# 7.8 Kew Recreation Centre Contamination and Consultancy Variation

# Abstract

This report identifies two items impacting the delivery of the Kew Recreation Centre redevelopment:

### Item 1: Soil contamination

During site excavation works at Kew Recreation Centre, volatile soil was encountered as a result of a diesel tank that was uncovered and had leached diesel into a substantial volume of surrounding soil over many decades. This diesel tank is a remnant of the previous site's history as a vehicle depot, under the former City of Kew. Located underneath the spa of the former recreation centre and situated over a few metres below the existing ground level, the diesel was not identified within the contamination management plan despite detailed testing and mapping occurring prior to construction.

This report identifies that an additional \$3.55 million in funding is required to manage the removal of site contaminants as well as other contaminated soil that is geotechnically unsuitable for re use, conducted in accordance with EPA regulations. Whilst the contract variation to manage contaminants totals \$4.55 million, project offsets of \$1m can be realised through value management and commercial negotiations.

### Item 2: Consultant variation fee

A variation fee request from the appointed architects, Williams Ross Architects, is to be formalised following an increase in project budget and scope in 2019.

In November 2018, as part of the tender for architectural and consultancy services, a construction budget of \$53 million was advised to tenderers to determine the project scope and basis for their fee submission. However, in October 2019, the project scope had increased, resulting in an increased project budget of \$67.5 million.

Subsequently, a consultancy fee variation claim has been submitted by the consultant team to reflect the additional scope of works. The report identifies a variation of \$464,201.

# **Officers' recommendation**

That Council resolve to:

- 1. Authorise the Director of Places of Spaces to approve the variation to Contract 2020/89, Redevelopment of Kew Recreation Centre, to remove contaminated soil to the value of \$4.55 million.
- 2. Authorise the Director of Places and Spaces to approve the variation to Contract 2018/177, Kew Recreation Centre Architectual Consultancy Services, to the value of \$464,201.

# **Responsible director:** Daniel Freer, Director Places and Spaces

#### 1. Purpose

The purpose of the report is to seek Council approval for additional funding under Contract 2020/89 as a result of the volatile soil contamination on site.

Further funding is also sought for Contract 2018/177 to address the additional consultancy fees by Williams Ross Architects, which has resulted from an increase to the project budget and scope.

### 2. Policy implications and relevance to community plan and council plan

The Boroondara Community Plan is structured around the following seven priority themes:

- Your Community, Services and Facilities
- Your Parks and Green Spaces
- The Environment
- Neighbourhood Character and Heritage
- Getting Around Boroondara
- Your Local Shops and Businesses
- Civic Leadership and Governance

The construction of the Kew Recreation Centre redevelopment is aligned with the following themes and strategies:

### Theme 1: Your Community, Services and Facilities

**Strategy 1.1:** Plan, maintain and renew multipurpose facilities and sports precincts to meet broad, intergenerational needs of the community now and into the future.

**Strategy 1.3:** Deliver, facilitate and advocate for services and programs that promote health, wellbeing, safety and a sense of community.

**Strategy 1.6:** Create and maintain public areas, facilities, amenities, footpaths and spaces that are inviting, clean and appropriately lit to increase social connection and improve perceptions of safety.

**Strategy 1.10:** Develop a strategic response to improving the safety of public spaces, Council's facilities and events and take action as required to help protect community participation.

### 3. Background

#### Item 1: Contaminated Soil

Environmental consultants, Senversa were engaged to provide a soil contamination management plan (SCMP) for 383 High St, Kew prior to the works being tendered. This plan is provided at attachment one.

Several soil samples were taken across the site as well as underneath the existing buildings (coring through the building floor) where possible given that the centre was operational at the time of the analysis.

- Fill Material
- Category C soil: Low levels of contamination
- Category B soil: Medium levels of contamination
- Category A soil: High levels of contamination
- Asbestos containing soil

The below plan illustrates the locations of where the soil samples taken across the site and the mapping which categorises the different levels of contaminated soil throughout the site.

Adopting the management option from the report which identified the ability for onsite reuse underneath the administration building footprint and northern car park, a provisional sum allowance was identified as part of the contract sum which was based on the quantity surveyor's estimates and methodology to remove only Category C soil. This was due to the Category C soil attracting the lowest cost for removal, while retaining the highest categories, A and B on site for re-use where possible.



Soil sample locations taken across the site



Soil classification identified in the Soil Contamination Management Plan

# Item 2: Consultancy Fee Variation

In October 2018, a tender submission was provided by Williams Ross Architects based on a budget of \$60million for building works. A post tender clarification was then issued, requesting their fee be adjusted to reflect a \$53 million project budget (based on a quantity surveyor's estimate of the project budget). The adjusted tender price for architectual and consultancy was approved and accepted by Council under Contract 2018/177.

In October 2019, Council approved additional funding to the project budget, providing a total of \$67.5 million for increased project scope and functionality including items such as a crèche area, party room, stroke support group, larger lift, multiple car park entry points and an expansion to parking bay sizes.

Consequently, this increase to the project scope and overall project cost has led to a request from William Ross Architects for additional consultancy fees. In accordance with procurement guidelines, this variation requires Council approval.

## 4. Outline of key issues/options

### Item 1: Contaminated Soil

A sub-surface diesel tank at a depth of approximately 4 metres was encountered on site in January 2021 during the excavation of an in-ground concrete slab located near the centre of the site.

The diesel tank was likely associated with the former use of the site as a vehicle depot and had leaked a substantial amount of diesel into the surrounding soil.

The location of the diesel tank was underneath the former spa where a bore hole had not been able to be obtained during the initial soil testing, and therefore not identified in the SCMP.



Location of diesel tank and extent of diesel contaminated soil on the site

Upon the discovery of the diesel tank, environmental consultants Prensa were engaged to undertake testing of the surrounding soil and confirmed that the soil contained volatiles associated with diesel. It was advised that the soil could not be reused on site due to test results far exceeding the applicable Health Investigation Levels (HIL) and risk to groundwater (based on leachability tests).

The methodology taken to manage the contaminated soil was to stockpile the soil where possible for laboratory testing in order to determine whether the soil could be downgraded to a lower category and thereby reduce the offsite disposal costs.

Other areas of contaminated soil on the site (not affected by diesel) that was identified as Category A in the SCMP, were able to be reused and located underneath the administration portion of the building. However, large portions of the Category B and C soil were required to be removed off site due to several factors:

- The soil was not suitable to achieve the required plasticity requirements and compaction rates to be located underneath the proposed carpark without being treated. Soil treatment solutions were investigated and deemed unsuitable for this application and environment.
- The soil was structurally unsuitable to support the piling rig required to establish the bore holes for the bored piers.
- The uncovering of rubble, bluestone and organics which could not be retained on site.
- The limited space available on site due to the large building footprint which significantly reduced the capacity to stockpile large quantities of soil for re-use over the landscaped areas at a later date.
- Delays to the critical path of the project by stockpiling soil on site which would impact the piling programme and thereby extending the construction period and potentially trigger delay costs.

## Item 2: Consultancy Fees

Following discussions with Williams Ross Architects regarding the increase to the project scope and overall project budget from the tendered amount, the request for additional consultancy fees has been negotiated, and the request for additional funding is to include provisional sum allowances for contingencies and potential prolongation of services as the current contract administration phase of works is shorter than the construction programme.

## 5. Consultation/communication

An information bulletin was issued to residents notifying them of contamination on site which was being identified and managed by the contractor. Regular updates are provided to residents by the contractor regarding the status of the site to allow residents to engage directly with the contractor and Council officers over the course of the construction period.

### 6. Financial and resource implications

### Item 1: Contaminated Soil

The existing contract sum currently includes a provisional sum of \$2 million to cover all soil contamination. This includes testing, management, handling and removal of any contaminated material encountered on site including transportation and disposal (including gate fees) of contamination to the extent that contamination cannot be reused on site. To date, the expenditure for the removal of contaminated soil is in the order of \$6.55 million. Following identified offset savings within the project and commerical negotations providing a combined sum of \$1 million, and the existing \$2 million allowance within the contract for management of soil contamination, an additional \$3.55 million is required to cover the shortfall. It is proposed that these funds be identified in the September amended budget as part of the finalisation of Council's 2019/20 financial year reporting.

## Item 2: Consultancy Fees

A key summary of the budgetary figures is represented below:

- The contract sum for Contract 2018/177 is \$2,671,750.
- The proposed variation to the contract is for the sum of \$464,201.
- The current contract contigency is to be drawn down, resulting in a funding shortfall of \$441,040.56.

It is proposed that these funds be identified in the September amended budget as part of the finalisation of Council's 2019/20 financial year reporting.

### 7. Governance issues

The implications of this report have been assessed in accordance with the requirements of the Victorian Charter of Human Rights and Responsibilities. The officers responsible for this report have no direct or indirect interests requiring disclosure.

### 8. Social and environmental issues

A neighbouring resident notified Council and the site contractor of a diesel odour. Council engaged Prensa to conduct vapour monitoring for Volatile Organic Compounds which are one of the main components of diesel fuel. The measurements indicated that VOCs were under detection limits at a majority of locations around the site. It was advised that while the diesel odour may pose some discomfort, the readings indicated a negligible risk to human health.

The EPA was also notified of the odour. All relevent test results and data have been provided to the authority and no further investigation or action is required.

### 9. Conclusion

The discovery of volatile soils on this project site has been unexpected. Officers have worked carefully to manage this issue to avoid environmental non-compliance and maximising opportunities to reduce cost impacts. Similarly with changes to the project scope over time, the appropriate contract administration needs to be finalised to ensure delivery of the project to completion and hand-over.

Manager: Christine White, Manager Capital Projects

Report officer: Prudence Ho, Senior Project Manager



# **Soil Contamination Management Plan**

Kew Recreation Centre, 383 High Street, Kew

Prepared for: City of Boroondara

17 August 2020





#### Soil Contamination Management Plan, Kew Recreation Centre, 383 High Street, Kew

17 August 2020				
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Contents

# Contents

List of	Acronyms\	4
1.0	Introduction	1
1.1	Overview	1
1.2	SCMP Objectives	1
2.0	Implementation of this SCMP	2
2.1	Responsibilities	2
2.2	Revision of SCMP	2
2.3	Legislative Requirements	3
3.0	Background Information	4
3.1	Site Details	4
3.2	Environmental Setting	4
3.3	Potential Contamination Sources	6
3.4	Soil Contamination	6
3.5	Potential Contaminant Exposure Pathways	6
4.0	General Environmental Management Requirements	8
4.1	General Requirements	8
4.2	General Handling of Contaminated Soil	8
4.3	Exposure to Asbestos	9
4.4	Use of Personal Protective Equipment	9
4.5	Dust Suppression	9
4.6	First Aid Measures	10
4.7	Unidentified Contamination and Contingency Requirements	10
5.0	Waste Management	11
5.1	Handling of Waste	11
5.2	Movement of Material	11
5.3	Categorisation and Off-site Disposal of Contaminated Soil	
	5.3.1 Existing IWRG 621 Guidelines	
5.4	5.3.2 Proposed EPA Publication 1828 Guidelines (from 1 July 2021)	
	Environmental Monitoring	
6.0		
6.1 6.2	Environmental Monitoring	
6.2 6.3	Environmental Emergency Response and Incident Reporting	
6.4	Environmental Emergency Response and incident Reporting	
7.0	References	
8.0	Principles and Limitations of Investigation	22

m17990\_rpt002\_rev1\_scmp S©NV©rsa ii

#### Contents

	-
Table 2-1: Relevant Parties and Responsibilities	2
Table 3-1: Site Details	4
Table 3-2: Environmental Setting	5
Table 3-3: Potential Contamination Sources	6
Table 3-4: Potential Contamination Exposure Pathways	7
Table 5-1: Summary of Contamination Management Options – IWRG 621	12
Table 5-2: Estimated Cut Volume based on IWRG 621 Guidlines	14
Table 5-3: Summary of Contamination Management Options – Pub 1828	15
Table 6-1: Trigger Levels and Corresponding Management Actions	18

Figures Figure 1: Site Location and Sample Location

Figure 2: Fill Depths

Figure 3: IWRG 621 Soil Hazard Categorisation (Fill Soil Only)

Figure 4: IWRG 621 Soil Hazard Categorisation (Natural Soil Only)

Figure 5: Publication 1828 Soil Hazard Categorisation (Fill Soil Only)

Figure 6: Publication 1828 Soil Hazard Categorisation (Natural Soil Only)

#### Attachments

Attachment A: William Ross Architects, 2020. Cut and Fill Plan, Project No. ME180492, Drawing No. C2.40 Issue E.

List of Acronyms\

# List of Acronyms\

Acronym	Definition
ACM	Asbestos containing material
AHD	Australian Height Datum
ASS	Acid Sulphate Soils
втех	Benzene, toluene, ethyl benzene, xylene
CIRIA	Construction Industry Research and Information Association
CoPC	Contaminants of potential concern
DBYD	Dial Before You Dig
EMP	Environmental Management Plan
EPA	Environment Protection Authority
GQRUZ	Groundwater quality restricted use zones
IWRG	Industrial Waste Resource Guideline
JSAs	Job Safety Analysis
МАН	Monoaromatic hydrocarbons
MSDSs	Material Safety Data Sheet
NEPC	National Environmental Protection Council
NEPM	National Environment Protection (Assessment of Site Contamination) Measure
OCPs	Organochlorine pesticides
OHS	Occupational Health and Safety
РАН	Polycyclic aromatic hydrocarbons
PCBs	Polychlorinated biphenyl
PID	Photoionisation detector
PPE	Personal protective equipment
PSR	Priority Sites Register
SCMP	Soil Contamination Management Plan
SEPP	State Environment Protection Policy
SWMS	Safe work method statement
TDS	Total dissolved solids
ТРН	Total petroleum hydrocarbons
TRH	Total recoverable hydrocarbons
UST	Underground storage tank
VVG	Visualising Victoria's Groundwater

m17990\_rpt002\_rev1\_scmp \$0NV0rsa iv Introduction



# 1.0 Introduction

Senversa Pty Ltd (Senversa) was engaged by City of Boroondara (CoB) to prepare a Soil Contamination Management Plan (SCMP) for the Site located at 383 High Street, Kew, Victoria (the site). Senversa understands the redevelopment works will be completed across the Stage 3 Redevelopment Area (refer to **Figure 1**).

The site is currently being used as the City of Boroondara's Kew Recreation Centre, including indoor pool, gymnasium facilities, café, child-care centre, car parking and open space.

City of Boroondara is planning to undertake construction of a new recreation centre during 2020-2022. Senversa understand that the existing facility will be demolished. A new 150 space underground car park is proposed as part of the project, with extensive excavation of sub-surface material expected.

#### 1.1 Overview

This SCMP has been prepared for use by CoB, contactors and those conducting below ground intrusive works that may disturb or redistribute subsurface materials at the site. During the redevelopment works there is the potential for humans to encounter contaminated material. These materials brought to the surface during below-ground works, may impact the surrounding environment, if appropriate management measures are not implemented during the works.

The SCMP has been prepared to provide a framework of protocols and procedures to minimise the risks to human health and the environment that may be posed by the soil impacts during:

- Below-ground intrusive works of any kind (e.g. construction, installation of underground services, other intrusive maintenance works, construction works etc.).
- Maintenance activities.
- Installation / construction of buildings and structures.

More generally, it also addresses soil excavation, handling and exposure that may occur across the site.

### 1.2 SCMP Objectives

The overall objective of this SCMP is to outline the minimum environmental management measures to be implemented during below-ground intrusive works to ensure the protection of human health and the environment. This SCMP provides the following:

- Specific responsibilities and obligations of relevant parties in the implementation the SCMP.
- Information on the potential contaminants of concern at the site.
- Management requirements that are expected to be implemented.
- Environmental monitoring requirements, including trigger levels / indicators for specific actions to minimise the potential for unacceptable environmental or human health impact (refer **Section 6.0**).

Any additional SCMPs/Environmental Management Plan (EMP) prepared by contractors working on the site may refer to the information detailed in this document. This SCMP does not preclude the conduct of any additional environmental management measures not specifically mentioned. Furthermore, this site-specific SCMP does not specifically include occupational health and safety (OH&S) requirements that must be complied with. This may require contractors to develop a site-specific OH&S plan.

1

Implementation of this SCMP

# 2.0 Implementation of this SCMP

### 2.1 Responsibilities

To ensure the successful implementation of the SCMP, the following stakeholders are required to assume responsibility for the actions outlined in **Table 2-1**.

Table 2-1: Relevan	t Parties and	Responsibilities
--------------------	---------------	------------------

Party	Responsible for the overall achievement of project objectives		
Client – CoB			
Site Manager	<ul> <li>Responsible for the implementation of this SCMP, ensuring controls are put in place to limit exposure to potential soil contamination.</li> </ul>		
	• Provision of this SCMP to contractors who may penetrate the existing and future hard standing surfaces and encounter the underlying soil.		
	• Ensuring any contractors are briefed and understand the requirements of this SCMP.		
	<ul> <li>Ensure the control measures for the protection of human health (i.e. personal protective equipment (PPE)) are adhered to for construction / maintenance workers handling potentially contaminated soil.</li> </ul>		
	Conducting compliance auditing of implementation of the SCMP.		
	<ul> <li>Arrange for the appropriate management/disposal option for surplus soils generated at the site during intrusive sub-surface works (in accordance with the EPA's Industrial Waste Resource Guidelines).</li> </ul>		
	<ul> <li>Ensuring compliance with all applicable legislation and guidelines relevant to management of the environment and potentially contaminated soil.</li> </ul>		
	<ul> <li>Reporting any incidents, complaints, non-conformances, and corrective actions to the client and providing sufficient information to the client associated with the SCMP implementation.</li> </ul>		
Construction / Maintenance	Perform any below-ground intrusive works in the manner specified in this SCMP.		
Workers	<ul> <li>Compliance with all applicable legislation and guidelines relevant to management of the environment and potentially contaminated soil.</li> </ul>		
	Reference to this SCMP should be included in site inductions such that all employees and sub-contractors are aware of the requirements and recommendations.		
	<ul> <li>Ensure that all employees, sub-contractors it engages and any other personnel accessing the site whilst under its control comply with the requirements of this SCMP.</li> </ul>		
	<ul> <li>Ensure the control measures for the protection of human health (i.e. PPE) are adhered to for construction / maintenance workers handling contaminated soil.</li> </ul>		
	<ul> <li>Arrange for the appropriate management/disposal option for surplus soils generated at the site during intrusive sub-surface works (in accordance with the EPA's Industrial Waste Resource Guidelines).</li> </ul>		
	Works must not result in contamination of surrounding areas.		
	<ul> <li>Reporting any incidents, complaints, non-conformances, and corrective actions taken to the appointed Lend Lease representative and site occupier for which they are working.</li> </ul>		

Any additional SCMPs prepared by contractors working on the site may refer to the information detailed in this document and must ensure that all activities are undertaken in a way that complies with relevant environmental policy and legislation.

