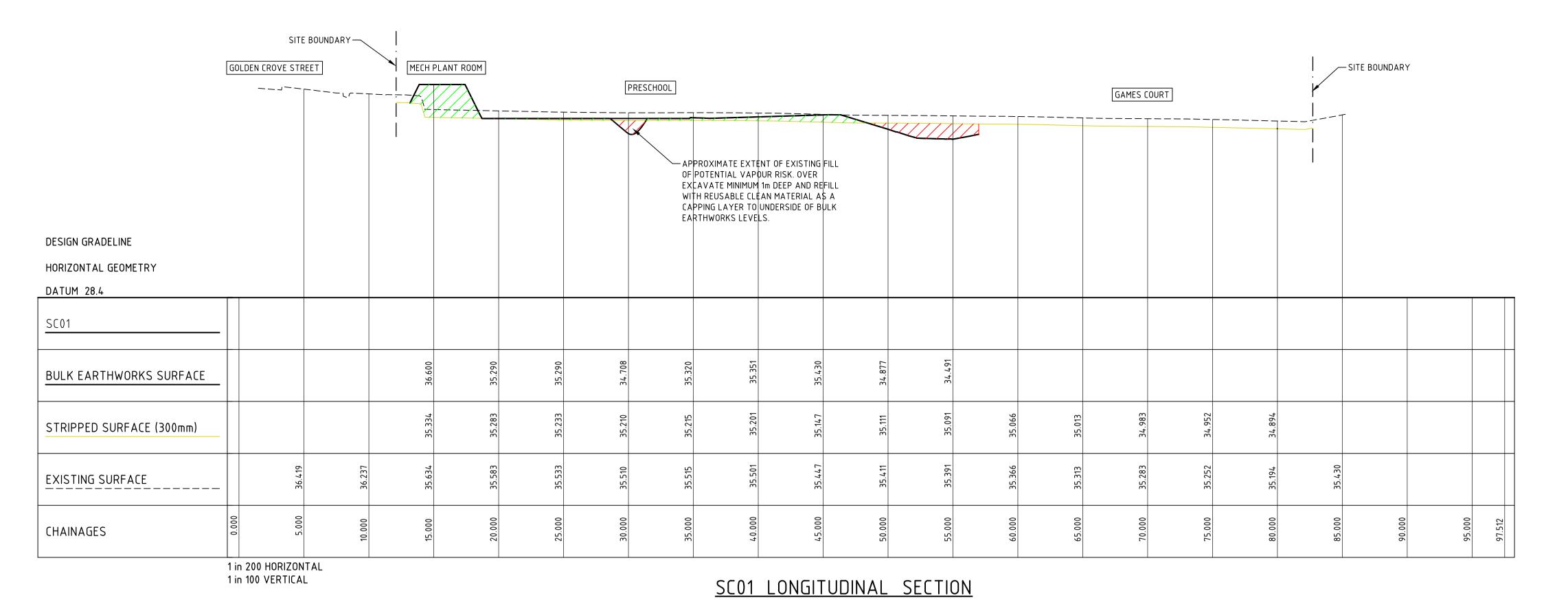
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sydney@bonaccigroup.com

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SOIL AND WATER
MANAGEMENT DETAILS

FOR REVIEW					
Designe	ed EW	Project Director Approved	Date	North	
Drawn	JF				
Scale	NTS	Project Ref	Drawing No	Rev	
Date	FEB 2020	1191701C	C006	D1	
Sheet	A1	11817010	C000		



SITE BOUNDARY — EXISTING TREES AND SURFACE— LEVELS TO BE RETAINED PENDING LIBRARY GOLDEN CROVE STREET ADMINISTRATION ARBORIST CONFIRMATION -REFER TO LANDSCAPE SITE BOUNDARY DRAWINGS FOR DETAILS (TYPICAL) DESIGN GRADELINE HORIZONTAL GEOMETRY DATUM 25.3 SC02 BULK EARTHWORKS SURFACE STRIPPED SURFACE (300mm) EXISTING SURFACE CHAINAGES

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P2 70% SSDA REVIEW P1 PRELIMINARY ISSUE