#### 2.2 Revision of SCMP

The SCMP should be recognised as a working document and it may require review and amendment to accommodate changes to the site operations, identified sub-surface conditions and legislation. If required, review of the SCMP should be completed by an environmental consultant experienced in the assessment and management of land contamination.

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#### 2.3 Legislative Requirements

It is the responsibility of the parties identified in **Section** Error! Reference source not found. to ensure works comply with legislative requirements and guidance, including but not limited to:

- Environment Protection Act, 1970.
- Environment Protection (Industrial Waste Resource) Regulations 2009, which includes the following key guidelines:
  - EPA Publication IWRG621 Industrial Waste Resource Guideline Soil Hazard Categorisation and Management (June 2009).
  - EPA Publication IWRG701 Industrial Waste Resource Guideline –Sampling and Analysis of Waters, Wastewaters, Soils and Wastes (June 2009).
  - EPA Publication IWRG702 Soil Sampling (June 2009).
  - EPA Publication IWRG821.2 Waste Transport Certificates (July 2019).
- EPA Publication 347 'Bunding Guidelines' (EPA Publication 347).
- Occupational Health and Safety Act, 2004.
- Occupational Health and Safety Regulations, 2017
- WorkSafe Victoria Industry Standard Contaminated Construction Site Construction and Utilities (June 2017).
- Worksafe Victoria Guidance Note: Asbestos Contaminated Soil (October 2010).

Senversa notes that from 1 July 2021, the new *Environment Protection Amendment Act 2018* and subsequent guidelines (e.g. EPA Publication 1828 Waste disposal categories – characteristics and thresholds) will come into effect and should be considered if construction works are likely to be conducted after this date.

3

Background Information

# 3.0 Background Information

This section summarises the information available relating to contamination at the site.

#### 3.1 Site Details

Relevant site details are summarised in Table 3-1.

#### Table 3-1: Site Details

Item	Relevant Site Information		
Site Address	383 High Street, Kew		
Site Identification	Refer to Figure 1		
Site Area	Approximately 12,140 m <sup>2</sup> .		
Site Zoning	PUZ6 – Public Use Zone – Local Government		
Site Use	The site is currently utilised as the Kew Recreation Centre with associated car parking. Other facilities within the recreation centre include:		
	Gymnasium.		
	Swimming pools, sauna.		
	• Café.		
	Childcare centre.		
	Open grassed area (currently used for a community garden)		
	Car parking.		

#### 3.2 Environmental Setting

The environmental setting at the site is summaries in Table 3-2.

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26/07/2021

Item	Relevant Site Information		
Topography and Drainage	The site topography is variable as portions of the site appear to have been cut and filled to allow for car parks and for buildings. Generally, the site slopes from south to north. The ground elevation at the site varies between approximately 52 m to 62 m above Australian Height Datum (AHD). Drainage at the site is directed to the stormwater system present throughout the carpark and along the perimeter of the site buildings.		
	along the perimeter of the site buildings.		
Geology	<text></text>		
	A search of the Australian Soil Resource Information System (ASRIS) (http://www.asris.csiro.au/themes/AcidSulfateSoils.html) plans indicate the site is located on		
	an area with extremely low probability/very low confidence for acid sulphate soils (ASS).		
Hydrogeology	The Visualising Victoria's Groundwater (VVG) website (http://www.vvg.org.au), indicates groundwater is likely to occur at depths between 10-15 m below ground level (bgl). Total Dissolved Solids (TDS) between 1,000 to 3,500 mg/L and the inferred groundwater flow direction would be west to south west towards the Yarra River.		
	The review of VVG's database (http://www.vvg.org.au), indicated that 17 groundwater bores		
	<ul> <li>were within 1 km of the site:</li> <li>Three observation bores.</li> </ul>		
	Ten bores with unknown use.		
	• WRK981311, WRK981513, WRK986457 – Domestic and Stock purposes.		
	WRK051848 Irrigation purposes		
EPA Records	<ul> <li>A search of the most up to date published EPA records indicated the following:</li> <li>No Clean Up or Pollution Abatement Notices had been issued to the owner or occupier of the site, or nearby surrounding sites according to the Priority Sites Register (PSR) information (dated 31 March 2019).</li> <li>No groundwater quality restricted use zones (GQRUZ) present within 1 km of the site.</li> </ul>		
	No licensed waste transporters or waste facilities within 1 km of the site.		

Background Information

#### 3.3 Potential Contamination Sources

The relevant potential contamination sources at the site are summarised in Table 3-3.

#### Table 3-3: Potential Contamination Sources

Potential Source of Contamination	Contaminants and/or chemicals of Potential Concern	Likelihood of Impact	Potential for Contamination
Vehicle movement and parking	Total recoverable hydrocarbons (TRH), monocyclic aromatic hydrocarbons (MAH), metals, phenols, oil and grease.	Possible	Moderate
Recreation centre including swimming pool	Chlorine, calcium hypochlorite, sodium hypochlorite, hypochlorous acid, cyanuric acid, sodium carbonate, sodium bicarbonate,	Possible	Moderate
Fuel storage, fuel usage – council depot	TRH, mono-aromatic hydrocarbons: benzene, toluene, ethylbenzene, and xylenes (BTEX), lead, polycyclic aromatic hydrocarbons (PAHs) and phenols.	Possible	High
Former USTs – council depot	TRH, MAH, metals, phenols, oil and grease.	possible	High
Existing site buildings and historical demolition	ACM – in the form of pipes and sheeting, lead.	Possible	Moderate
Potentially imported fill	Commonly identified chemicals include metals, TRHs, PAHs. Less frequently: ACM, Organochlorine pesticides (OCPs), polychlorinated biphenyl (PCBs), BTEX, phenols, cyanide, sulphate, pH, and possibly aesthetically displeasing inert material such as timber, bricks and concrete	Likely	Moderate
Historical agricultural activities	OCPs, metals including arsenic, mercury, copper and cadmium.	Unlikely	Low

#### 3.4 Soil Contamination

Previous soil investigation works at the site have identified the following contaminants in the fill soils:

- Heavy metals (arsenic, copper, lead, nickel, zinc).
- Polycyclic aromatic hydrocarbons (PAHs).
- Total petroleum hydrocarbons (TPH).
- Anthropogenic wastes, including glass, brick fragments, concrete fragments, metal, plastic, bluestone, slag, ash, wire, timber, ceramic tiles and polystyrene within fill.
- Asbestos containing materials (SB17 and BH5).

#### 3.5 Potential Contaminant Exposure Pathways

Impacted soil and groundwater (if encountered) and ground gas poses a potential risk to human health and the environment. The potential contaminant exposure pathways that may be realised during below-ground intrusive works (e.g. construction and maintenance works) are summarised in **Table 3-4**.

6

Background Information

#### Table 3-4: Potential Contamination Exposure Pathways

Source	Receptors	Exposure Pathways
Soil contamination	Construction / maintenance workers	Direct contact with soil
		Inhalation of dust
		Inhalation of organic vapours
		Ingestion
	Site occupants / neighbours	Inhalation of dust
	Surface water	Surface water run-off from stockpiles or unpaved surfaces into stormwater drainage systems
	Buildings and structures	Direct contact (corrosion / degradation)
Ground gas (vapours)	Construction / maintenance workers	Inhalation of ground gas (hydrocarbons)
		Explosion from flammable atmosphere
	Site occupants	As above, via excavation and exposed stockpiles

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# 4.0 General Environmental Management Requirements

### 4.1 General Requirements

Prior to the commencement of any intrusive ground works, the contractor performing the work must:

- Adhere to the responsibilities outlined in Section 2.1.
- Adhere to all other CoB site access and permitting requirements.
- Undertake underground service clearance, review of available surveyed underground services figures and dial before you dig (DBYD) information.

### 4.2 General Handling of Contaminated Soil

To minimise potential soil contamination exposure during below-ground intrusive activities, all maintenance and construction works must be carried out in accordance with the *Worksafe Victoria Industry Standard Contaminated Construction Sites* (2017) and / or applicable regulation or guidance at the time of the activity.

At a minimum the following control measures and procedures should be adopted:

- Prepare Safe Work Method Statements (SWMSs) and / or Job Safety Analysis (JSAs) that consider the hazards associated with handling contaminated soil and potential accumulation of ground gas in excavations or confined spaces.
- Establish a safe work zone around the work areas that clearly defines the work zone and restricts public access and intruders after hours (i.e. fencing).
- Provide adequate signage at the boundary of the safe work zone to deter entry.
- Minimise physical contact with the soil and be rigorous in matters of personal hygiene during and following activities involving potentially contaminated soil (e.g. wash any mud, dirt or dust particles from skin and clothing before eating, drinking and smoking).
- Use dust suppression techniques, such as spraying water on exposed soil and stockpiles to control dust generation during intrusive works.
- Use PPE to minimise direct contact with soils and inhalation of dust generated during the handling of contaminated soil (see **Section 4.4** below).
- Stockpile excavated soil away from existing drainage lines and, if possible, where they can be protected from wind.
- Fully cover and protect exposed stockpiles with plastic sheeting when the work area is not
  occupied and provide a suitable barrier around stockpiles to minimise sediment runoff during
  rainfall as well as odour control (if any).
- Manage water intrusion into open excavations with the use of pumps or other appropriate methods and control surface water run-off in an appropriate manner to prevent discharge of sediments to stormwater drains.
- Provide first aid, washing and toilet facilities away from work areas.
- If odours from impacted soils are encountered during subsurface construction or maintenance activities, monitoring of ambient air with a volatile organic compound gas detector (e.g. PID) should be conducted.

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General Environmental Management Requirements

#### 4.3 Exposure to Asbestos

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The site contains heterogeneous, uncontrolled fill observed to contain trace quantities of building debris. Asbestos containing material (ACM) was identified during field investigations of the site was a cement sheet beneath the ground surface at one location. However, most of soil investigations performed at the site were completed by drilling soil bores, which is generally unsuitable for identification of solid inert waste or hazardous waste materials such as asbestos cement sheet debris.

If debris suspected to be ACM is observed during the works it should be managed in line with the Worksafe Guidance Note – *Asbestos-contaminated soil*, (October 2010). More specifically, in the event potential ACM is identified, the work area should be isolated and a suitably qualified occupational hygienist and Class A licensed asbestos removalist should be engaged to assess the impacts, remove the visible asbestos so far as reasonably practical and provide an asbestos clearance certificate.

#### 4.4 Use of Personal Protective Equipment

The appropriate selection of PPE is an essential part of ensuring the health and safety of personnel. The use of inappropriate or improperly fitting equipment can result in the lack of protection from the hazard, potentially causing injury or adverse health effects.

Where contractors and maintenance workers are required to handle or come into direct contact with contaminated soils, the following PPE should be worn:

- Full length pants and long sleeve shirts in accordance with AS/NZS 4501.
- Safety footwear complying with AS/NZS 2210.
- Gloves.
- Class P1 or P2 particulate respirator complying with AS/NZS 1715 and AS/NZS 1716 (if significant airborne dust is generated).

#### 4.5 Dust Suppression

Inhalation of dust is considered to be the primary potential pathway of exposure to contaminated soil, as dust is commonly generated during below-ground excavation works on high-wind days. Dust generation poses a potential inhalation risk to site workers, but also neighbouring site occupants. Mitigation techniques may include:

- Application of water or dust suppressants to stockpiles, exposed soils and below-ground work areas, whilst ensuring that potentially contaminated water runoff is not created.
- Cover stockpiles or exposed soil with plastic sheeting or tarpaulins.
- Modifying the use of equipment to minimise generation of dust.
- Limit the size of an exposed work area.
- Ensure that a water supply is available during excavation works so that it can be applied, as necessary.

The need for dust suppression may be minimal during the winter months, but contingencies should be provided if significant dust is generated.

General Environmental Management Requirements

#### 4.6 First Aid Measures

First aid measures are as follows:

- For skin exposure, the affected area should be washed immediately and thoroughly with soap and water.
- For eye contamination, emergency eyewash facilities should be provided within the immediate work area and the potential injury treated accordingly, as soon as the incident occurs.
- For ingestion, consume large amounts of water and seek medical assistance if ingestion leads to vomiting.
- For inhalation of dust that results in coughing, move the victim to a dust free area and seek medical assistance if coughing persists.

Material Safety Data Sheets (MSDSs) have not been provided for individual contaminants, as they are relevant to the contaminants in pure form, not as trace components in a pollutant mixture in soil. MSDSs for specific contaminants can be sought from a site location contact or from http://www.msds.com.au/.

#### 4.7 Unidentified Contamination and Contingency Requirements

In the event visual or olfactory evidence of unexpected contaminants or wastes are encountered, Senversa propose the following approach:

- Cease in site operations to remove soils from site.
- Separation of the unexpected contaminants or wastes and implementation of management measures for the soils as summarised in this document.
- Engagement of all project stakeholders including but not limited to CoB, principal contractor and an appropriately qualified environmental professional to assess risks associated with unexpected contamination or hazardous materials and agree a proposed management strategy for the material.
- As required, the consultant would complete addition works to assess risk associated with unexpected material which may include:
  - Additional site inspections and sampling of impacted soils.
  - Preparation of documentation to classify the category of waste for the purpose of off-site disposal.
  - Provision of a cost estimate to CoB associated with the management of unexpected contamination.
  - Supervision of field works to manage the impacted materials.
  - Daily updates to principal contractor during the excavation works so CoB can be made aware of progress and likely timing and cost implications.



# 5.0 Waste Management

This section outlines the management measures that must be adopted during the management of excess soil, including off-site disposal requirements.

### 5.1 Handling of Waste

Excess spoil (waste for disposal) generated during below-ground intrusive works at the site are to be handled, transported and disposed of in accordance with the regulatory requirements and guidance, including but not limited to:

- Environment Protection Act, 1970.
- Environment Protection (Industrial Waste Resource) Regulations 2009, which include the following key guidelines:
  - EPA Publication IWRG621 Industrial Waste Resource Guideline Soil Hazard Categorisation and Management (June 2009).
  - EPA Publication IWRG701 Industrial Waste Resource Guideline Sampling and Analysis of Waters, Wastewaters, Soils and Wastes (June 2009).
  - EPA Publication IWRG702 Soil Sampling (June 2009).
  - EPA Publication IWRG821 Waste Transport Certificates (June 2009).
  - EPA Publication IWRG611.1 Asbestos Transport and Disposal (July 2009).
- Environment Protection (Scheduled Premises) Regulations 2017.

### 5.2 Movement of Material

Senversa understands that CoB intends on minimising the amount of contaminated materials being excavated and disposed off site and therefore, contaminated materials may be relocated on site as part of filling that is required in some areas. Much of that filling is likely to be in areas of proposed building footprints. Movement of contaminated soil on a construction site for the purposed of filling that is required can be undertaken with the appropriate controls, as outlined in this document. However, EPA regulations do not allow excavation of areas for the specific purpose of filling with contaminated soil.

### 5.3 Categorisation and Off-site Disposal of Contaminated Soil

Where waste soil is required to be disposed off-site, the soil is required to be sampled and classified in accordance with EPA Publication IWRG621 – *Industrial Waste Resource Guideline – Soil Hazard Categorisation and Management*. This should be undertaken an environmental consultant experienced in the assessment and management of land contamination.

Materials categorised as 'Category C' or 'Category B' to be disposed off-site will need to be transported in EPA licensed trucks, accompanied by EPA waste transport certificates. Materials categorised as 'Category A' contaminated soil must be remediated or treated on-site, or transported to a licensed treatment facility before disposal to landfill. All EPA waste transport certificates should be retained by the waste producer (contractor, building management and / or site owner).

Other chemically impacted wastes identified for disposal, should be classified for disposal in accordance with Environment Protection (Industrial Waste Resource) Regulations 2009.



Please note that from 1 July 2021, new Victorian environmental regulations (EPA Publication 1828 *"Waste disposal categories – characteristics and thresholds"*) will take effect. The current understanding of these regulations is that new waste codes and waste classification protocols would be applicable to the site. Senversa has provided preliminary classification of soils based on these new regulations. However, Senversa advises, that prior to adoption, that the classifications made in this document be reviewed to ensure that they are still relevant at the time that the new regulations are adopted.

Soil hazard characterisations plans for fill and natural soils for both EPA IWRG 621 and EPA Publication 1828 have been provided on **Figure 3** to **Figure 6** and outlined below.

#### 5.3.1 Existing IWRG 621 Guidelines

In order to provide guidance to the site owner on potential human health risks associated with intrusive works at the site, five contamination management areas have been designated across the site and are shown in **Figure 3** and **Figure 4**. Information on potential risks and the likelihood of approval being granted to undertake sub-surface excavations is provided summaries in **Table 5-1**.