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BONACCI

Rev Description

12.03.20 JF Date By Ap

BULK EARTHWORKS LONGITUDINAL SECTIONS SHEET 1

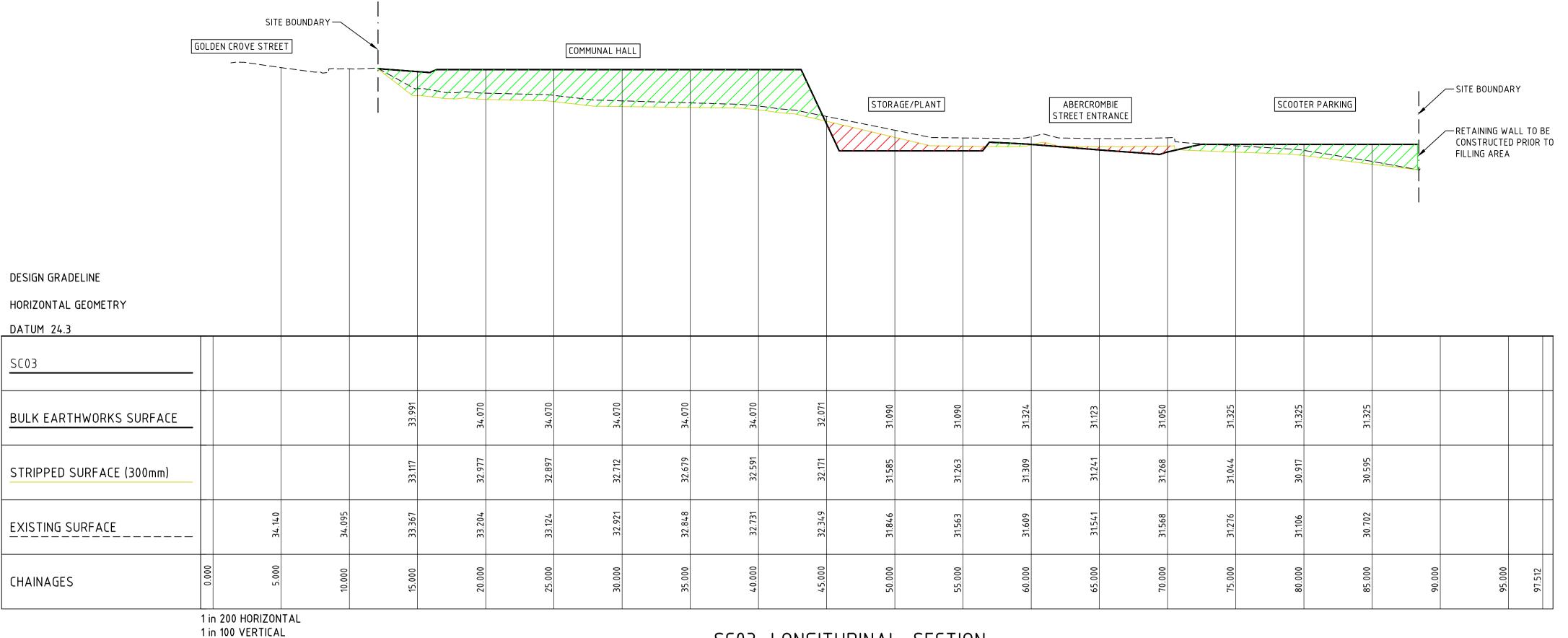
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Date FEB 2020	1191701C	C021	P2		
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SC02 LONGITUDINAL SECTION

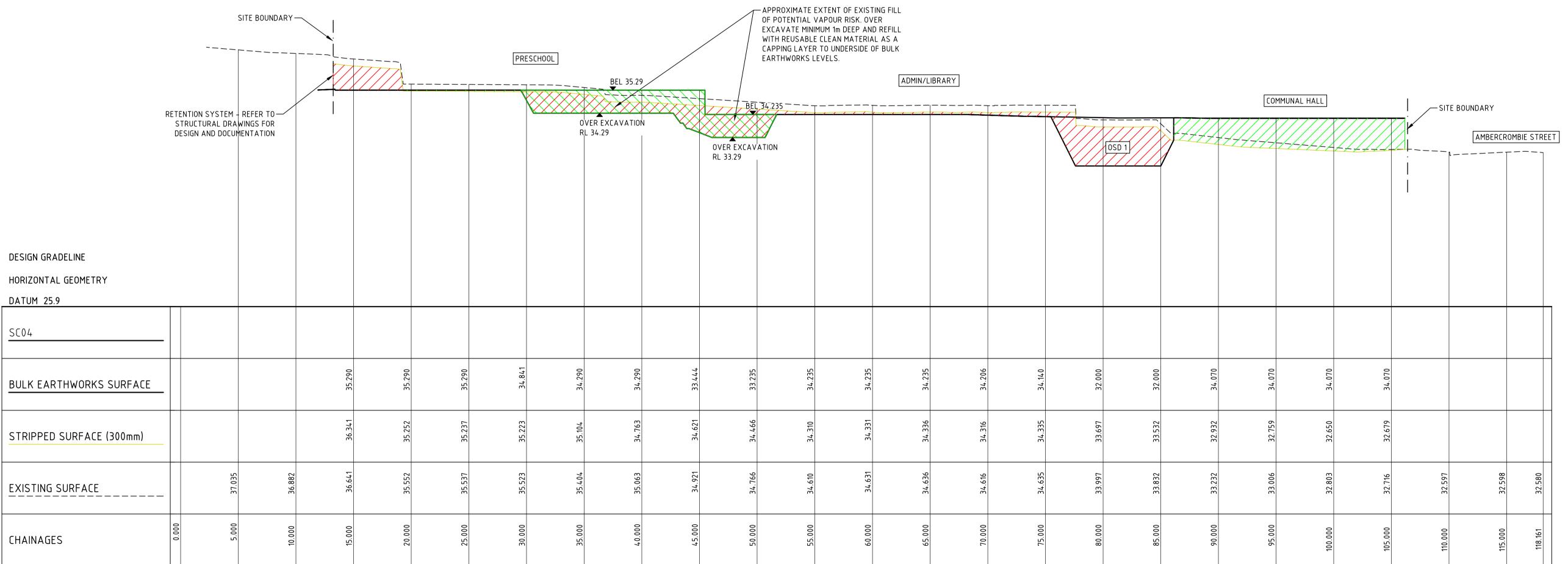
1 in 200 HORIZONTAL 1 in 100 VERTICAL

<u>NOTES</u>

EXISTING SURFACE LEVELS ARE INTERPOLATED FROM INFORMATION SUPPLIED BY 'CMS SURVEYORS' PTY LTD REFERENCE 17702A ISSUE 3. DATED 04 MARCH 2019



SC03 LONGITUDINAL SECTION



SC04 LONGITUDINAL SECTION

<u>NOTES</u>

1. EXISTING SURFACE LEVELS ARE
INTERPOLATED FROM INFORMATION SUPPLIED
BY 'CMS SURVEYORS' PTY LTD REFERENCE
17702A ISSUE 3. DATED 04 MARCH 2019

P2 70% SSDA REVIEW 04.03.20 JF P1 PRELIMINARY ISSUE 12.03.20 JF
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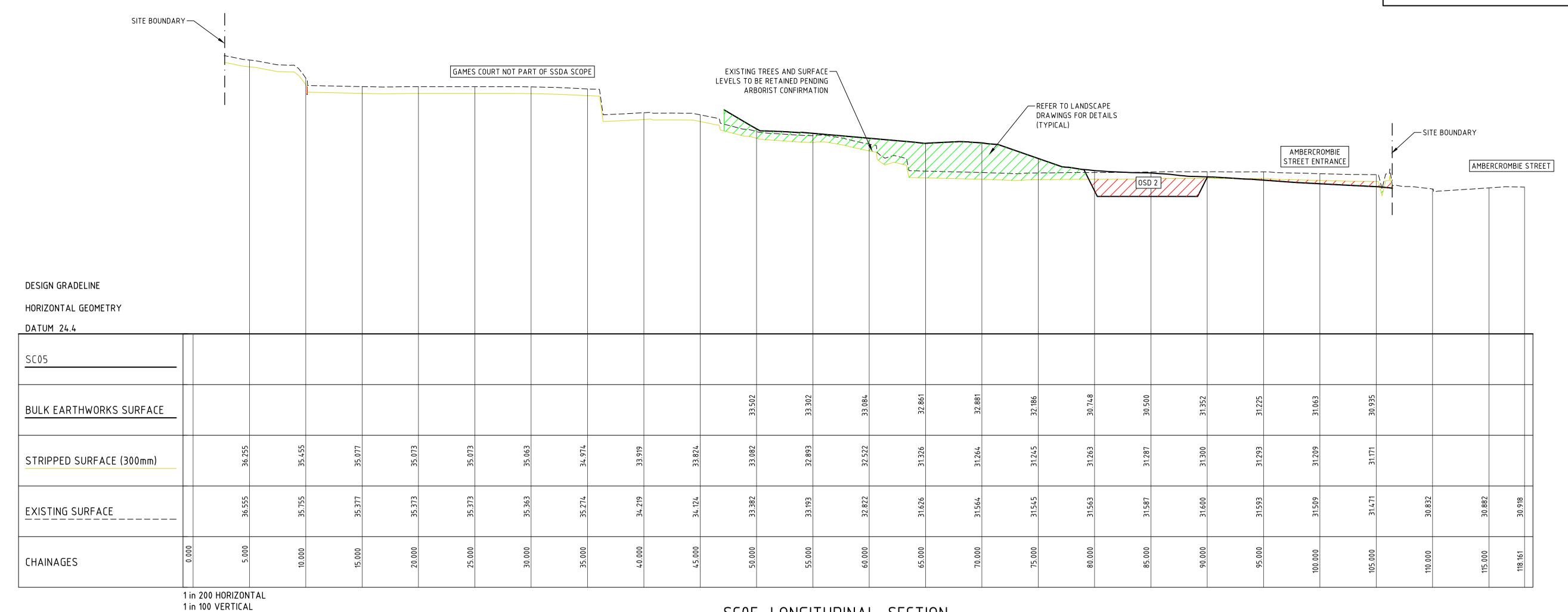
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BULK EARTHWORKS LONGITUDINAL SECTIONS SHEET 2

FOR REVIEW					
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Scale AS S	HOWN	Project Ref	Drawing No	Rev	
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1 in 200 HORIZONTAL 1 in 100 VERTICAL