Contamination Management Areas	Description	Land Use Activities Allowed / Prohibited
Fill Material (Green)	These areas are considered to currently have a <b>lower</b> potential for contamination based on historical soil assessments undertaken at the Site. Current testing shows contaminant results are lower than the adopted EPA IWRG 621 Fill Material upper limits. Currently there a <b>lower</b> risk of exposure to CoPC in soil and groundwater during excavation activities. <i>It is important to note</i> <i>that a low potential for</i> <i>contamination does not indicate</i> <i>that contamination is absent</i> <i>however does indicate that</i> <i>contamination is less likely to be</i> <i>present.</i>	Materials categorised as Fill Material can be used on site either under concrete structures (provided it is geotechnically suitable) or as surface cover (provided the material is also considered to be topsoil).
Category C Contaminated Material (Yellow)	These areas are considered to currently have a <b>low</b> potential for contamination based on historical soil assessments undertaken at the Site. Current testing shows contaminant results are lower than the adopted EPA IWRG 621 Category C Contaminated Material upper limits. Currently there a <b>lower</b> risk of exposure to CoPC in soil and groundwater during excavation activities. <i>It is important to note</i> <i>that a low potential for</i> <i>contamination does not indicate</i> <i>that contamination is absent</i> <i>however does indicate that</i> <i>contamination is less likely to be</i> <i>present.</i>	<ul> <li>Senversa considers that there are three options for the management of Category C Contaminated Soils, being: <ol> <li>Dispose off site in accordance with EPA regulations. Current charges for disposal range between \$100 per tonne and \$125 per tonne but is generally based on distance of source to landfill. A Waste Classification letter would need to be produced for the material to be accepted by a licenced landfill.</li> <li>Onsite reuse under building footprint – provided materials are geotechnically suitable, placement of soils under buildings or carparking could be sufficiently limit potential ongoing exposure to site users. Based on the CoPC type, there would not be any additional PPE or OHS restrictions on movement of this material.</li> <li>Onsite reuse under open space – If this material was to be used in areas of public open space (i.e. gardens), Senversa recommends that it be covered by 0.3 m of Fill Material and a protective barrier/marker layer (e.g. geotextile) to limit potential excavations into the contaminated materials.</li> </ol> </li> </ul>

#### Table 5-1: Summary of Contamination Management Options – IWRG 621

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Naste Management				
Contamination Management Areas	Description	Land Use Activities Allowed / Prohibited		
Category B Contaminated Material (Orange)	These areas are considered to currently have a <b>medium</b> potential for contamination based on historical soil assessments undertaken at the Site. Current testing shows contaminant results are lower than the adopted EPA IWRG 621 Category B Contaminated Material upper limits.	<ul> <li>Senversa considers that there are two options for the management of Category B Contaminated Soils, being: <ol> <li>Dispose off site in accordance with EPA regulations. Current charges for disposal range between \$250 per tonne and \$400 per tonne but is generally based on distance of source to landfill. A Waste Classification letter would need to be produced for the material to be accepted by a licenced landfill.</li> <li>Onsite reuse under building footprint – provided materials are geotechnically suitable, placement of soils under buildings or carparking could be sufficiently limit potential ongoing exposure to site users. Based on the CoPC type, there would be additional PPE or OHS restrictions on movement of this material. Senversa recommends that it be covered by 0.5 m of Fill Material and a protective barrier / marker layer (e.g. geotextile) if located in any areas that are not paved or under buildings, to limit potential future exposure to the contaminated materials.</li> </ol> </li> </ul>		
Category A Contaminated Material (Red)	These areas are considered to currently have a <b>higher</b> potential for contamination based on historical soil assessments undertaken at the Site. Soil contamination is likely to be present in these areas. Currently there is considered to be a <b>high</b> risk of exposure to CoPC in soil and groundwater if excavation activities were to occur.	<ul> <li>Senversa consider that there are two options for the management of Category A Contaminated Soils, being: <ol> <li>Dispose off site in accordance with EPA regulations. Current charges for disposal range between \$600 per tonne and \$800 per tonne but is generally based on distance of source to landfill. A Waste Classification letter would need to be produced for the material to be accepted by a licenced landfill.</li> <li>Onsite reuse under building footprint – provided materials are geotechnically suitable, placement of soils under buildings or carparking could be sufficiently limit potential ongoing exposure to site users. Based on the CoPC type, there would be additional PPE or OHS restrictions on movement of this material. Senversa recommends that it be covered by 0.5 m of Fill Material and a protective barrier / marker layer (e.g. geotextile) if located in any areas that are not paved or under buildings, to limit potential future exposure to the contaminated materials.</li> </ol> </li> </ul>		
Asbestos containing soils (Grey)	Samples collected from this area has tested positive for asbestos fibres and require additional management requirements.	<ol> <li>Senversa consider that there are three options for the management of asbestos containing soils:         <ol> <li>Dispose off site in accordance with EPA regulations – due to the presence of asbestos fibres in a small area of Category A and B Contaminated Materials, disposal off site would likely be very costly form of management (\$600 to \$800 per tonne). As stated above, Category A Contaminated Soils must be treated before they are accepted by a licenced landfill. Due to the presence of asbestos, treatment options will be limited.</li> </ol> </li> <li>Onsite reuse under building footprint – due to the contamination status of the soils (both Category A), soils may be best managed underneath the proposed building footprint and under an ongoing Soil Contamination Management Plan.</li> </ol>		

Contamination Management Areas	Description	Land Use	e Activiti	es Allowed / Prohibited
		3.	again, du may be l car parki Managei	euse under open space / car parking – ue to the contamination status, soils best managed underneath open space ing and under an ongoing Soil ment Plan. Additional requirements (but not limited to) the following would :
			а.	Contaminated soils must be covered by 0.5 m of Fill Material.
			b.	Contaminated soils must be covered by protective barrier / marker layer (e.g. geotextile) to limit potential excavations into the contaminated materials.
			C.	Materials cannot be used in areas that are likely excavated in the future (e.g. proposed pipelines, garden beds, etc.)

Based on cut and fill plans provided in **Attachment A**, Senversa has estimated the total amount of each category requiring excavation in the table below. These are estimates only based on the information provided (**Table 5-2**). It is recommended that the project architect check them to confirm volumes.

Category	Cut Volume (m <sup>3</sup> )	
	Drawing C2.40 Issue E	
Fill Material	7,600	
Category C Contaminated Material	4,900	
Category B Contaminated Material	1,200	
Category A Contaminated Material	2,200	

#### Table 5-2: Estimated Cut Volume based on IWRG 621 Guidelines

Classification volumes outlined in **Table 5-2** must be interpreted with reference to the following documents:

- Senversa, 2020, "Re: Additional Soils Contamination Assessment Kew Recreation Centre, 383 High Street, Kew", Ref: M18011\_002\_LTR\_Rev0, 17 August 2020.
- Senversa (2019) "Supplementary Soil Contamination Assessment Kew Recreation Centre, 383 High Street, Kew", Ref: m17037\_002\_rpt\_rev0, 1 July 2019.

#### 5.3.2 Proposed EPA Publication 1828 Guidelines (from 1 July 2021)

In order to provide guidance to the site owner on potential human health risks associated with intrusive works at the site, five contamination management areas have been designated across the site and are shown in **Figure 5** and **Figure 6**. Information on potential risks and the likelihood of approval being granted to undertake sub-surface excavations is provided in **Table 5-3**.



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#### Table 5-3: Summary of Contamination Management Options – Pub 1828

Contamination Management Areas	Description	Land Use Activities Allowed / Prohibited
Fill Material (Green)	These areas are considered to currently have a <b>lower</b> potential for contamination based on historical soil assessments undertaken at the Site. Current testing shows contaminant results are lower than the adopted EPA Publication 1828 Fill Material upper limits. Currently there a <b>lower</b> risk of exposure to CoPC in soil and groundwater during excavation activities. It is important to note that a low potential for contamination does not indicate that contamination is absent	Materials categorised as Publication 1828 Fill Material can be used on site either under concrete structures (provided it is geotechnically suitable) or as surface cover (provided the material is also considered to be topsoil).
	however does indicate that contamination is less likely to be present.	
Category D Contaminated Material (Light blue)	These areas are considered to currently have a <b>low</b> potential for contamination based on historical soil assessments undertaken at the Site. Current testing shows contaminant results are lower than the adopted Publication 1828 Category D Contaminated Material upper limits. Currently there a <b>lower</b> risk of exposure to CoPC in soil and groundwater during excavation activities. <i>It is important to note</i> <i>that a low potential for</i> <i>contamination does not indicate</i> <i>that contamination is absent</i> <i>however does indicate that</i> <i>contamination is less likely to</i> <i>be present.</i>	<ul> <li>Senversa consider that there are three options for the management of Publication 1828 Category D and Category D Contaminated Soils, being: <ol> <li>Dispose off site in accordance with EPA regulations. Current charges for disposal likely to be approx.</li> <li>\$100 per tonne but would generally be based on distance of source to landfill. A Waste Classification letter would need to be produced for the material to be accepted by a licenced landfill.</li> </ol> </li> <li>Onsite reuse under building footprint – provided materials are geotechnically suitable, placement of soils under buildings or carparking could be sufficiently limit potential ongoing exposure to site users.</li> <li>Onsite reuse under open space – If this material was to be used in areas of public open space (i.e. gardens). Senversa recommends that it be covered by 0.5 m of Fill Material and a protective barrier / marker layer (e.g. geotextile) if located in any areas that are not paved or under buildings, to limit potential future exposure to the contaminated materials.</li> </ul>
Category C Contaminated Material (Yellow)	These areas are considered to currently have a <b>low</b> potential for contamination based on historical soil assessments undertaken at the Site. Current testing shows contaminant results are lower than the adopted Publication 1828 Category C Contaminated Material upper limits. Currently there a <b>lower</b> risk of exposure to CoPC in soil and groundwater during excavation activities. <i>It is important to note</i> <i>that a low potential for</i> <i>contamination does not indicate</i> <i>that contamination is absent</i> <i>however does indicate that</i> <i>contamination is less likely to</i> <i>be present.</i>	<ul> <li>Senversa consider that there are three options for the management of Publication 1828 Category C and Category D Contaminated Soils, being: <ol> <li>Dispose off site in accordance with EPA regulations. Current charges for disposal range likely between \$125 per tonne and \$150 per tonne but is generally based on distance of source to landfill. A Waste Classification letter would need to be produced for the material to be accepted by a licenced landfill.</li> <li>Onsite reuse under building footprint – provided materials are geotechnically suitable, placement of soils under buildings or carparking could be sufficiently limit potential ongoing exposure to site users.</li> <li>Onsite reuse under open space – If this material was to be used in areas of public open space (i.e. gardens). Senversa recommends that it be covered by 0.5 m of Fill Material and a protective barrier / marker layer (e.g. geotextile) if located in any areas that are not paved or under buildings, to limit potential future exposure to the contaminated materials.</li> </ol> </li> </ul>

Waste Management		
Contamination Management Areas	Description	Land Use Activities Allowed / Prohibited
Category B Contaminated Material (Orange)	These areas are considered to currently have a <b>medium</b> potential for contamination based on historical soil assessments undertaken at the Site. Current testing shows contaminant results are lower than the adopted EPA Publication 1828 Category B Contaminated Material upper limits.	<ul> <li>Senversa consider that there are two options for the management of Publication 1828 Category B Contaminated Soils, being:</li> <li>1. Dispose off site in accordance with EPA regulations. Current charges for disposal are likely to range between \$250 per tonne and \$400 per tonne but is generally based on distance of source to landfill. A Waste Classification letter would need to be produced for the material to be accepted by a licenced landfill.</li> <li>2. Onsite reuse under building footprint – provided materials are geotechnically suitable, placement of soils under buildings or carparking could be sufficiently limit potential ongoing exposure to site users. Senversa recommends that it be covered by 0.5 m of Fill Material and a protective barrier / marker layer (e.g. geotextile) if located in any areas that are not paved or under buildings, to limit potential future exposure to the contaminated materials.</li> </ul>
Category A Contaminated Material (Red)	These areas are considered to currently have a <b>higher</b> potential for contamination based on historical soil assessments undertaken at the Site. Soil contamination is likely to be present in these areas. Currently there is considered to be a <b>high</b> risk of exposure to CoPC in soil and groundwater if excavation activities were to occur.	<ul> <li>Senversa consider that there are two options for the management of Publication 1828 Category A Contaminated Soils, being:</li> <li>1. Dispose off site in accordance with EPA regulations. Current charges for disposal are likely to range between \$600 per tonne and \$800 per tonne but is generally based on distance of source to landfill. A Waste Classification letter would need to be produced for the material to be accepted by a licenced landfill.</li> <li>2. Onsite reuse under building footprint – provided materials are geotechnically suitable, placement of soils under buildings or carparking could be sufficiently limit potential ongoing exposure to site users. Senversa recommends that it be covered by 0.5 m of Fill Material and a protective barrier / marker layer (e.g. geotextile) if located in any areas that are not paved or under buildings, to limit potential future exposure to the contaminated materials.</li> </ul>
Asbestos containing soils	Samples collected from this area has tested positive for asbestos fibres and require additional management requirements.	<ul> <li>Senversa consider that there are three options for the management of asbestos containing soils:</li> <li>1. Dispose off site in accordance with EPA regulations – due to the presence of asbestos fibres in a small area of Publication 1828 Category A and B Contaminated Materials, disposal off site would likely be very costly form of management (likely to be \$600 to \$800 per tonne). As stated above, Category A Contaminated Soils must be treated before they are accepted by a licenced landfill. Due to the presence of asbestos, treatment options will be limited.</li> <li>2. Onsite reuse under building footprint – due to the contamination status of the soils (both Category A and Category B), soils may be best managed underneath the proposed building footprint and under an ongoing Soil Management Plan.</li> <li>3. Onsite reuse under open space / car parking – again, due to the contamination status, soils may be best managed underneath open space / car parking and under an ongoing Soil Management Plan.</li> </ul>

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Contamination Management Areas	Description	Land Use Activities Allowed / Prohibited			
		Additional requirements such as (but not limited to) the following would be likely:			
		a.	Contaminated soils must be covered by 0.5 m of Fill Material.		
		b.	Contaminated soils must be covered by protective barrier / marker layer (e.g. geotextile) to limit potential excavations into the contaminated materials.		
		c.	Materials cannot be used in areas that are likely excavated in the future (e.g. proposed pipelines, garden beds, etc.)		

#### 5.4 Surface Runoff

In the event of heavy rainfall of unintentional pipeline fracturing, surface water may collect within an excavation or stockpile areas. Removal of potentially contaminated water accumulated within such areas should be undertaken in accordance with requirements of Victorian EPA *Environment Protection (Industrial Waste Resource) Regulations* (2009). This may necessitate the sampling of water by an environmental consultant experienced in the assessment and management of land contamination, or licensed liquid waste contractor, prior to disposal.

Where wastewater is collected for off-site disposal, the wastewaters must be removed by an appropriately licensed contractor and disposed of at an appropriately EPA licensed disposal/treatment facility. All transport certificates should be retained by the waste producer (contractor, building management and / or site owner).

No wastewater should be discharged into the stormwater system without a discharge licence and / or consent from the local water authority (Melbourne Water). Discharge to these systems is likely to require sampling, testing and sediment removal.

Irrigation of accumulated suspected stormwater for dust suppression purposes may only occur where run-off is not generated from the site.

Environmental Monitoring



#### 6.0 **Environmental Monitoring**

This section outlines environmental monitoring requirements and trigger levels to assess and manage (minimise) unacceptable environmental risk that may occur when performing intrusive works at the site.

#### 6.1 **Environmental Monitoring**

Potential environmental and human health exposure issues include the presence of dust, vapours/odours, ground gas, generated waste, accumulated/pooled water on site caused by storm water in excavated or stockpiled areas, or, any other unusual site event/activity that may be perceived to have a potential to result in site contamination or have an environmental (including aesthetics) or health impact.

Monitoring (by observation) is therefore considered necessary to assess and manage potential environmental and human health exposure. Observation of any of the above environmental issues, or assessment that may occur due to the nature of the proposed site activities or works, must be assessed in general accordance with the control measures outlined in the SCMP and the trigger levels / indicators presented in the section below.

#### 6.2 **Trigger Levels / Indicators**

Trigger levels / indicators for potential environmental and human health exposure issues and recommended action measures when they are observed are summarised in Table 6-1.

Issue Dust exposure	Level 1		Level 2		
	Primary Indicator Trigger	Action	Trigger Level(s)	Action	
	Observable dust	<ul> <li>Provide dust suppression measures (if not already) in line with Section 4.5</li> <li>Provide appropriate PPE (Class P1 or P2 particulate respirator), in line with Section 4.5</li> <li>If dust cannot be controlled, stop work, review alternative control measures, and provide active personnel and boundary monitoring</li> </ul>	relevant SEPPs, guidelines and other relevant	<ul> <li>Stop work immediately. Cover exposed soil to prevent dust generation</li> <li>Review and implement other control measures or complete works when wind subsides.</li> </ul>	
Vapour exposure	Unknown aesthetically displeasing odour or hydrocarbon impacted soil	<ul> <li>If source of odour is known, review control measures and implement the use of appropriate PPE (e.g. respirator with organic vapour filter).</li> <li>If source of odour is not known, stop work and engage an environmental consultant experienced in the assessment and management of land contamination to assess risk.</li> </ul>	As set out in relevant SEPPs, guidelines and other relevant publications for personnel and ambient vapour monitoring.	<ul> <li>Stop work immediately Cover exposed soil to minimise vapour generation and exposure.</li> <li>Review and implement other recommended control measures.</li> </ul>	

#### Table 6-1: Trigger Levels and Corresponding Management Actions

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Environmental Monitoring

Issue	Level 1		Level 2	
	Primary Indicator Trigger	Action	Trigger Level(s)	Action
Ground gas	Unknown or known aesthetically displeasing odour	<ul> <li>If source of gas odour is known, review control measures and implement the use of appropriate PPE.</li> <li>If source of odour is unknown, stop work and engage qualified environmental consultant to assess risk.</li> </ul>	As set out in relevant SEPPs, guidelines and other relevant publications for personnel and ambient vapour monitoring.	<ul> <li>Stop work immediately. Reseal area to limit gas generation and exposure.</li> <li>Review and implement other recommended control measures.</li> </ul>
Contaminated run-off to stormwater	Pooled water / leakage	<ul> <li>Manage water intrusion into open excavations with the use of pumps or other appropriate methods</li> <li>Control surface water run-off in an appropriate manner to prevent discharge of sediments to stormwater drains (e.g. cover stockpiles, provide bunding around work area to minimise water ingress, provide sediment controls such as hay bales).</li> <li>Where inclement weather is predicted, suspend works if there is concern about the potential for detrimental environmental impact to the site or surrounds.</li> </ul>	Breach of control measures and discharge into stormwater.	<ul> <li>Stop work immediately and contain discharge, where possible.</li> <li>Engage an environmental consultant experienced in the assessment and management of land contamination to investigate risk and notify authority (where deemed necessary).</li> </ul>
Generation of waste	Soil stockpile / Unexpected waste	<ul> <li>Manage waste in line with control measures outlined in Section 4.2.</li> <li>Where waste type is unknown (e.g. buried drum, asbestos), isolate area and seek advice from an environmental consultant experienced in the assessment and management of land contamination.</li> <li>Provide appropriate PPE, in line with Section 4.5</li> <li>Manage excess spoil on-site, where possible.</li> </ul>	As set out in Industrial Waste Resource Guidelines	<ul> <li>Retain EPA waste transport certificates and waste categorisation testing reports.</li> <li>Review and implement other recommended control measures.</li> </ul>

The table provided above outlines action measures that should be considered where trigger levels / indicators are observed. Where there is any doubt or uncertainty about potential or perceived environmental or human health impacts, it is recommended that an environmental consultant experienced in the assessment and management of land contamination or occupational hygienist is engaged to further assess the potential risk.

Environmental Monitoring



### 6.3 Environmental Emergency Response and Incident Reporting

In the event of an environmental incident, the priority should be the safety of site personnel and the community that may be potentially affected. All steps should then be taken to minimise the risk of environmental damage (e.g. planning, plant maintenance, review of risk controls, establishment and rehearsal of emergency, rescue and first aid procedures are undertaken and communicated). Typical first response to an emergency may include:

- Ensure site personnel can be removed safely from the emergency location and emergency services are notified (if required).
- Exclusion zone of any sub-surface excavations / pit is erected until it can be safely re-sealed / filled and / or ventilated, purged or the appropriate respiratory equipment is available.
- Containment of any pollution using booms, silt fences, absorbents, bunding or interceptor traps.
- Temporarily repair or isolate failed source (e.g. plant, vessel).
- Sample the impacted material (e.g. soil or surface water).

Corrective action should include the development of a work plan to remediate the impacted area. This plan would detail testing requirements to define the nature and extent of impacts; methods for recovery; general handling, storage and treatment of impacted materials; disposal and reuse options; and personnel protective equipment.

Any incidents, accidents, hazardous situations, unusual event and unsafe exposures must be reported to the site owner. Emergency procedures and contact telephone numbers should be displayed in a prominent area during site works.

### 6.4 Ongoing Management

This SCMP outlines approaches and controls to be implemented during construction. On the basis that contaminated soil will remain after redevelopment it is recommended that a soil contamination management plan be developed to guide appropriate management of contaminated soil during operation of the facility. That would be developed once the final status of contaminated soil is understood following construction. It would document the locations of contaminated soil and outline appropriate management measures to ensure the protection of human health and the environment during any activities that would expose contaminated soil (e.g. any sub-surface maintenance activities).

# 7.0 References





#### Reports

- A.S. James, 2010. Supplementary Investigation Kew Recreation Centre Redevelopment, 383 High Street, Kew. A.S. James Pty Ltd, 18 June 2010.
- A.S. James, 2018. Phase Two Environmental Site Assessment Kew Recreation Centre, 383 High Street Kew, Victoria 3101. A.S. James Pty Ltd, 8 January 2018.
- Atma Environmental, 2018. Preliminary Site Investigation: Kew Recreation Centre, 383-407 High Street, Kew, Victoria. Atma Environmental, 13 August 2018.
- Senversa, 2019. Supplementary Soil Contamination Assessment. Kew Recreation Centre, 383 High Street, Kew, Senversa, 1 July 2019.

#### Legislation and Subordinate Legislation

- Environment Protection Act 1970, Victoria. Act No 8056/1970.
- Environment Protection (Industrial Waste Resource) Regulations 2009.
- Occupational Health and Safety Act, 2004.
- State Environment Protection Policy (Contaminated Land), EPA Victoria, 2002.
- Environment Protection Amendment Act 2018, Victoria.

#### Guidelines

- CIRIA, 2007. *Publication C665 Assessing Risk Posed by Hazardous Ground Gases to Buildings.* Construction Industry Research and Information Association (United Kingdom).
- EPA Victoria, 2009a. Industrial Waste Resource Guideline Soil Hazard Categorisation and Management. Publication IWRG621
- EPA Victoria, 2009b. Solid Industrial Waste Hazard Categorisation and Management. Publication IWRG631.
- EPA Victoria, 2009c. Industrial Waste Resource Guidelines Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, Publication IWRG701.
- EPA Victoria, 2009d. Industrial Waste Resource Guidelines Soil Sampling. Publication IWRG702.
- EPA Victoria, 2009e. Industrial Waste Resource Guidelines Asbestos Transport and Disposal. Publication IWRG611.1.
- EPA Victoria, 2009f. Industrial Waste Resource Guidelines Waste Transport Certificates. EPA Publication IWRG821.
- EPA Victoria, 2009g. Publication 1270, Assessment of the Potential for Methane Gas Movement from Victorian Landfills, Victorian Environment Protection Authority.
- EPA Victoria, 2011, Publication 1416 Draft Landfill Gas Fugitive Emissions Monitoring Guidelines.
- EPA Victoria, 2012, Publication 1490 Closed Landfill Guidelines.
- EPA Victoria, 2015, Publication 788.3, Best Practice Environmental Management Siting, Design, Operation and Rehabilitation of Landfills.
- EPA Victoria, 2019. Waste Transport Certificates. Publication IWRG821.2.
- EPA Victoria, 2020. Waste classification assessment protocol. Publication 1827.
- EPA Victoria, 2020, Waste disposal categories characteristics and thresholds. Publication 1828,
- National Environmental Protection Council (NEPC) 1999. National Environment Protection (Assessment of Site Contamination) Measure.
- Worksafe Victoria, 2009. Industry Standard Contaminated Construction Sites.

Principles and Limitations of Investigation



# 8.0 **Principles and Limitations of Investigation**

The following principles are an integral part of site contamination assessment practices and are intended to be referred to in resolving any ambiguity or exercising such discretion as is accorded the user or site assessor.

#### **Elimination of Uncertainty**

Some uncertainty is inherent in all site investigations. Furthermore, any sample, either surface or subsurface, taken for chemical testing may or may not be representative of a larger population or area. Professional judgment and interpretation are inherent in the process, and even when exercised in accordance with objective scientific principles, uncertainty is inevitable. Additional assessment beyond that which was reasonably undertaken may reduce the uncertainty.

#### Failure to Detect

Even when site investigation work is executed competently and in accordance with the appropriate Australian guidance, such as the National Environmental Protection (Assessment of Site Contamination) Amendment Measure ('the NEPM'), it must be recognised that certain conditions present especially difficult target analyte detection problems. Such conditions may include, but are not limited to, complex geological settings, unusual or generally poorly understood behaviour and fate characteristics of certain substances, complex, discontinuous, random, or heterogeneous distributions of existing target analytes, physical impediments to investigation imposed by the location of services, structures and other man-made objects, and the inherent limitations of assessment technologies.

#### **Limitations of Information**

The effectiveness of any site investigation may be compromised by limitations or defects in the information used to define the objectives and scope of the investigation, including inability to obtain information concerning historic site uses or prior site assessment activities despite the efforts of the user and assessor to obtain such information.

#### **Chemical Analysis Error**

Chemical testing methods have inherent uncertainties and limitations. Serversa routinely seeks to require the laboratory to report any potential or actual problems experienced, or non-routine events which may have occurred during the testing, so that such problems can be considered in evaluating the data.

#### Level of Assessment

The investigation herein should be considered limited in nature and not an exhaustive assessment of environmental conditions on a property. There is a point at which the effort of information obtained and the time required to obtain it outweigh the benefit of the information gained and, in the context of private transactions and contractual responsibilities, may become a material detriment to the orderly conduct of business. If the presence of target analytes is confirmed on a property, the extent of further assessment is a function of the degree of confidence required and the degree of uncertainty acceptable in relation to the objectives of the assessment.

#### **Comparison with Subsequent Inquiry**

The justification and adequacy of the investigation findings in light of the findings of a subsequent inquiry should be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made.

Principles and Limitations of Investigation

#### **Data Usability**



Investigation data generally only represent the site conditions at the time the data were generated. Therefore, the usability of data collected as part of this investigation may have a finite lifetime depending on the application and use being made of the data. In all respects, a future reader of this report should evaluate whether previously generated data are appropriate for any subsequent use beyond the original purpose for which they were collected, or are otherwise subject to lifetime limits imposed by other laws, regulations or regulatory policies.

#### Nature of Advice

The investigation works herein are intended to develop and present sound, scientifically valid data concerning actual site conditions. Serversa does not seek or purport to provide legal or business advice.

Figures





# **Figures**

Figure 1: Site Location and Sample Location

Figure 2: Fill Depths

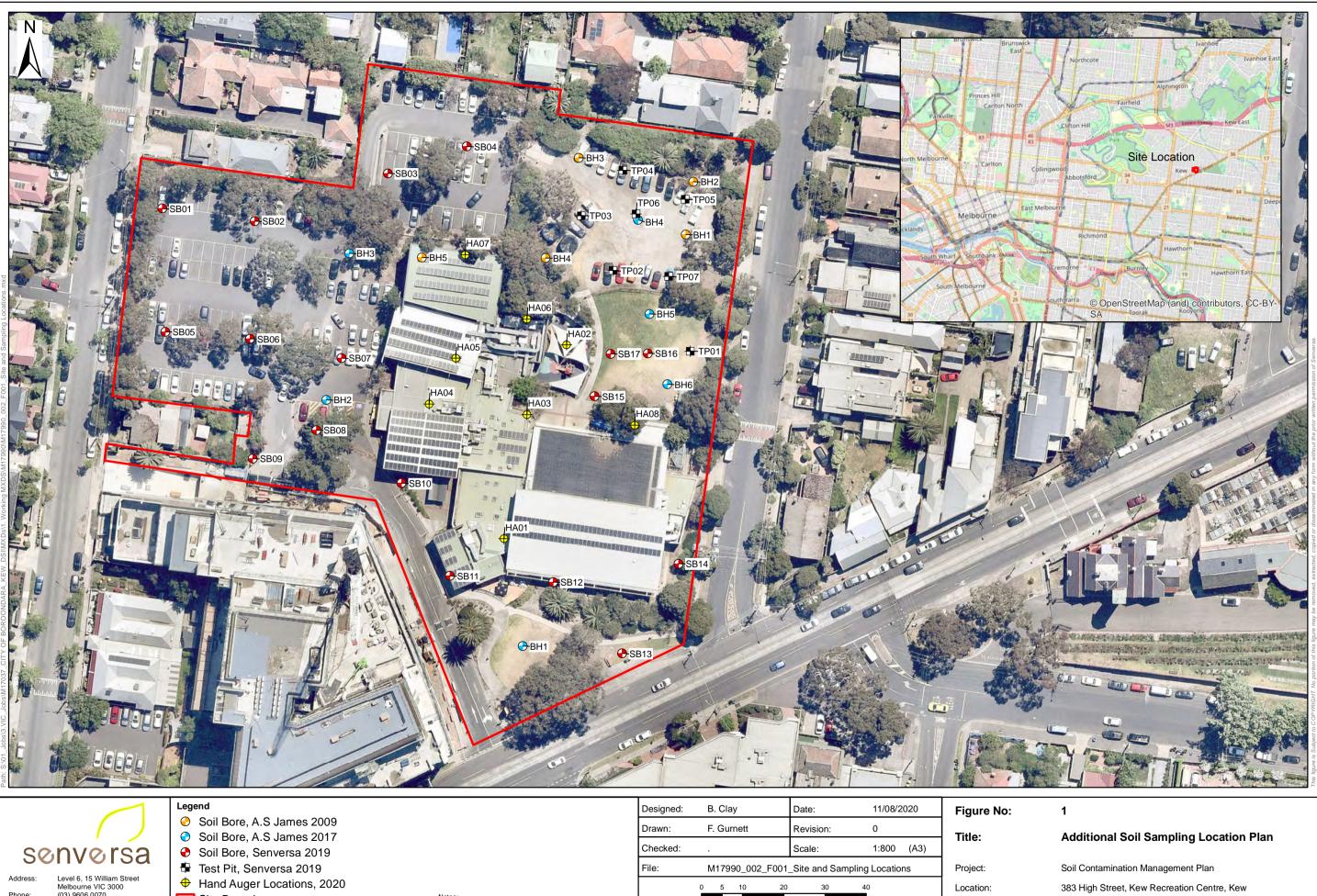
Figure 3: IWRG 621 Soil Hazard Categorisation (Fill Soil Only)

Figure 4: IWRG 621 Soil Hazard Categorisation (Natural Soil Only)

Figure 5: Publication 1828 Soil Hazard Categorisation (Fill Soil Only)

Figure 6: Publication 1828 Soil Hazard Categorisation (Natural Soil Only)

m17990\_rpt002\_rev1\_scmp \$@NV@rSa



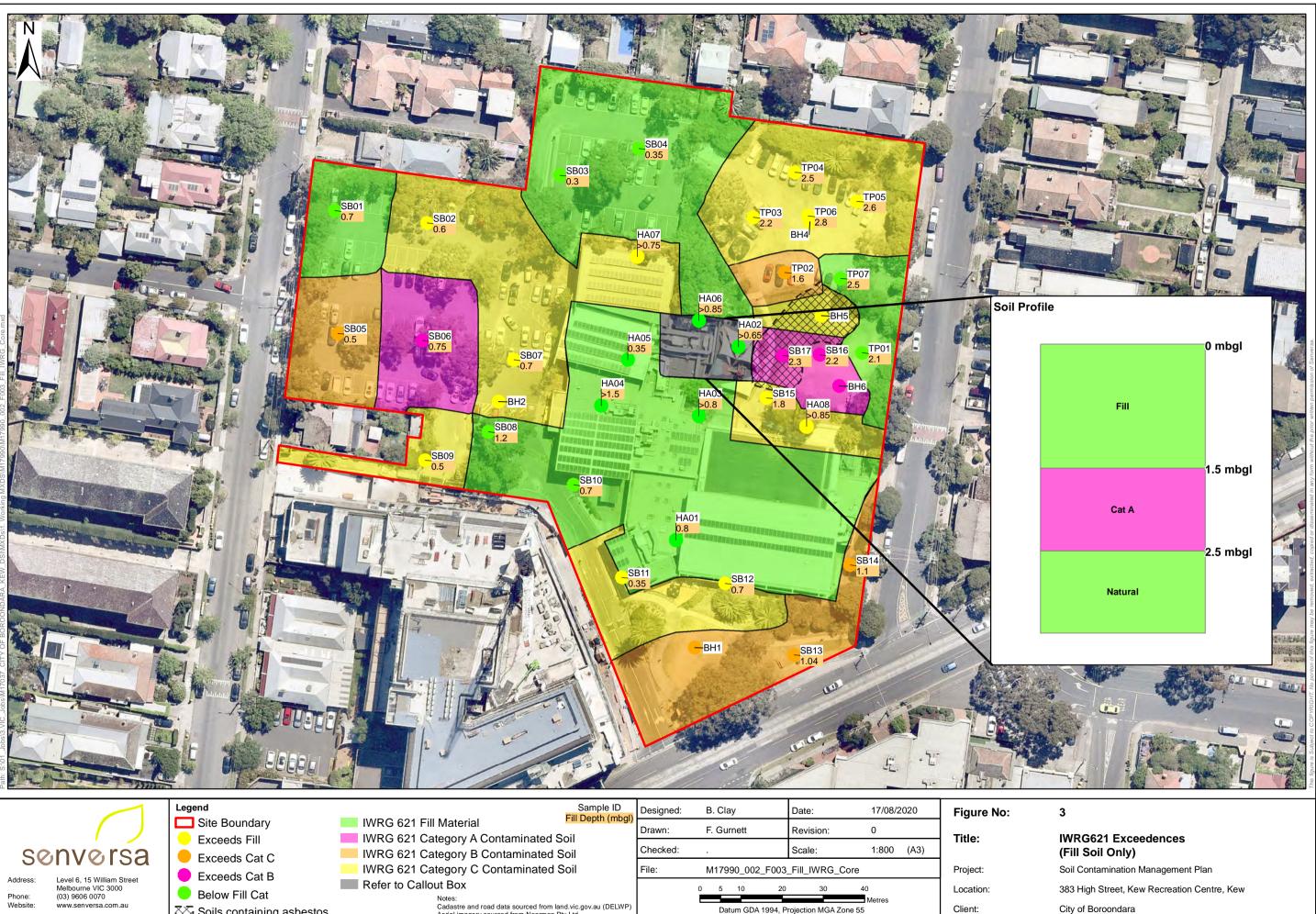
		Legend		Designed:	B. Clay	Date:	11/08/2020	Figure No:
		<ul> <li>Soil Bore, A.S James 2009</li> <li>Soil Bore, A.S James 2017</li> </ul>		Drawn:	F. Gurnett	Revision:	0	Title:
Se	nversa	<ul> <li>Soil Bore, Serversa 2019</li> </ul>		Checked:		Scale:	1:800 (A3)	The.
oenvered		🖶 Test Pit, Senversa 2019		File:	M17990_002_F001	Site and Samplir	ng Locations	Project:
Address: Phone:	Level 6, 15 William Street Melbourne VIC 3000 (03) 9606 0070	+ Hand Auger Locations, 2020	Notes:		0 5 10 20	) 30	40	Location:
Website:	www.senversa.com.au	Site Boundary	Cadastre and road data sourced from land.vic.gov.au (DELWP) Aerial imagery sourced from Nearmap Ptv Ltd		Datum GDA 1994, F	Projection MGA Zone 5	Metres 5	Client:

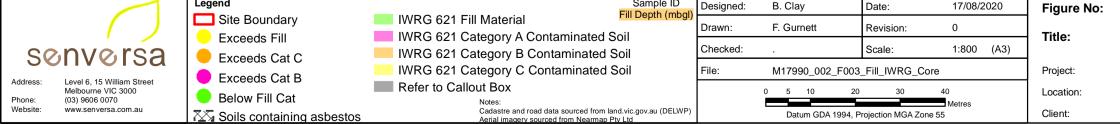


	Legend	Sample ID	Designed:	B. Clay	Date:	11/08/2020	Figure No:
	<ul> <li>Hand Auger Locations, 2020</li> <li>Soil Bore, Senversa 2019</li> </ul>	Fill Depth (mbgl)	Drawn:	F. Gurnett	Revision:	0	Title:
senversa	<ul> <li>Test Pit, Serversa 2019</li> </ul>		Checked:		Scale:	1:800 (A3)	THE.
	Site Boundary		File: M17990_002_F002_Fill Depths				Project:
Address:       Level 6, 15 William Street         Melbourne VIC 3000         Phone:       (03) 9606 0070         Website:       www.senversa.com.au		Notes: Cadastre and road data sourced from land.vic.gov.au (DELWP) Aerial imagery sourced from Nearmap Ptv Ltd		0 5 10 20 Datum GDA 1994,		40 Metres e 55	Location: Client:

#### Depth of Fill Material

Soil Contamination Management Plan 383 High Street, Kew Recreation Centre, Kew City of Boroondara







- Legend Exceeds Fill + Hand Auger Locations, 2020 sonvorsa Soil Bore, A.S James 2009 Soil Bore, A.S James 2017 Level 6, 15 William Street Melbourne VIC 3000 (03) 9606 0070 www.senversa.com.au Soil Bore, Senversa 2019 🖶 Test Pit, Senversa 2019
- Site Boundary IWRG 621 Category C Contaminated Soil IWRG 621 Fill Material
- Contamination Status Unknown
  - Notes: Cadastre and road data sourced from land.vic.gov.au (DELWP) Aerial imanery sourced from Nearmap Ptv Ltd