SC05 LONGITUDINAL SECTION

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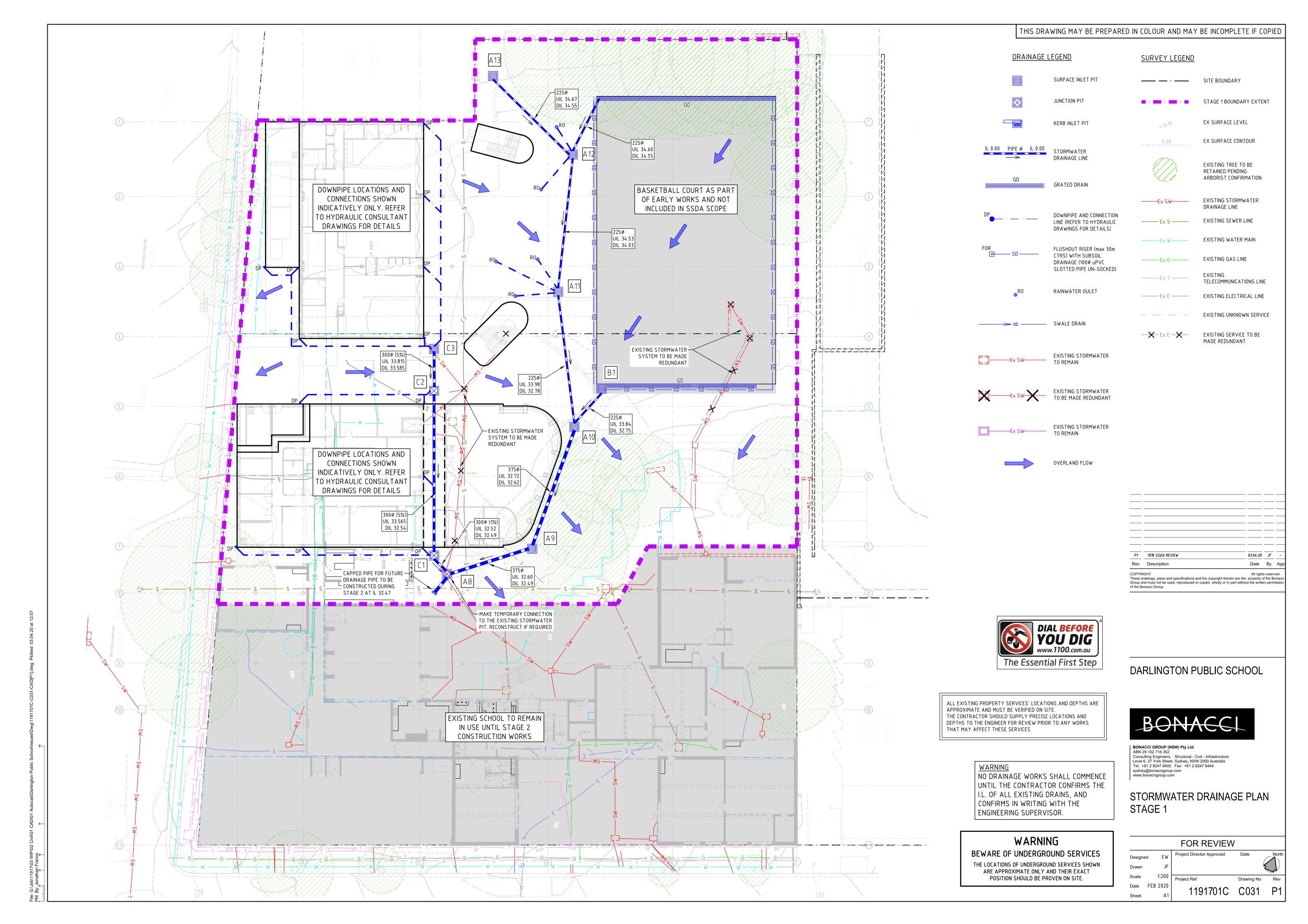