Designed:	B. Clay	Date:	11/08/2020	Figure No:			
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	0 5 10 20	30 4	40	Location:			
	Datum GDA 1994, Projection MGA Zone 55						

Address:

Phone: Website:

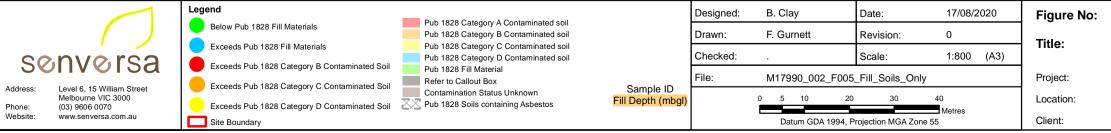
#### 4

#### IWRG621 Exceedences (Natural Soil Only)

Soil Contamination Management Plan

383 High Street, Kew Recreation Centre, Kew







		Legend		Designed:	B. Clay	Date:	11/08/2020	Figure No:
		Below Pub 1828 Fill Material		Drawn:	F. Gurnett	Revision:	0	<b>T</b> .4.
	nvo roo	Exceeds Pub 1828 Fill Material		Checked:		Scale:	1:800 (A3)	Title:
50	onvorsa	Site Boundary		File:	M17990 002 F006	Natural Soil Onl	ly	Project:
Address:	Level 6, 15 William Street Melbourne VIC 3000	Contamination Status Unknown			0 5 10 20	) 30	40	Leastion
Phone: (03) 9606 0070 Website: www.senversa.com.au	Pub 1828 Category D Contaminted Soil	Notes:		0 5 10 20	30 40 Metres		Location:	
	Pub 1828 Fill Material	Cadastre and road data sourced from land.vic.gov.au (DELWP) Aerial imagery sourced from Nearmap Pty Ltd		Datum GDA 1994, F	Projection MGA Zone 5	5	Client:	

## Publication. 1828 Exceedences (Natural soils only)

Soil Contamination Management Plan

383 High Street, Kew Recreation Centre, Kew

Attachments





#### **Attachments**

Attachment A: William Ross Architects, 2020. *Cut and Fill Plan*, Project No. ME180492, Drawing No. C2.40 Issue E.

m17990\_rpt002\_rev1\_scmp **S©NV©rSa** 

#### Council Meeting Agenda

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BEL 59.20

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BEL 592

CUT AND FILL PLAN

TTTTT I

FILL

BEL 59.20

5715 BEL 59,20

CUT/FILL			Surface Analysis: Elevation Ranges						
PHASE 1: AREA FOR ASSUMED STRIP OF 150mm ACROSS SITE: 12,140 m <sup>2</sup>				Minimum Elevation	Maximum Elevation	2D Area	Γ		
VOLUME: 1,820 m <sup>3</sup>		Number	Color	(m)	(m)	(m²)			
2: CUT/FILL VOLUME (STRIPPED NATURAL SURFACE TO EXCAVATED DESIGN LEVELS)		1	Z	-4.000	-3.500	0.0	0		
/0LUME: 9.700 m <sup>3</sup>		2	$\geq$	-3.500	-3.000	546.5	5		
/OLUME : 6,420 m <sup>3</sup> :SS CUT OVER FILL : 3,280 m <sup>3</sup>		3	$\geq$	-3.000	-2.500	1066.5	5		
LOO COTTOVERTINE COLOUTIN		4	$\geq$	-2.500	-2.000	568.4	9		
TES		5		-2.000	-1.500	543.1	1		
LI VOLUME PHASE 2 ALLOWS FOR:		6	$\geq$	-1.500	-1.000	853.3	1		
HICKNESS OF 150mm (BASEMENT SLAB), 250mm (LEVEL 1 SLAB)		7	$\sim$	-1.000	-0.500	1773.4	2		
AB PREPARATION (SAND BEDDING) NOM 50mm ALT PAVEMENT THICKNESS OF 300mm		8		-0.500	0.000	1628.7	3		
ILL VOLUME DOES NOT ALLOW FOR:		9	1	0.000	0.500	509.1	1		
ESTRIAN FOOTPATH PAVEMENT	J	10		0.500	1.000	129.5	1		
		11	$\sim$	1.000	1.500	526.8	1		
		12	$\sim$	1.500	2.000	1624.1	9		
		13	$\sim$	2.000	2.500	351.6	3		
		14		2,500	3.000	378.8	2		

Volume (m<sup>1</sup>) 0.0 0.0 546.5 56.6 1066.5 576.0 568.4 951.1 543.1 1219.6 853.3 1564.2 1773.4 2211.1 1628.7 3129.5 509.1 1727.5 129.5 1591.0 526.8 1476.8 1624.1 985.0 351.6 363.8 378.8 227.1

	_ 7		_											
Datum 45.000														
EXCAVATED LEVEL		53.475	53.363	53.567	53.650	53.745	53.896	59.200	59.200	59.200	59.200	59.200	59.200	59.200
STRIPPED EXISTING LEVELS	52.954	53.765	54.844	55.247	56.729	56.773	SE0.72	57.137	57.328	27.474	57.705	58.939	60.027	60.551
DEPTH		-0.290	-1.481	-1.680	-3.078	-3.028	-3.139	2.063	1.872	1.726	1.495	0.261	-0.827	-1.351
CHAINAGE 8	10.000	20.000	30.000	000.04	50.000	60.000	70.000	80.000	000.06	100.000	110.000	120.000	130.000	136.702

15

3.000

3.500

243.6 52.7

SECTION 2

HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:500

						_
Datum 45.000						
EXCAVATED LEVEL	54.198	54.341	54.357	55.944	4E6.2S	
STRIPPED EXISTING LEVELS	54.115	54.719	55.240	55.716	56.221	56.630
DEPTH	0.083	-0.378	-0.884	0.227	-0.287	
CHAINAGE	10.000	20.000	000.0E	000.04	50.000	57.458

#### SECTION 1

D

С

Issue Description

VERTICAL SCALE 1:500



SECTIO

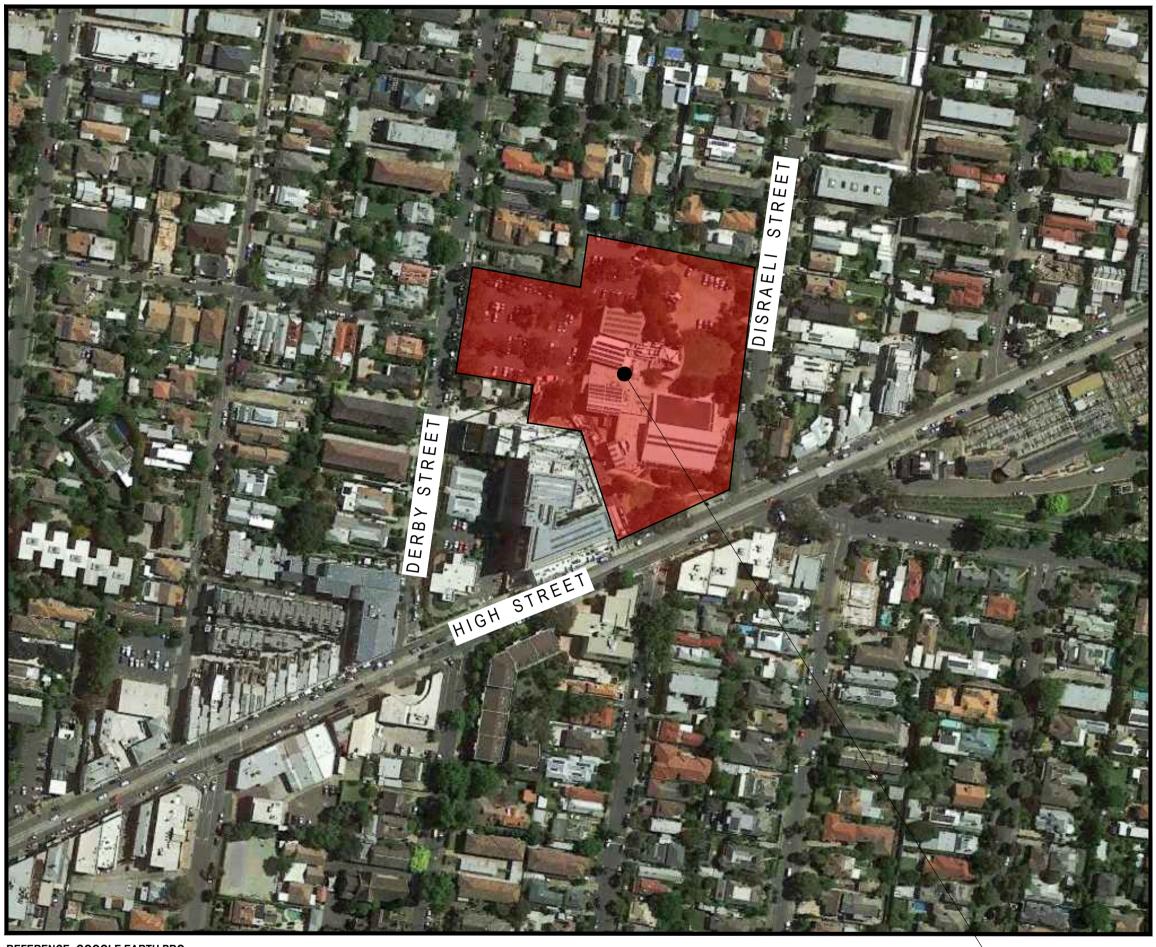
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BEL 55.33

## **KEW RECREATION CENTRE** AQUATIC AND SPORTS CENTRE REDEVELOPMENT **CIVIL DRAWINGS**

## **DRAWING INDEX**

C1.00 C1.01	<ul> <li>COVER SHEET, DRAWING INDEX AND LOCALITY PLAN</li> <li>SITE NOTES AND SPECIFICATIONS</li> </ul>
C2.40	- CUT AND FILL PLAN
C2.41	- CUT AND FILL SECTIONS
C3.00	- DRAINAGE AND PAVEMENT PLAN LEVEL 0
C3.01	- DRAINAGE AND PAVEMENT PLAN LEVEL 1
C3.05	- PIT SCHEDULE
C3.06	- DRAINAGE ROOF PLAN
C3.07	- BASEMENT LINEMARKING PLAN
C3.10	- CIVIL DETAILS SHEET 1
C3.11	- CIVIL DETAILS SHEET 2
C3.12	- CIVIL DETAILS SHEET 3
C3.13	- CIVIL DETAILS SHEET 4
C3.14	- CIVIL DETAILS SHEET 5
C3.15	- RETAINING WALL DETAILS
C3.20	<ul> <li>DRAINAGE LONG SECTIONS SHEET 1</li> </ul>
C3.21	- DRAINAGE LONG SECTIONS SHEET 2



REFERENCE: GOOGLE EARTH PRO LOCALITY PLAN N.T.S.

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This drawin	g has been assigned an electronic code that signifies the drawing has been checked and approved by:					Client
D	90% PRE-TENDER ISSUE	26.05.20	AP	HC	North	
С	DESIGN DEVELOPMENT	16.04.20	AP	HC		
В	DESIGN DEVELOPMENT	12.03.20	) AP	HC		() BOR
А	SCHEMATIC DESIGN	08.10.19	AP	BB		
Issue	Description	Date	Drawn	Approved		
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**AREA OF WORKS** 



ACOR Consultants (Vic) Pty Ltd Level 1, 173 Burke Road Glen Iris VIC 3146 T +61 3 9885 4335

BOROONDARA CI

## LEGEND

	227.8Ø PP 1:100
STORMWATER DRAIN	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
DOWNPIPE CONNECTION	DP
FLOOR WASTE CONNECTION	FW
SWALE DRAIN INVERT	$\!$
KERB (BARRIER)	B1
KERB & CHANNEL (BARRIER)	B2
CONCRETE EDGE STRIP	ES
KERB (BARRIER) WITH CONCRETE I	BK T1
SUBSURFACE DRAIN	SSD SSD
EXISTING SURFACE CONTOUR	42.00
EXISTING STORMWATER DRAIN	ExSW ExSW
EXISTING SERVICE TO BE DEMOLIS	HED — X — X — X —
FENCE	/ /
RETAINING WALL	WALL
CONCRETE BARRIER	
PROPERTY BOUNDARY	
FINISHED FLOOR LEVEL	FFL 10.00
DESIGN FINISHED PAVEMENT LEVE	L P 9.95
PIT COVER LEVEL	CL 9.90
INVERT LEVEL	IL 9.00
JUNCTION PIT (JP)	$\boxtimes$
GRATED PIT (GP)	
EXISTING JUNCTION PIT	
EXISTING GRATED PIT	
TRENCH GRATE	TG
FLUSHOUT RISER	○ FR
FLOOR WASTE	○ FW
DIRECTION OF FALL	<u>    1:40                                </u>
DIRECTION OF FLOW	>>>>
BOLLARD	0 B
WHEEL STOP	

227 80 DD 1.100

#### TENDER ISSUE NOT FOR CONSTRUCTION

N CENTRE ITY COUNCIL	Drawing Title COVER SHE	et, drawing I	NDEX AND LOC	ALITY PLAN		P:/ME18/ME
	Drawn AP	Date SEPT 2019	Scale A1 AS SHOWN	Q.A. Check <b>HC</b>	Date MAY 202	20 - 4:49pm
	Designed BB	Project No.	E180492	Dwg. No. C1.00	lssue D	Aay 29, 202