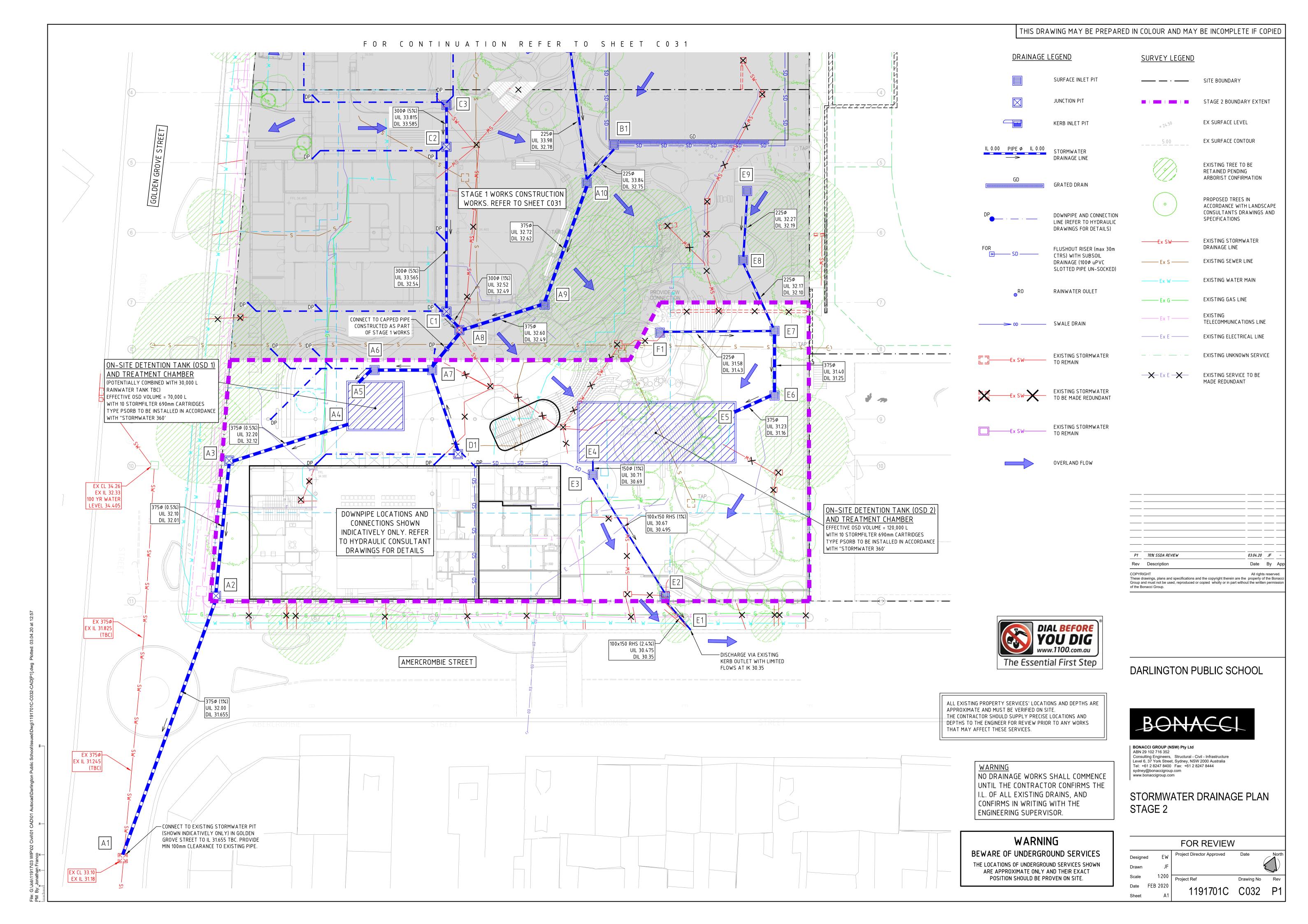
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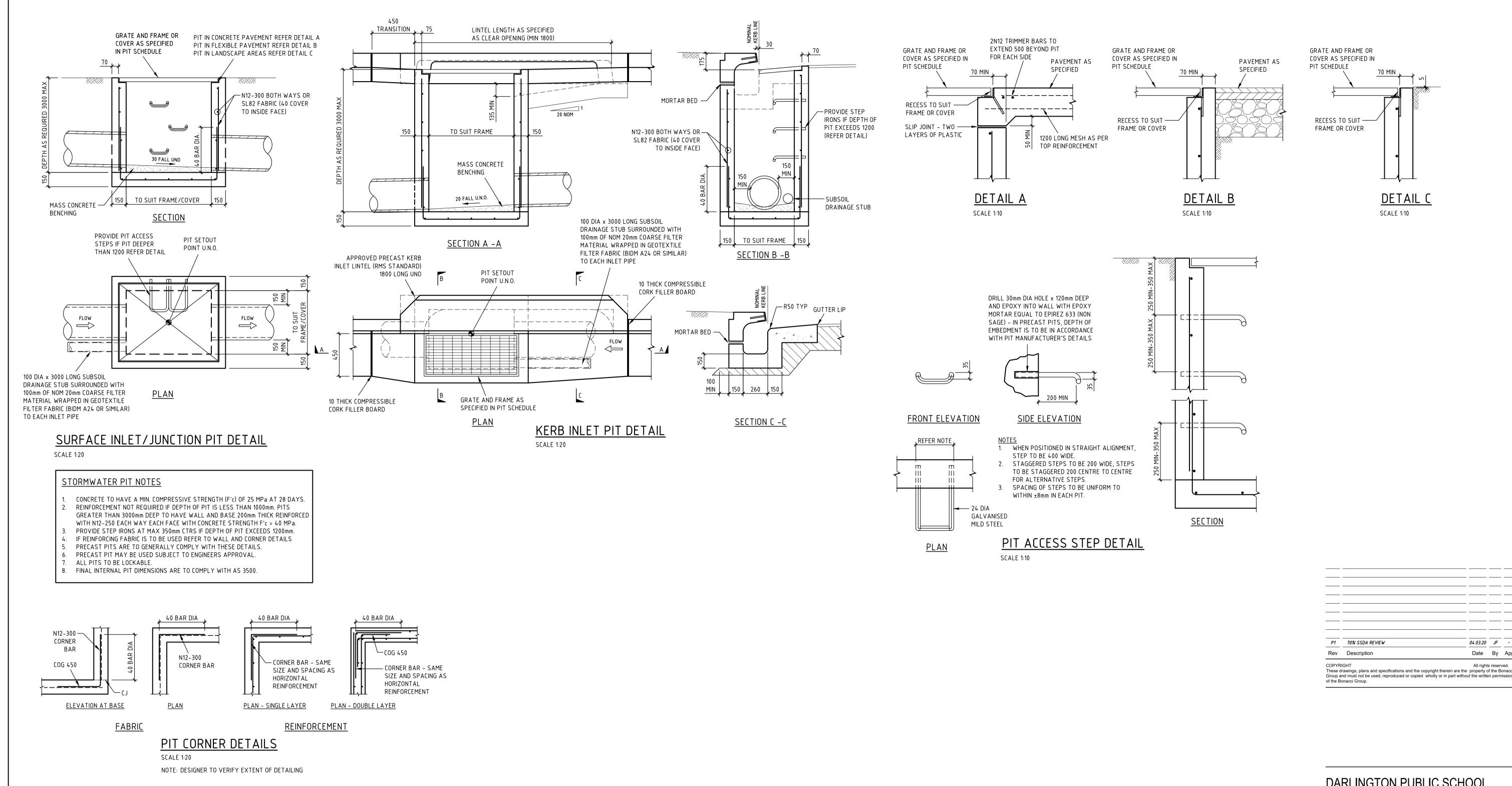
BULK EARTHWORKS LONGITUDINAL SECTIONS SHEET 3

FOR REVIEW EXISTING SURFACE LEVELS ARE Designed INTERPOLATED FROM INFORMATION SUPPLIED BY 'CMS SURVEYORS' PTY LTD REFERENCE Scale AS SHOWN Drawing No Rev 17702A ISSUE 3. DATED 04 MARCH 2019 Date FEB 2020 Sheet

<u>NOTES</u>







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Date By Ap

DETAIL C

SCALE 1:10

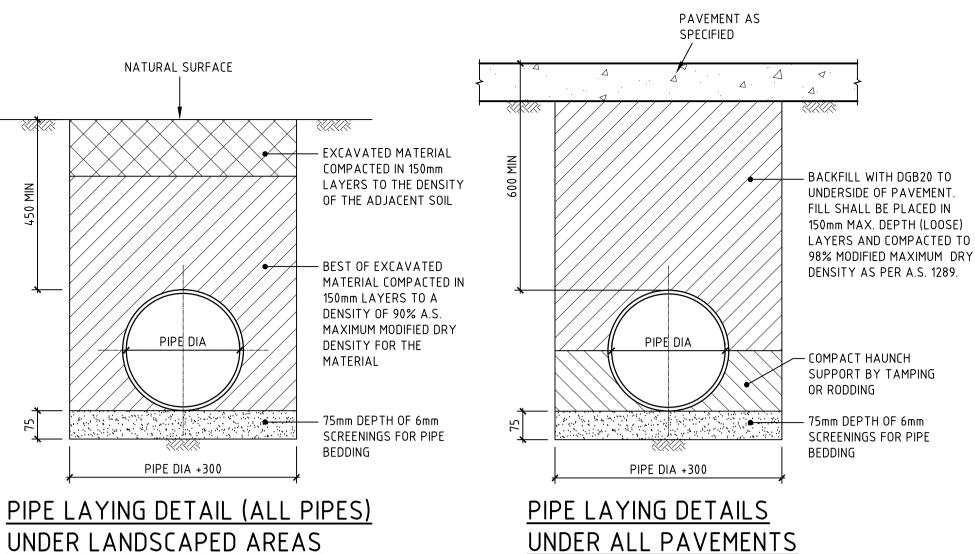


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STORMWATER DRAINAGE **DETAILS - SHEET 1**