0-GENERAL NOTE	S	4-LANDSCAPING		11-SERVICES	
THESE DRAWINGS SHALL I	← BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTS (INCLUDING ARCHITECTURAL AND AWINGS AND SPECIFICATIONS ) AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE	LANDSCAPE AREAS	FOR DETAILS OF LANDSCAPE AREAS & FINISH, REFER TO LANDSCAPE ARCHITECT'S DRAWINGS.	EXISTING	ALL STATUTORY AUTHORITY SERVICES MUST BE MAINTAINED AND PROTECTED BY THE CONTRACTOR AT ALL TIMES UNLESS OTHERWISE SHOWN. EXISTING SERVICE LOCATIONS SHOWN
ISSUED DURING THE COUF ALL SET OUT DIMENSIONS ARCHITECT'S DRAWINGS A	ASE OF THE CONTRACT. AND LEVELS, INCLUDING ANY SHOWN ON CIVIL DRAWINGS, SHALL BE IN ACCORDANCE WITH THE IND VERIFIED ON THE SITE BY THE CONTRACTOR. ANY DISCREPANCIES IN THE DOCUMENTS MUST	PREPARATION	IN NEW LANDSCAPE AREAS ALL REDUNDANT PAVEMENT MATERIAL SHALL BE REMOVED & REINSTATED WITH CLEAN FILL TO 150mm BELOW FINISHED SURFACE LEVEL. UNLESS NOTED OTHERWISE ON THE LANDSCAPE PLANS, REINSTATEMENT OF A MIN. 150mm OF CLEAN TOPSOIL SHALL BE PROVIDED TO ALL LANDSCAPE AREAS.		HAVE BEEN OBTAINED FROM STATUTORY AUTHORITY RECORDS AND/OR EXISTING CONDITIONS PLANS, WHERE AVAILABLE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN AND ALL SERVICES SHOULD BE PROVEN ON SITE PRIOR TO THE COMMENCEMENT OF WORKS IN THEIR VICINITY.
ALL DISCREPANCIES SHAL	DERING OR PLACING ANY MATERIALS. THESE DRAWINGS ARE NOT TO BE SCALED.	EXISTING	ALL EXISTING TREES IN THE VICINITY OF THE TRAFFICABLE AREAS THAT ARE TO BE RETAINED SHALL BE PRUNED, & ROOTS CUT & SEALED WHERE THEY EXTEND BENEATH NEW WORKS, BY	CONTACTS	CIVIL CONTRACTOR TO CONTACT AUTHORITY FOR RELOCATION OF CABLES , U/G MAINS OR POLES WHERE REQUIRED.
ATERIALS OR PROCEEDI	SED IN METRES. DRAWINGS ARE NOT TO BE SCALED.		APPROPRIATELY QUALIFIED PERSONNEL. TREES TO BE REMOVED SHALL HAVE ALL ROOTS GRUBBED OUT AND BE MADE GOOD WITH COMPACTED FILL.	LIGHTING	FOR PROPOSED CARPARK LIGHTING WORKS REFER TO ELECTRICAL DRAWINGS . ALL ELECTRICAL WORKS AS DOCUMENTED ARE TO BE ALLOWED FOR INCLUDING ALL FITTINGS,
	TITUTION BY THE ENGINEER IS NOT AN AUTHORISATION FOR A COST VARIATION. ANY COST IT BE APPROVED BY THE SUPERINTENDENT OR ARCHITECT BEFORE THE WORK COMMENCES.	5-SITE CLEARANCI		ADJUSTMENTS	CONDUITS, CABLE ETC. AND COORDINATION WITH THE CIVIL WORKS. ALL EXISTING PITS AND SERVICE FITTINGS THAT ARE TO REMAIN WITHIN THE PAVEMENT AREA
	THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY BRACING, PROPPING ARY, INCLUDING ANY TEMPORARY SUPPORT FOR EXCAVATIONS.	DEMOLITION	ALL EXISTING REDUNDANT CONCRETE, PAVEMENT, SOIL, RUBBISH AND CONSTRUCTION DEBRIS SHALL BE TAKEN UP AND REMOVED FROM SITE.		SHALL BE REBUILT TO MATCH PROPOSED LEVELS AND WHERE APPLICABLE FITTED WITH AN APPROPRIATE HEAVY DUTY, AUTHORITY APPROVED, COVER. ELSEWHERE EXISTING SERVICES SHALL BE ADJUSTED TO SUIT NEW ADJACENT LEVELS.
ALL WORK AND MATERIAL	S SHALL CONFORM TO RELEVANT LOCAL AUTHORITY AND CODE OF AUSTRALIA UNLESS E IN THESE DRAWINGS	CLEAN UP	PRIOR TO COMPLETION, THE CONTRACTOR SHALL ENSURE THE SITE OF WORKS IS TIDIED AND OBTAIN A CLEARANCE FROM THE SUPERINTENDENT.		NOTE:
ANUFACTURER'S SPECIF	CTS SPECIFIED ON THESE DRAWINGS SHALL BE USED STRICTLY IN ACCORDANCE WITH THE ICATION. ALTERNATIVE PRODUCTS MAY ONLY BE USED WITH THE APPROVAL OF THE WING SUBMISSION OF EVIDENCE OF EQUIVALENCE.	6-DRAINAGE			CONTRACTOR TO MAKE ALLOWANCE FOR RELOCATION OF ALL SERVICES AFFECTED BY THE PROPOSED WORKS.
,	O DELINEATE DIFFERENT FEATURES ON PLAN. DRAWINGS ARE NOT TO BE	PIPES	DRAINAGE PIPES ABOVE 225mmØ TO BE MINIMUM OF CLASS 2 REINFORCED CONCRETE, FRCP OR SRCP (RUBBER RING JOINTED) UNLESS OTHERWISE SPECIFIED. DRAINAGE PIPES UP TO 200Ø TO BE SEWER QUALITY UPVC (RUBBER RING JOINTED). ALL HDPE PIPES SPECIFIED SHALL HAVE	PROPOSED SERVICES	REFER TO SEPARATE SERVICE DRAWINGS FOR PROPOSED LOCATION OF ELECTRICAL, SEWER,
DURING CONSTRUCTION,	THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING THE SITE AND PROVIDING EASURE FOR ALL UPSTREAM OVERLAND FLOW AND STORMWATER SYSTEMS.		ELECTROFUSION WELDED JOINTS. COMPACTED CLASS 2 FCR BACKFILL SHALL BE INSTALLED TO PIPES UNDER ROAD PAVEMENTS AND BUILDING SLABS. TRENCHES IN LANDSCAPE AREAS CAN BE BACKFILLED WITH SELECTED CLAY FILL. ALL STORM WATER PIPES ARE TO BE TESTED IN ACCORDANCE WITH AS3500.3 SECTION 10.		WATER, GAS & TELECOMMUNICATIONS SERVICES. SERVICE TRENCHES LOCATED UNDER PROPOSED PAVEMENTS INCLUDING VEHICLE CROSSINGS AND FOOTPATHS SHALL BE BACKFILLED WITH COMPACTED CLASS 2 FCR. (TRENCHES WHICH ENCROACH WITHIN 150mm OF THE EDGE OF PAVEMENT SHALL ALSO BE BACKFILLED WITH APPROVED FCR MATERIAL). THE EDGE OF PAVEMENT SHALL ALSO BE BACKFILLED WITH APPROVED FCR MATERIAL).
I-SURVEY		EXISTING PIPES	ALL EXISTING PIPES THAT WILL NOW BE BENEATH NEW ROAD PAVEMENT SHALL HAVE THE EXISTING BACKFILL REMOVED AND REPLACED WITH A CRUSHED ROCK BACKFILL COMPACTED TO 98% STANDARD.		THE BASE OF ALL SERVICE TRENCHES SHALL BE SLOPED AWAY FROM THE BUILDING. TRENCHES SHALL BE BACKFILLED WITH CLAY IN THE TOP 300mm WITHIN 1.5m OF THE BUILDING. THE CLAY USED FOR BACKFILLING SHALL BE COMPACTED.WHERE PIPES PASS UNDER THE FOOTING SYSTEM, THE TRENCH SHALL BE BACKFILLED FULL DEPTH WITH CLAY OR CONCRETE TO RESTRICT THE INGRESS OF WATER BENEATH THE FOOTING SYSTEM.
SURVEY DATUM	THESE PLANS ARE BASED UPON THE EXISTING CONDITIONS SURVEY PREPARED BY MOONLAND GROUP, REF. No. M1451-A1-RD DATED 04/07/2019. LEVELS SHOWN ARE TO A.H.D.	PITS	DRAINAGE PITS TO BE CAST IN-SITU CONCRETE PITS AS DETAILED OR APPROVED PRECAST CONCRETE COMPLYING WITH THE RELEVANT AUSTRALIAN STANDARDS. ALL PITS DEEPER THAN		
SETOUT	THE CONTRACTOR SHALL SETOUT THE WORKS FROM THE NOMINATED DESIGN LINES, SURVEY BENCHMARKS AND CONTROL POINTS SHOWN ON THE PLANS AND TO THE SPECIFIED DETAILS.		1.0m ARE TO BE PROVIDED WITH APPROVED STEP IRONS AT 300 MAX. CENTERS. PROVIDE CLASS D PIT COVER TO ALL PITS THAT ARE SITUATED ON A ROAD AND CLASS B PIT COVERS TO ALL OTHER AREAS UNLESS NOTED OTHERWISE.	12-INSPECTIONS	
	SETOUT INFORMATION TO BE PROVIDED IN DIGITAL FORMAT FOR INFORMATION ONLY. ACOR KERSULTING TAKE NO RESPONSIBILITY FOR DIGITAL INFORMATION ONCE RELEASED FROM THIS OFFICE. DIGITAL INFORMATION SHALL BE VERIFIED AGAINST SITE CONDITIONS BY THE CONTRACTOR PRIOR TO USE.	DOWNPIPES	REFER TO ARCHITECTURAL DRAWINGS FOR DOWNPIPE DETAILS. ALL IN GROUND DOWNPIPE CONNECTIONS ARE TO BE 150Ø UPVC OR EQUAL TO THE DOWNPIPE SIZE, WHICHEVER IS GREATER, UNLESS SHOWN OTHERWISE. DOWNPIPE CONNECTIONS TO THE MAIN STORMWATER DRAINAGE SHALL BE VIA A 45° OBLIQUE JUNCTION OR BANDAGE JOINT AS	GENERAL	ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE APPROVED CONSTRUCTION PROGRAMME TO THE SATISFACTION OF THE SUPERINTENDENT. AND SUBJECT TO PERIODICAL INSPECTION AND WRITTEN STAGED APPROVAL. ADDITIONAL INSPECTIONS CAN BE REQUESTED AT 24 HOURS NOTICE.
DIMENSIONS REFERENCES PROTECTIO	ALL DIMENSIONS ARE TO LIP OF KERB OR OUTER EDGE OF LINEMARKING WHERE APPLICABLE. N THE CONTRACTOR SHALL MAINTAIN AND PROTECT THE PEGS AND SURVEY MARKS FOR THE DURATION OF THE WORKS.		MAIN STORMWATER DRAINAGE SHALL BE VIA A 45 OBLIQUE JUNCTION OR BANDAGE JOINT AS DETAILED OR DIRECT TO A STORMWATER PIT. SUSPENDED DOWNPIPE CONNECTIONS WITHIN THE BUILDING ARE TO BE SUPPORTED WITH APPROVED HANGERS AT 1.2m CENTRES. THE ALIGNMENT OF SUSPENDED DRAINS IS SCHEMATIC ONLY. THE FINAL ALIGNMENT IS TO COMPLY WITH THE ARCHITECTURAL PLANS.	EXTERNAL	ALL WORKS IN ROAD RESERVATIONS SHALL REQUIRE WRITTEN APPROVAL OF RELEVANT CITY COUNCIL AND ARE SUBJECT TO SEPARATE INSPECTIONS. SEVEN DAYS NOTICE TO BE GIVEN OF WORK COMMENCING. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY ROAD OPENING
S CONSTRUCTED SURVE	Y UPON COMPLETION OF THE CIVIL WORKS THE CONTRACTOR SHALL PROVIDE CERTIFIED AS CONSTRUCTED PLANS OF THE WORKS AND AN AS CONSTRUCTED SURVEY.	CHARGED SYSTEM	ALL COMPONENTS OF THE CHARGED SYSTEM TO BE INSTALLED IN ACCORDANCE WITH THE PLUMBING INDUSTRY STANDARDS AND REQUIREMENTS. CHARGED SYSEMS ARE TO BE PRESSURE RATED TO MINIMUM 6.0 HEAD.	13-PAVEMENTS SAWCUTTING	PERMITS AND AUTHORITY APPROVALS PRIOR TO COMMENCING WORKS.
-DEMOLITION		SETOUT	PIT LOCATIONS AND PIPE INVERT LEVELS ARE SPECIFIED ON THE PIT SCHEDULE.	SAWGUTTING	SAWCUT IN A NEAT LINE AND TO HAVE 300mm OVERLAP. REFER TO STANDARD DETAILS.
ENERAL	DETAILED SET OUT OF NEW WORKS ON SITE MUST BE UNDERTAKEN PRIOR TO DEMOLITION OF ANY EXISTING ASSETS. SITE MEASUREMENTS MUST BE UNDERTAKEN PRIOR TO DEMOLITION OF ANY EXISTING ASSETS TO VERIFY THAT THE DOCUMENTED EXTENT OF THE EXISTING ASSETS MATCHES THE ACTUAL EXTENT.	STORAGE AND DETENTION	WHERE WATER TANKS ARE SPECIFIED, APPROPRIATE FILTERS ARE TO BE INCORPORATED INTO THE SYSTEM TO ENSURE GROSS POLLUTANTS AND LITTER ARE PREVENTED FROM ENTERING	TRENCHING	ALL TRENCHING WORKS IN EXISTING PAVEMENTS SHALL HAVE SAWCUT EDGES AND NEW PAVEMENT REINSTATED TO NEATLY MATCH EXISTING LEVELS. ALL TRENCHING DEEPER THAN 1.5m SHALL BE CARRIED OUT IN ACCORDANCE WITH THE MINES & TRENCHING ACT.
B-EARTHWORKS			THE TANKS. NOMINAL APERTURE SIZE OF 5mm IS RECOMMENDED. AN EFFECTIVE MAINTENANCE PROGRAM INCLUDING REGULAR CLEANING OF FILTERS IS TO BE ADOPTED TO ENSURE SYSTEM REMAINS FULLY FUNCTIONAL.	REMAINING	EXISTING PAVEMENT AREAS THAT REMAIN, WHERE CRACKING IS EVIDENT SHALL BE SEALED WITH A PROPRIETARY BITUMINOUS PRODUCT TO THE MANUFACTURERS' SPECIFICATIONS.
GENERAL	EARTHWORKS SHALL BE CARRIED OUT TO THE FINISHED SURFACE LEVELS SHOWN ON THE PLANS AND CROSS SECTIONS. CUT BATTERS SHALL NOT EXCEED 1 IN 6 AND FILL BATTERS SHALL NOT EXCEED 1 IN 6 SLOPE UNLESS INDICATED OTHERWISE.	7-SUBSURFACE DF	RAINAGE	CONCRETE JOINTING	SAWCUT OR TOOLED CONSTRUCTION JOINTS SHALL BE PROVIDED AT MAX. 2.0m CENTRES TO ALL FOOTPATHS OR PEDESTRIAN PAVING UNLESS NOTED OTHERWISE. A 19mm EXPANSION JOINT SHALL BE PROVIDED WHENEVER RIGID PAVEMENTS ABUT FIXED STRUCTURES OR AT MAX. 15m CENTRES TO FOOTPATHS. DOWELLED SAWCUT AND CONSTRUCTION JOINTS SHALL BE PROVIDED
BEOTECHNICAL	REFER TO THE GEOTECHNICAL REPORT BY A.S. JAMES PTY LIMITED, REF. No. 118710 DATED 23/01/2018 FOR SUBGRADE PREPARATION RECOMMENDATIONS AND SOIL CONDITIONS.	ROAD FORMATION	100mm DIA. UPVC CLASS CLASS 1000 SUBSURFACE DRAINS WITH 20mm NOMINAL NO FINES CONCRETE BACKFILL SHALL BE INSTALLED BEHIND ALL KERBING AND PAVEMENT JOINTS UNLESS		TO ALL VEHICULAR PAVEMENTS AS DETAILED ON THE DRAWINGS, TYPICALLY NOT GREATER THAN 6.0m CENTRES AND JOINT SPACING SHALL ENSURE SLAB LENGTH (L) ≤1.5 SLAB WIDTH.
SITE STRIP	THE CONTRACTOR SHALL STRIP ALL AREAS SUBJECT TO BULK EARTHWORKS , PAVEMENT CONSTRUCTION OR BUILDING WORKS OF ALL ASPHALT, TOPSOIL AND OTHER DELETERIOUS MATERIAL. THE SITE STRIP SHALL INCLUDE REMOVAL OF ALL DELETERIOUS MATERIAL (150mm DEPTH) TO EXPOSE THE CLAY SUBGRADE (CBR 3%).	LANDSCAPE	OTHERWISE NOTED AT MIN. GRADE OF 1:250 UNLESS OTHERWISE NOTED.	PAVEMENT TESTING	EACH ROAD PAVEMENT LAYER SHALL BE TEST FOR COMPACTION BY A NATA REGISTERED GEOTECHNICAL ENGINEER IN ACCORDANCE WITH AS1289 AND SHALL MEET THE FOLLOWING STANDARDS:
SUBGRADE CONDITIONS	THE CLAY SUBGRADE (CBR 3%). EXISTING SUBGRADES ARE SILT AND CLAY. THEESE SUBGRADES IN PARTICULAR ARE SUSCEPTIBLE TO WATER PENETRATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN SITE GRADING AND DRAINAGE AND TO PROTECT AND MAINTAIN SUBGRADES IN A SUITABLE CONDITION (MIN. CBR 3%) IN	LANDSCAFE	SCREENINGS BACKFILL INSTALLED IN GARDEN BEDS OR ADJACENT TO PEDESTRIAN PAVEMENT. MIN. GRADE OF 1:250 UNLESS OTHERWISE NOTED.	ASPHALT LAYERS	UP TO 50mm THICKNESS - 94% CHARACTERISTIC VALUE OF DENSITY RATIO.GREATER THAN 50mm THICKNESS - 96% CHARACTERISTIC VALUE OF DENSITY RATIO 98% MODIFIED DRY DENSITY
	ORDER TO ACHIEVE THE COMPACTIONS SPECIFIED. SHOULD SUBGRADES BECOME SATURATED ANY UNSUITABLE MATERIAL IS TO BE REMOVED AND MADE GOOD WITH TYPE B GENERAL FILL AND/OR LIME/CEMENT STABILIZED AS REQUIRED IN ORDER TO MAINTAIN SUBGRADES. ALL SUBGRADES ARE TO	8-TRAFFIC MANAG	EMENT	SUB BASE LAYER SUB GRADE	98% MODIFIED DRY DENSITY 98% STANDARD DRY DENSITY
	BE PROOF ROLLED AND APPROVED PRIOR TO CONSTRUCTION OF PAVEMENTS AND/OR COMMENCEMENT OF FILLING.	GENERAL	TRAFFIC MANAGEMENT SHALL BE ARRANGED BY THE CONTRACTOR FOR THE DURATION OF THE WORKS IN ACCORDANCE WITH AUSTRALIAN STANDARD AS1742.3-2002 FOR CONSTRUCTION TRAFFIC MANAGEMENT AND TO THE SATISFACTION OF ALL PARTIES, INCLUDING THE PROVISION	ARTERIAL ROADS	COMPACTION TEST RESULT SHALL BE FORWARDED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO THE PLACEMENT OF SUBSEQUENT PAVEMENT LAYERS. TESTING RATES SHALL BE : 6 TESTS/LOT
COMPACTION TO AS1289	THE CONTRACTOR SHALL OBTAIN 98% STANDARD MINIMUM DRY DENSITY COMPACTION ON ALL FINISHED SUBGRADES AND FORMATIONS WITHIN + 2% OF OPTIMUM MOISTURE CONTENT. ALL SUBGRADES ARE TO BE PROOF ROLLED WITH A STATIC SMOOTH WHEEL ROLLER OR PNEUMATIC TYRE PLANT OF NOT LESS THAN 10 TONNES AND APPROVED BY THE SUPERINTENDANT PRIOR TO CONSTRUCTION OF DAVISIONED AND/OP COMMENCEMENT OF FILLING. PRIOR TO PROOF POLLING		OF ALL NECESSARY SIGNAGE, LIGHTING AND BARRICADING. TRAFFIC FLOWS IN ALL ABUTTING ROADWAYS AND ACCESS TO THE SITE SHALL REMAIN UNIMPEDED FOR THE DURATION OF THE CONTRACT. A TRAFFIC MANAGEMENT PLAN FOR ANY EXTERNAL ROADWORKS SHALL BE SUBMITTED TO RELEVANT CITY COUNCIL FOR APPROVAL A MINIMUM OF TWO WEEKS PRIOR TO	ARTENIAL ROADS OTHER	6 TESTS/LOT 3 TESTS/LOT A LOT SHALL BE THE SMALLER OF 5000m <sup>2</sup> OR ONE DAYS PRODUCTION. WHERE SO REQUIRED. THE CONTRACTOR SHALL PROVIDE ADDITIONAL TEST TO THE CLIENT'S
	CONSTRUCTION OF PAVEMENTS AND/OR COMMENCEMENT OF FILLING. PRIOR TO PROOF ROLLING, SUBGRADE TO BE COMPACTED WITH A MINIMUM OF SIX PASSES WITH PLANT NOMINATED ABOVE.	0 TEOTING	COMMENCEMENT OF WORKS.	14-KERBS	SATISFACTION.
	ALL SERVICE TRENCH BACKFILL COMPACTION TO BE DONE USING LIGHTWEIGHT EQUIPMENT TO ENSURE NO DAMAGE IS DONE TO INSTALLED SERVICES.	9-TESTING data	THE CONTRACTOR SHALL SUPPLY WRITTEN TEST RESULTS FROM A NATA REGISTERED	PROPOSED	WHERE REQUIRED MATCH ALL NEW KERBS TO EXISTING LEVEL NEATLY, ENSURING MINIMUM 1 IN 250 GRADE, SAW CUTTING AND REINSTATING PAVEMENT IN FRONT OF KERB TO FALL TO NEW KERB LEVEL.
ILLING	PRIOR TO THE COMMENCEMENT OF FILLING THE SITE SHALL BE STRIPPED AS NOTED. FILLING IS TO BE CARRIED OUT IN STRICT ACCORDANCE WITH THE SPECIFICATIONS AND AS3798. APPROVED MATERIAL WON FROM SITE OR APPROVED COMPACTED FILL SHALL BE MOISTURE CONDITIONED IN ACCORDANCE		GEOTECHNICAL ENGINEER CONFIRMING COMPLIANCE WITH THE SPECIFICATIONS FOR ALL EARTHWORKS, CONCRETE WORKS AND PAVEMENTS LAYERS.		
	WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT PRIOR TO BEING PLACED IN UNIFORM HORIZONTAL LAYERS OF 200mm MAXIMUM DEPTH AND COMPACTED AS SPECIFIED. ALL FINISHED SURFACES SHALL ACHIEVE A MINIMUM COMPACTION OF 98% STANDARD DRY DENSITY WITHIN + 2% OF OPTIMUM MOISTURE CONTENT. COMPACTION TESTING OF ALL FILL SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF AS 3798.	AUDIT	TEST RESULTS WILL BE REVIEWED BY THE CLIENT CONTACT AND WHERE SO REQUIRED ADDITIONAL TESTS WILL BE PROVIDED BY THE CONTRACTOR TO THE SUPERINTENDENTS SATISFACTION.	SPECIFICATION	THE PROJECT SPECIFICATIONS SHALL BE USED AS THE GENERAL SPECIFICATION FOR ALL WORKS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A COPY OF THE CURRENT SPECIFICATIONS, ALL RELEVANT STANDARD DRAWINGS AND ALL ASSOCIATED REVISIONS AND AMENDMENTS ETC.
ISPECTIONS AND TESTIN	G THE CONTRACTOR SHALL INSTRUCT A NATA REGISTERED GEOTECHNICAL ENGINEER TO CARRY OUT LEVEL 2 SUPERVISION TESTING AND REPORTING IN ACCORDANCE WITH AS3798 AND AS1289 AND TO	10. LINEMARKING	ALL REDUNDANT LINEMARKING SHALL BE PERMANENTLY REMOVED BY APPLICATION OF A SPRAY	16-CONTRACT CO	NDITIONS
	RELEVANT COUNCIL REQUIREMENTS FOR THIS PROJECT. THIS REQUIRES THE GEOTECHNICAL CONSULTANT TO UNDERTAKE THE SAMPLING AND TESTING ON SITE AS SPECIFIED IN ADDITION THEY ARE RESPONSIBLE FOR THE SELECTION TIMING AND LOCATION OF SAMPLING ON EACH VISIT. THE	GENERAL	ALL REDUNDANT LINEWARKING SHALL BE PERMANENTLY REMOVED BY APPLICATION OF A SPRAY SEAL OR BY GRINDING.	GENERAL	ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 4000-1997 GENERAL AND MODIFIED CONDITIONS OF CONTRACT.
	GEOTECHNICAL CONSULTANT SHALL PROVIDE TEST RESULTS TO ACORKERSULTING ON EACH VISIT. THE TAKEN AND SUBMIT A COMPREHENSIVE FINAL REPORT TO ACORKERSULTING'S SATISFACTION PRIOR TO PRACTICAL COMPLETION. THE FREQUENCY OF TESTING SHALL BE IN ACCORDANCE WITH AS3798 TABLE 8.1 (ADOPTING WHICHEVER GIVES THE MOST TEST RESULTS).	ULIYLIYAL	LINEMARKING AND R.R.P.IN'S ARE TO BE INSTALLED IN ACCORDANCE WITH THESE PLANS AND TO VICROADS SPECIFICATIONS. ALL PARKING BAYS TO BE FULLY LINEMARKED TO VICROADS STANDARDS AND SPECIFICATION. WIDTH OF CAR PARKING BAYS TO BE 2.60m WIDE EXCEPT FOR THE DISABLED PARKING BAYS WHERE THE WIDTH TO BE INCREASED TO 2.4 m WIDE PLUS SHARED ZONE UNLESS OTHERWISE NOTED.	MAINTENANCE PERIOD	A 12 MONTH MAINTENANCE PERIOD WILL APPLY TO THIS CONTRACT UNLESS NOTED OTHERWISE.
	SMALL DEVELOPMENTS         • 1 TEST PER 200 m³ (DISTRIBUTED OVER AREA AND DEPTH).         • 1 TEST PER 200mm THICK LAYER PER 1000 m².         • 1 TEST PER LOT	INTERNAL WORKS	ALL LINEMARKING TO BE APPROVED LONG LIFE ROAD MARKING PAINT UNLESS OTHERWISE NOTED. PARKING BAYS TO BE APPROVED LONG LIFE ROAD MARKING PAINT, LATERAL WORKS, PAVEMENT		
EINSTATEMENT	THEST PER LOT     THE CONTRACTOR SHALL REGRADE, SHAPE, TOPSOIL AND GRASS ALL ADJACENT EXISTING GRASSED     AREAS THAT ARE DISTURBED OR ALTERED AS A CONSEQUENCE OF THE PROPOSED WORKS.	LATENNAL WORNS	PARKING BAYS TO BE APPROVED LONG LIFE ROAD MARKING PAINT. LATERAL WORKS, PAVEMENT MARKINGS, ARROWS ETC. ARE TO BE COLD APPLIED PLASTIC TROWELLED INTO PLACE (DEGADUR, PLASTELINE OR EQUIVALENT). LONGITUDINAL LINEWORK TO BE EXTRUDED THERMAL PLASTIC MARKINGS.		
OFT SPOT ALLOWANCE	AREAS THAT ARE DISTURBED OR ALTERED AS A CONSEQUENCE OF THE PROPOSED WORKS. ALLOWANCE IS TO BE MADE FOR SOFT SPOTS - AT A MINIMUM, TO REPLACE 10% OF THE SURFACE AREA BELOW ALL CONCRETE AND ASPHALT PAVEMENTS, AND ALL CONCRETE SLABS/RAFT SLABS ON GROUND. TENDERER IS TO MAKE ALLOWANCE FOR THIS REPLACEMENT TO A DEPTH OF 600mm AND TO				