FOR REVIEW Project Director Approved Designed Drawing No Date FEB 2020 Sheet

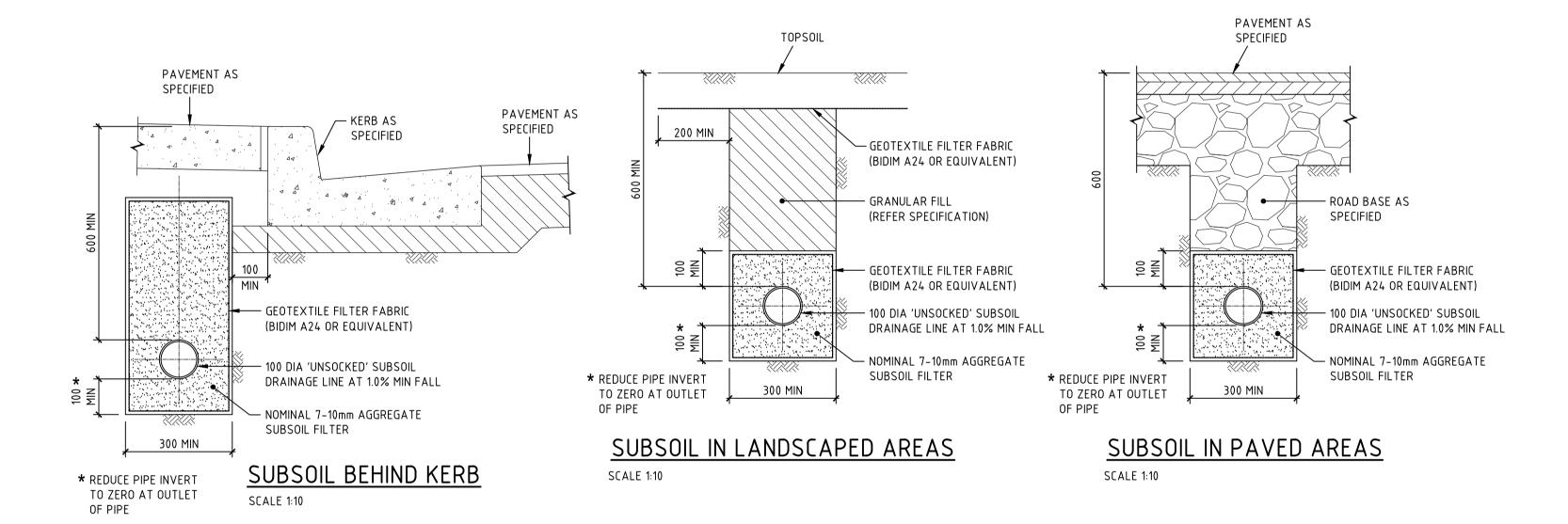


UNDER LANDSCAPED AREAS

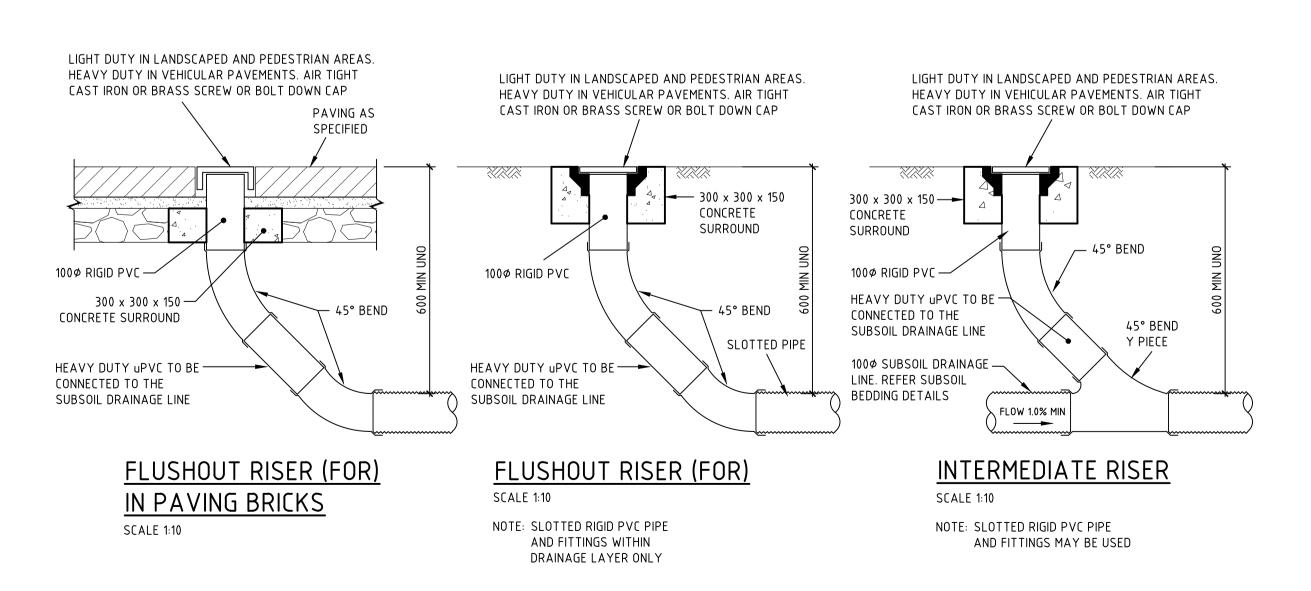
SCALE 1:10

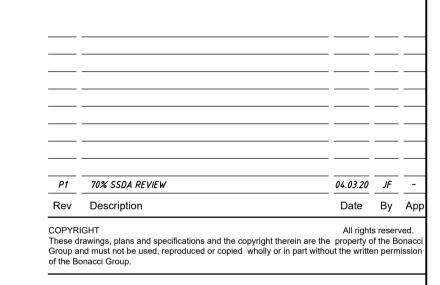
SCALE 1:10

NOTE: AVOID RUNNING CONSTRUCTION EQUIPMENT OVER THE PIPES



UNTIL BACKFILL MATERIAL IS 300mm MIN. ABOVE CROWN OF PIPE.





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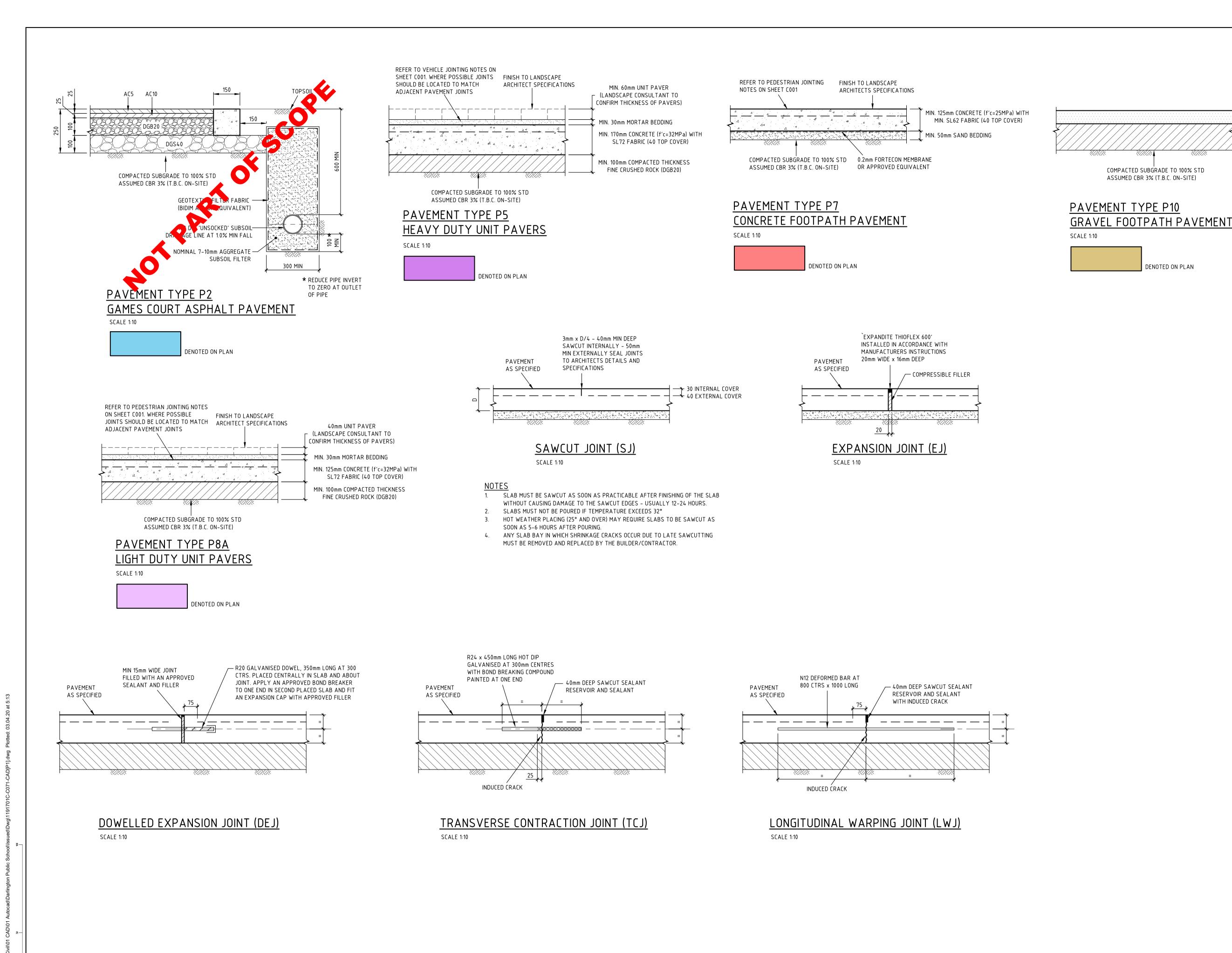
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STORMWATER DRAINAGE DETAILS - SHEET 2