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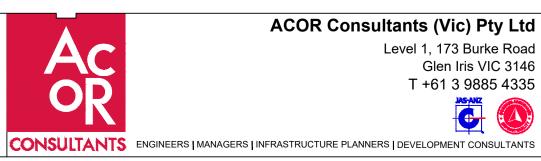
					North
С	90% PRE-TENDER ISSUE	26.05.20	AP	HC	]
В	DESIGN DEVELOPMENT	16.04.20	AP	HC	
А	SCHEMATIC DESIGN	09.10.19	AP	BB	
Issue	Description	Date	Drawn	Approved	
-10	1cm at full size	· · · · · · · · · · · · · · · · · · ·	· .	20cm	1

Architect

ROONDARA

Client

williams ross architects



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### ALL REGULATORY AND HAZARD DIRECTIONAL SIGNS TO BE INSTALLED IN CLASS 1 REFLECTIVE MATERIAL AND ALL WARNING SIGNS TO BE INSTALLED IN CLASS 2 REFLECTIVE MATERIAL TO APPROVED AUSTRALIAN STANDARDS. FOR TEMPORARY SIGNAGE DURING CONSTRUCTION WORKS, REFER TO VICROADS ROADWORKS SIGNAGE CODE.

WHERE NECESSARY, EXISTING TRAFFIC CONTROL SIGNS SHALL BE RELOCATED CLEAR OF PROPOSED WORKS. REDUNDANT SIGNS SHALL BE TAKEN UP AND REMOVED.

NEW TRAFFIC CONTROL SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH THE DRAWINGS AND THE RELEVANT SPECIFICATION.

P, HANDLING AND PLACEMENT SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS

THE DRAWINGS, THE FOLLOWING CONCRETE STRENGTHS AND COVER TO REINFORCING BARS,

	CONCRETE STRENGTH (MPa)	BOTTOM COVER (mm)	TOP COVER (mm)
	N 32	50	50
AMS	N 32	50	50
	N 25	40	30
LS	N 25	40	80
	S32-T1	50	50
	N 32	35	35
	N 15	NA	NA

E THE PROPERTIES OF N32 WITH A CHARACTERISTIC FLEXURAL TENSILE STRENGTH OF fct.f=4.4MPa

TH GRADE OF CONCRETE NOT LISTED ABOVE SHALL BE GRADE 25, UNLESS OTHERWISE NOTED STRENGTH CONCRETE SHALL BE USED WHERE SPECIFIED ON THE DRAWINGS. CONCRETE MIX ED TO THE SUPERINTENDENT FOR REVIEW.

IPOUNDS SHALL NOT BE USED UNLESS APPROVED BY THE SUPERINTENDENT. IT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL NOT BE MADE E WITHOUT THE PRIOR APPROVAL OF THE SUPERINTENDENT.

ONAL TO THOSE SHOWN ON THE DRAWINGS SHALL BE SUBJECT TO THE APPROVAL OF THE

MPLY WITH THE REQUIREMENTS OF AS 1379 - FOR PROJECT ASSESSMENT. HE SPECIFICATION. UNLESS OTHERWISE NOTED, SLABS SHALL BE THOROUGHLY WETTED, THEN

DAYS WITH 0.2 mm THICK POLYTHENE SHEETING, WHICH SHALL BE SECURELY FIXED AGAINST APPED 300 mm MINIMUM AT JOINTS. M 56 DAY MEDIAN DESIGN SHRINKAGE STRAIN OF 750 MICROSTRAIN.

MATERIAL SHALL CONSIST OF BASECOURSE MATERIAL, OR OTHER SUITABLE MATERIAL NDENT, STABILISED IN THE PROPORTION OF 100KG OF TYPE GP PORTLAND CEMENT TO ONE ED BACKFILL MATERIAL. WATER FOR CEMENT STABILISATION SHALL BE CLEAN AND POTABLE.

ROAD RESERVE IS TO BE COMPLETED IN ACCORDANCE WITH CITY OF BOROONDARA COUNCIL ND FINISHED TO THE SATISFACTION OF COUNCIL. BE ACCEPTED WITHIN THE ROAD RESERVE. NAGEMENT PLAN (EMP) MUST BE SUBMITTED TO, AND APPROVED BY COUNCIL 14 DAYS PRIOR

T OF ANY WORKS ON SITE AND ALL WORKS MUST BE CARRIED OUT IN ACCORDANCE WITH THIS RTAKEN IN ACCORDANCE WITH THE COUNCIL ENDORSED TRAFFIC MANAGEMENT PLAN. TREATMENT IS SUBJECT TO CITY OF BOROONDARA COUNCIL APPROVAL, ENDORSED PLANS

WORKS CAN PROCEED IN THIS AREA. D RESERVE WILL BE SUBJECT TO A ROAD OPENING PERMIT. L APPLY TO COUNCIL FOR APPROVAL TO CONNECT TO COUNCIL'S DRAINAGE ASSET.

#### UIREMENTS

ORKS WITH IN THE ROAD RESERVE TO BE COMPLETED AS PER CITY OF BOROONDARA COUNCIL ACTION AND REQUIREMENTS.

AGE EASEMENTS IN FAVOUR OF MELBOURNE WATER ENCUMBERS THE DEVELOPMENT LL WORKS WITH IN, ADJACENT TO OR DIRECTLY IMPACTING THE EASEMENT SHALL BE CTED TO APPROPRIATE APPLICATIONS AND APPROVALS PRIOR TO CONSTRUCTION S. SEWER EASEMENT IN FAVOUR OF YARRA VALLEY WATER ENCUMBERS THE OPMENT SITE.

## TENDER ISSUE

	AP Designed HC	SEPT 2019 Project No.	E180492	HC Dwg. No. C1.01	INIAT 2020	May 20, 2020 - 3			
ITY COUNCIL	Drawn	Date	Scale A1	Q.A. Check	Date	3:54pm			
N CENTRE	Drawing Title SITE NOTES AND SPECIFICATIONS								

CUT/FILL VOLUME DOES NOT ALLOW FOR: 1. PEDESTRIAN FOOTPATH PAVEMENT

CUT/FILL
PHASE 1: AREA FOR ASSUMED STRIP OF 150mm ACROSS SITE: 12,140 m <sup>2</sup>
CUT VOLUME : 1,820 m <sup>3</sup>
PHASE 2: CUT/FILL VOLUME (STRIPPED NATURAL SURFACE TO EXCAVATED DESIGN LEVELS)
CUT VOLUME : 9,700 m <sup>3</sup> FILL VOLUME : 6,420 m <sup>3</sup> EXCESS CUT OVER FILL : 3,280 m <sup>3</sup>
NOTES
CUT/FILL VOLUME PHASE 2 ALLOWS FOR: 1. SLAB THICKNESS OF 150mm (BASEMENT SLAB), 250mm (LEVEL 1 SLAB) AND SLAB PREPARATION (SAND BEDDING) NOM. 50mm 2. ASPHALT PAVEMENT THICKNESS OF 300mm

Surface Analysis: Elevation Ranges Minimum Elevation | Maximum Elevation | 2D Area | Volume Number Соloг (m²) (m³) (m) (m) -3.500 0.0 1 -4.000 0.0 546.5 56.6 -3.500 -3.000 2 1066.5 576.0 3 -3.000 -2.500 4 -2.500 -2.000 568.4 951.1 5 -1.500 543.1 1219.6 -2.000 6 -1.500 -1.000 853.3 1564.2 7 1773.4 2211.1 -1.000 -0.500 1628.7 3129.5 8 -0.500 0.000 9 509.1 1727.5 0.000 0.500 10 0.500 129.5 1591.0 1.000 11 1.000 1.500 526.8 1476.8 12 1624.1 985.0 1.500 2.000 351.6 363.8 13 2.000 2.500 3.000 378.8 227.1 14 2.500 3.000 3.500 243.6 52.7 15 

Datum 45.000												
EXCAVATED LEVEL		53.475	53.363	56	53.650	53.745	53.896	6.	59.200	59.200	9.20	9.20
STRIPPED EXISTING LEVELS	2.9	53.765	54.844		56.729	LL	57.035	7.1	57.328	57.474	57.705	65
DEPTH		- 0.290	-1.481	-1.680	-3.078	02	- 3.139	2.063	1.872	1.726	64	0.261
CHAINAGE CO	00.00	20.000	30.000	4 0.000	50.000	0	70.000	80.000	000.06	100.000	10.00(	0.0

SECTION 2

HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:500

Datum 45.000						
EXCAVATED LEVEL	54.198	54.341	54.357	55.944	55.934	
STRIPPED EXISTING LEVELS	54.115	54.719	55.240	55.716	56.221	56.630
DEPTH	0.083	- 0.378	-0.884	0.227	- 0.287	
CHAINAGE CO	10.000	20.000	30.000	4 0.000	50.000	57.458

#### **SECTION 1**

HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:500

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E	90% PRE-TENDER ISSUE 26.05.20 AP HC North	
D	DESIGN DEVELOPMENT 17.03.20 AP HC	
С	SCHEMATIC DESIGN 08.10.19 AP BB	
В	SCHEMATIC DESIGN 19.09.19 AP BB	
Issue	Description Date Drawn Approved	
-1 _0	10m at full size	









Council Meeting Agenda

#### Datum 45.000

EXCAVATI	ED LEVEL	
STRIPPED	EXISTING	L

DEPTH

CHAINAGE

#### SECTION 5 HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:500

Datum 45.000

EXCAVATED LEVEL \_\_\_\_\_

STRIPPED EXISTING LEV \_\_\_\_\_

DEPTH

CHAINAGE

SECTION 4 HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:500

Datum 45.000

EXCAVATED LEVEL STRIPPED EXISTING LEV \_\_\_\_\_ DEPTH

CHAINAGE

SECTION 3 HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:500

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E	90% PRE-TENDER ISSUE	26.05.20	AP	HC	North	1						
D	DESIGN DEVELOPMENT	17.03.20	AP	HC		<b>^</b>						
С	SCHEMATIC DESIGN	08.10.19	AP	BB								
В	SCHEMATIC DESIGN	24.09.19	AP	BB								
Issue	Description	Date	Drawn	Approved								
-10	10cm 10cm 10cm			20cm								

	~														
									1						
00															
	56.209	56.074	55.939	55.693	55.919	55.983	56.030	55.027	53.888	53.883	53.860	53.94.0	53.940	54.049	
EVELS 57.097	56.711	56.486	.26	56.003	55.851	55.745	56.460	56.628	56.744	56.872	56.876	56.944	56.515	56.242	55.561
	-0.502	- 0.413	- 0.323	- 0.310	0.068	0.238	-0.429	-1.601	-2.856	-2.989	- 3.017	-3.004	-2.575	-2.193	
0.000	10.000	20.000	00	4 0.000	50.000	60.000	70.000	80.000	000.06	100.000	110.000	120.000	130.000	14.0.000	14.6.128

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	55.064	54.708	54.509	54.423	54.355	54.037	53.961	53.869	53.734	53.685	53.523	53.623		54.255	53.673
-evels 55.885	55.576	55.333	55.118	54.930	54.768	54.742	54.908	55.729	56.402	56.620	4	56.137	55.781	55.045	55.619
	- 0.512	- 0.625	- 0.609	-0.506	-0.413	-0.705	-0.947	-1.860	-2.669	-2.935	-2.898	-2.513	-2.109	- 0.790	-1.946
0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	000.06	100.000		120.000		14.0.000	132.821

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00									
	54.065	53.839	53.744	53.517	53.338	53.413	53.514	53.590	
EVELS 23.630	52.092	52.009	51.961	53.613	54.853	54.610	55.317	55.296	54.048
	1.972	1.830	1.783	-0.096	- 1.516	-1.198	- 1.803	-1.706	
0.000	10.000	20.000	30.000	4 0.000	50.000	60.000	70.000	80.000	89.304