FOR REVIEW						
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Drawn JF						
Scale AS SHOWN	Project Ref	Drawing No	Rev			
Date FEB 2020	1191701C	C052	P1			
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MIN. 75mm STABILISED DECOMPOSED

GRANITE GRAVEL

MIN. 150mm COMPACTED THICKNESS

FINE CRUSHED ROCK (DGB20)

COMPACTED SUBGRADE TO 100% STD

DENOTED ON PLAN

ASSUMED CBR 3% (T.B.C. ON-SITE)

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04.03.20 JF

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P1 70% SSDA REVIEW

Rev Description

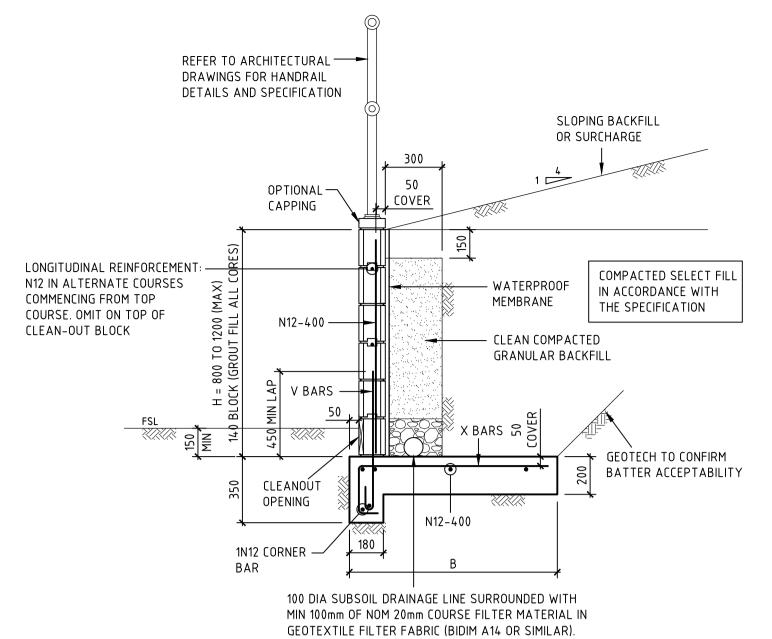
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SITEWORKS AND PAVEMENT DETAILS SHEET 1

	500 DEVUEVA						
		FOR REVIEW					
Design	ed EW	Project Director Approved	Date	North			
Drawn	JF		(
Scale	AS SHOWN	Project Ref	Drawing No	Rev			
Date	FEB 2020	1191701C	C071	D1			
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190 REINFORCED BLOCK

RETAINING WALL

5L11-TM TOP — AND BOTTOM R10 TIES AT 1000 CTRS

SCALE 1:20

400

WALL TYPE 1 (W1)

GROUT FILL ALL CORES

EACH WAY

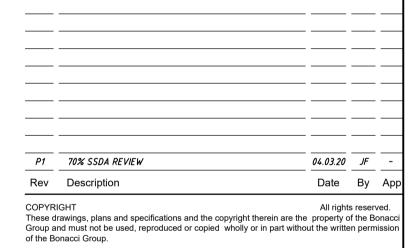
CONNECT TO NEAREST PIT AT 1% MIN GRADE.

BLOCK RETAINING WALL (MAX 1200 HIGH)

SCALE 1:20

NOTE: DESIGNER TO CHECK THE NEED FOR SHEAR KEY

BLOCK RETAINING WALL BASE TYPE 1								
	WALL HEIGHT REINFORCEMENT BASE DIMENSIONS							
TOTAL HEIGHT	HEIGHT OF BLOCKWORK		X-BARS AND	K-BARS	WIDTH, B (mm) WITH FOLLOWING BACKFILL CONDITIONS			
(mm) H	150 SERIES	200 SERIES	300 SERIES	V-BARS		N-DANS	LEVEL	MAX 1:4 SLOPE
800	800	-	-	N12-400	-	800	1000	
1000	1000	-	-	N12-400	-	1000	1200	
1200	1200	-	-	N12-400	-	1100	1500	



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SITEWORKS AND PAVEMENT DETAILS SHEET 2

FOR REVIEW					
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