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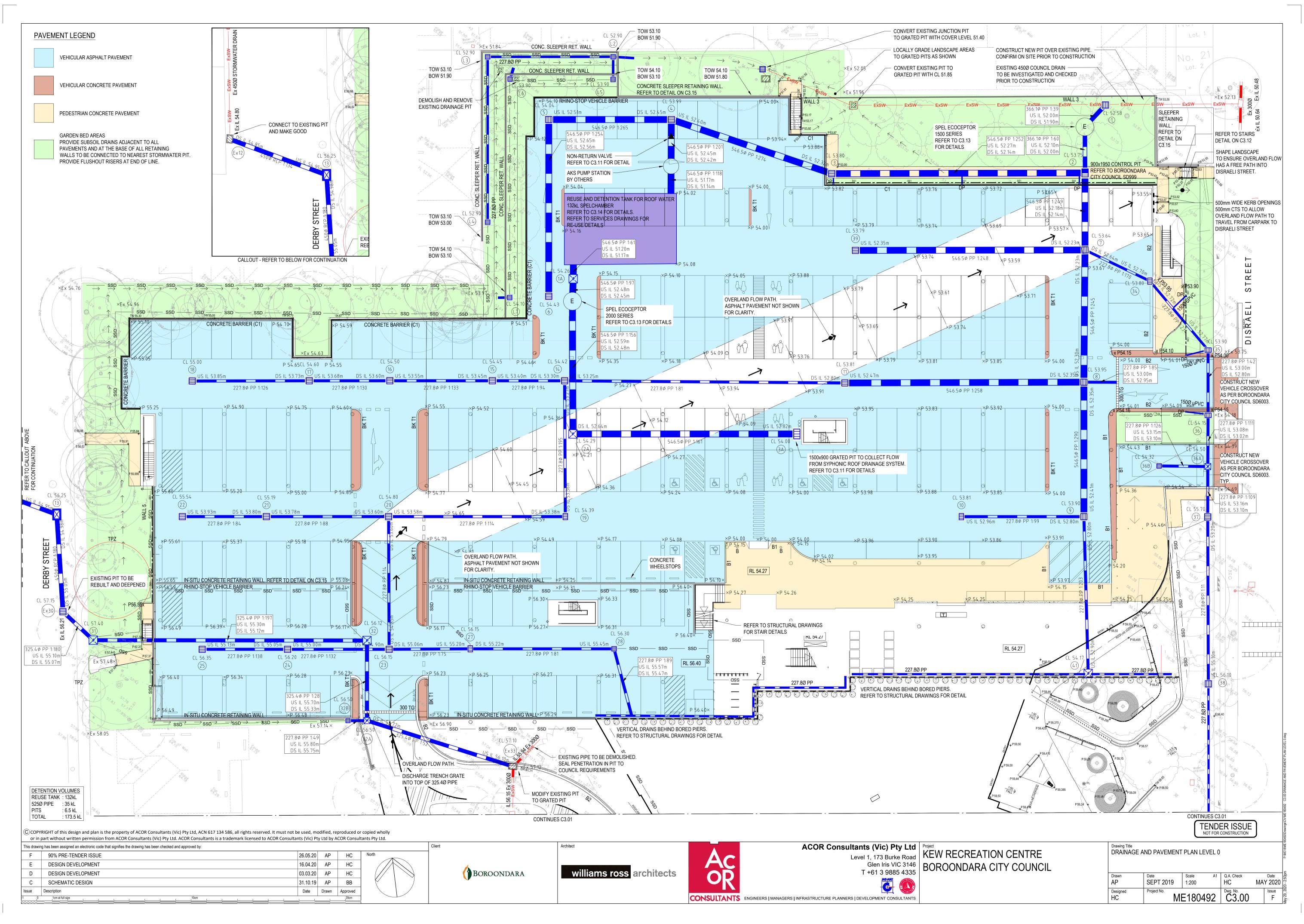
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				E Sime state stat
Drawing Title CUT AND I	FILL SECTIONS			
Drawn AP	Date SEPT 2019	Scale A1 AS SHOWN	Q.A. Check Q.A.	Q.A. DATE Issue E
Designed HC	Project No. ME180492 C2.41			
	CUT AND I Drawn AP Designed	CUT AND FILL SECTIONS           Drawn         Date           AP         SEPT 2019           Designed         Project No.	Drawing Title CUT AND FILL SECTIONS Drawn AP Designed Drave SEPT 2019 Designed Project No.	Drawn     Date     Scale     A1     Q.A. Check       AP     SEPT 2019     AS SHOWN     Q.A.       Designed     Project No.     Dwg. No.

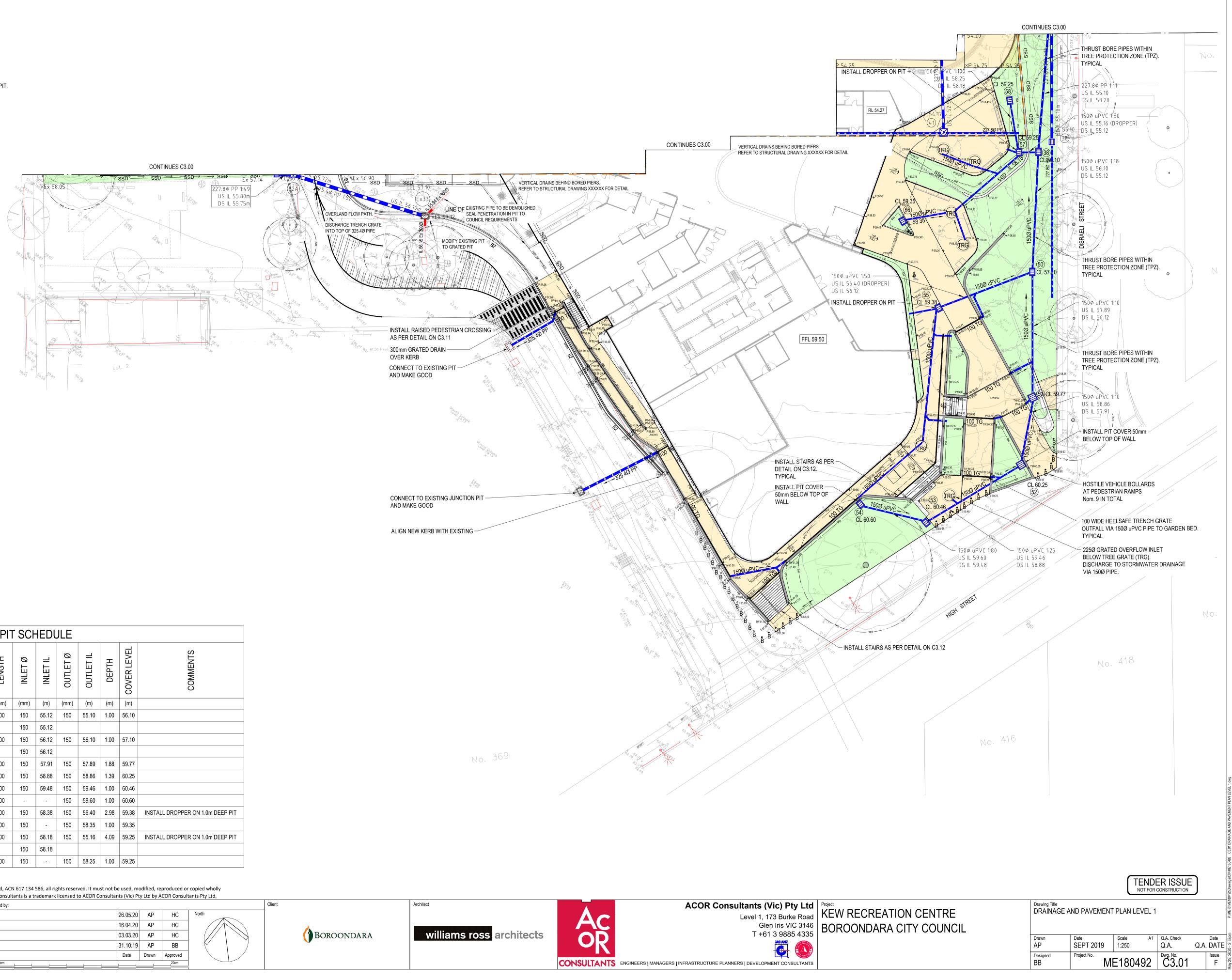


## PAVEMENT LEGEND

PEDESTRIAN CONCRETE PAVEMENT

#### GARDEN BED AREAS

PASSIVELY IRRIGATED BY ADJACENT PAVEMENT AND WATER COLLECTED IN TRENCH GRATES. PROVIDE SUBSOIL DRAINS ADJACENT TO ALL PAVEMENTS AND AT THE BASE OF ALL RETAINING WALLS TO BE CONNECTED TO NEAREST STORMWATER PIT. PROVIDE FLUSHOUT RISERS AT END OF LINE.



	PIT SCHEDULE										
PIT No.	TYPE	CLASS	WIDTH	LENGTH	INLET Ø	INLET IL	OUTLET Ø	OUTLET IL	DEPTH	COVER LEVEL	COMMENTS
			(mm)	(mm)	(mm)	(m)	(mm)	(m)	(m)	(m)	
38	GP	В	600	900	150	55.12	150	55.10	1.00	56.10	
					150	55.12					
50	GP	В	600	900	150	56.12	150	56.10	1.00	57.10	
					150	56.12					
51	GP	В	900	900	150	57.91	150	57.89	1.88	59.77	
52	GP	В	900	900	150	58.88	150	58.86	1.39	60.25	
53	GP	В	600	900	150	59.48	150	59.46	1.00	60.46	
54	GP	В	600	900	-	-	150	59.60	1.00	60.60	
55	GP	В	600	900	150	58.38	150	56.40	2.98	59.38	INSTALL DROPPER ON 1.0m DEEP PIT
56	GP	В	600	900	150	-	150	58.35	1.00	59.35	
57	GP	В	600	900	150	58.18	150	55.16	4.09	59.25	INSTALL DROPPER ON 1.0m DEEP PIT
					150	58.18					
58	GP	В	600	900	150	-	150	58.25	1.00	59.25	

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This drawing	g has been assigned an electronic code that signifies the drawing has been checked and approved by:					Cilent
F	90% PRE-TENDER ISSUE	26.05.20	AP	HC	North	
E	DESIGN DEVELOPMENT	16.04.20	AP	HC		
D	DESIGN DEVELOPMENT	03.03.20	AP	HC		() B
С	SCHEMATIC DESIGN	31.10.19	AP	BB		
Issue	Description	Date	Drawn	Approved		
-10	10cm 10cm 10cm			20cm		



	PIT SCHEDULE										
PIT NAME	PIT TYPE	PIT COVER CLASS	SETOUT COORDS	INTERNAL DIM [mm]	INLET Ø [mm]	INLET INV [m]	OUTLET Ø [mm]	OUTLET INV [m]	PIT COVER LEVEL	PIT DEPTH [m]	COMMENTS
L2	GRATED PIT	В	E: 327288.749 N: 5814279.916	W: 600 L: 600	227.8Ø PP 227.8Ø PP	52.17 51.90	227.8Ø PP	51.88	52.90	1.02	PIT IN LANDSCAPE
L3	GRATED PIT	В	E: 327272.645 N: 5814282.135	W: 600 L: 600	227.8Ø PP	52.27	227.8Ø PP	52.25	52.90	0.65	PIT IN LANDSCAPE
L4	GRATED PIT	В	E: 327269.707 N: 5814260.919	W: 600 L: 600			227.8ø PP	52.35	52.90	0.55	PIT IN LANDSCAPE
SPEL E.	-	_	E: 327348.036 N: 5814262.557		366.1Ø PP	52.00	366.1Ø PP	52.00	52.91	0.91	SPEL ECOCEPTOR. REFER TO DETAILS ON DRAWING C3.13
AKS PUMP	-	-	E: 327294.240 N: 5814264.848	W: ??? L: ???	546.5ø PP	51.14	546.5ø PP	52.45	53.60	1.16	-
L6	GRATED PIT	В	E: 327275.135 N: 5814278.887				227.8ø PP	53.30	53.90	0.60	PIT IN LANDSCAPE
L5	GRATED PIT	В	E: 327288.332 N: 5814277.011	W: 600 L: 600			227.8Ø PP	53.30	53.90	0.60	INSTALL DROPPER TO ACHIEVE IL AND RUN PIPE UNDER RET. WALL FOOTING
L7	GRATED PIT	В	E: 327271.193 N: 5814250.866	W: 600 L: 600			227.8Ø PP	53.20	54.10	0.90	PIT IN LANDSCAPE
SPEL E	-	_	E: 327279.186 N: 5814249.278	W: ??? L: ???	546.5Ø PP	52.48	455.7Ø PP 546.5Ø PP	51.87 52.48	54.33	2.46	SPEL ECOCEPTOR. REFER TO DETAILS ON DRAWING C3.13
Ex12	Ex PIT	_	E: 327197.437 N: 5814237.392	W: 900 L: 900	450Ø RCP	54.85			56.20	1.40	-
Ex33	Ex PIT	-	E: 327263.303 N: 5814190.648	W: 900 L: 900			325.4Ø PP	56.10	57.10	1.00	-
Ex30	Ex PIT	-	E: 327208.299 N: 5814218.492	W: 900 L: 900	325.4Ø PP	55.07	450Ø RCP	55.05	57.15	2.18	-
1	GRATED PIT	C	E: 327351.060 N: 5814264.991	W: 900 L: 900	366.1Ø PP	51.90			52.58	0.68	
1A	JUNCTION PIT	C	E: 327279.685 N: 5814252.145	W: 900 L: 900	455.7ø PP 546.5ø PP	51.76 52.45	546.5Ø PP	51.20	54.26	3.06	_
2	CONTROL PIT	D	E: 327347.235 N: 5814256.641	W: 900 L: 1200	546.5Ø PP 546.5Ø PP	52.14 52.14	366.1Ø PP	52.10	53.75	1.61	ANTISLIP HEELSAFE GRATE
2 A	JUNCTION PIT	C	E: 327276.895 N: 5814232.242	W: 900 L: 900	546.5Ø PP	52.64	546.5Ø PP	52.59	54.29	1.70	-
3	GRATED PIT	D	E: 327314.716 N: 5814261.051	W: 900 L: 900	546.5ø PP	52.32	546.5Ø PP	52.27	53.80	1.53	ANTISLIP HEELSAFE GRATE
ЗА	GRATED PIT	D	E: 327305.627 N: 5814228.268	W: 900 L: 1500			546.5Ø PP	52.82	54.00	1.18	ANTISLIP HEELSAFE GRATE
4	GRATED PIT	D	E: 327295.100 N: 5814270.831	W: 900 L: 900	546.5Ø PP 546.5Ø PP	52.45 52.42	546.5Ø PP	52.40	53.99	1.59	ANTISLIP HEELSAFE GRATE
5	GRATED PIT	D	E: 327279.372 N: 5814273.007	W: 900 L: 900	546.5ø PP	52.56	546.5Ø PP	52.51	54.04	1.53	ANTISLIP HEELSAFE GRATE
6	GRATED PIT	D	E: 327276.236 N: 5814250.329	W: 900 L: 900			546.5ø PP	52.65	54.43	1.78	ANTISLIP HEELSAFE GRATE
7	GRATED PIT	D	E: 327345.863 N: 5814246.761	W: 900 L: 900	546.5Ø PP 227.8Ø PP 546.5Ø PP	52.23 52.64 52.23	546.5ø PP	52.18	53.64	1.46	ANTISLIP HEELSAFE GRATE
8	GRATED PIT	D	E: 327343.376 N: 5814229.818	W: 900 L: 900	546.5Ø PP 546.5Ø PP	52.35 52.35	546.5Ø PP 227.8Ø PP	52.30 53.00	53.95	1.65	ANTISLIP HEELSAFE GRATE
9	GRATED PIT	D	E: 327340.992 N: 5814212.562	W: 900 L: 900	227.8Ø PP 227.8Ø PP	52.96 52.80	546.5Ø PP	52.41	53.90	1.49	ANTISLIP HEELSAFE GRATE
10	GRATED PIT	D	E: 327325.268 N: 5814214.737	W: 600 L: 900			227.8Ø PP	52.80	53.81	1.01	ANTISLIP HEELSAFE GRATE
11	GRATED PIT	D	E: 327312.693 N: 5814233.961	W: 900 L: 900	227.8Ø PP	52.80	546.5Ø PP	52.47	53.81	1.34	ANTISLIP HEELSAFE GRATE
13	JUNCTION PIT	C	E: 327209.233 N: 5814231.073	W: 900 L: 900	450Ø RCP	54.98	450Ø RCP	54.95	56.25	1.30	-
14	GRATED PIT	D	E: 327276.771 N: 5814239.211	W: 900 L: 900	227.8Ø PP 227.8Ø PP	53.30 53.27	227.8Ø PP	53.25	54.42	1.76	ANTISLIP HEELSAFE GRATE
15	GRATED PIT	C	E: 327267.492 N: 5814240.497	W: 900 L: 900	227.8Ø PP	53.45	227.8Ø PP	53.40	54.45	1.15	ANTISLIP HEELSAFE GRATE
16	GRATED PIT	D	E: 327254.339 N: 5814242.316	W: 900 L: 900	227.8Ø PP	53.60	227.8Ø PP	53.55	54.50	1.00	ANTISLIP HEELSAFE GRATE
17	GRATED PIT	D	E: 327244.002 N: 5814243.743	W: 900 L: 900	227.8Ø PP	53.73	227.8Ø PP	53.68	54.60	0.92	ANTISLIP HEELSAFE GRATE
18	GRATED PIT	D	E: 327228.980 N: 5814245.790	W: 900 L: 900			227.8Ø PP	53.85	55.00	1.15	ANTISLIP HEELSAFE GRATE
19	GRATED PIT	D	E: 327274.449 N: 5814221.772	W: 600 L: 900	227.8Ø PP	53.38	227.8ø PP	53.36	54.39	1.06	ANTISLIP HEELSAFE GRATE

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				North	
В	90% PRE-TENDER ISSUE 26.05.2	0 AP	НС	1	BOF
А	DESIGN DEVELOPMENT 12.03.2	0 AP	HC		
Issue	Description Date	Drawn	Approved	-	
-1 _0	10cm 10cm	, 	20cm	1	

						PIT SCHEE	DULE				
PIT NAME	PIT TYPE	PIT COVER CLASS	SETOUT COORDS	INTERNAL DIM [mm]	INLET Ø [mm]	INLET INV [m]	OUTLET Ø [mm]	OUTLET INV [m]	PIT COVER LEVEL	PIT DEPTH [m]	COMMENTS
20	GRATED PIT	D	E: 327251.776 N: 5814224.908	W: 900 L: 900	227.8ø PP 227.8ø PP	53.60 53.60	227.8ø PP	53.58	54.80	1.22	ANTISLIP HEELSAFE GRATE
21	GRATED PIT	D	E: 327236.087 N: 5814227.078	W: 900 L: 900	227.8ø PP	53.80	227.8Ø PP	53.78	55.19	1.41	ANTISLIP HEELSAFE GRATE
22	GRATED PIT	D	E: 327225.302 N: 5814228.570	W: 900 L: 900			227.8Ø PP	53.93	55.54	1.61	ANTISLIP HEELSAFE GRATE
23	GRATED PIT	D	E: 327249.488 N: 5814207.876	W: 900 L: 900	227.8Ø PP 227.8Ø PP	54.90 55.06	227.8Ø PP	54.85	56.15	1.30	ANTISLIP HEELSAFE GRATE
24	GRATED PIT	D	E: 327236.452 N: 5814209.678	W: 900 L: 900	227.8ø PP	55.05	227.8Ø PP	55.00	56.20	1.00	ANTISLIP HEELSAFE GRATE
25	GRATED PIT	D	E: 327225.499 N: 5814211.193	W: 900 L: 900			227.8Ø PP	55.13	56.35	0.96	ANTISLIP HEELSAFE GRATE
27	GRATED PIT	D	E: 327259.905 N: 5814206.499	W: 600 L: 900	227.8ø PP	55.22	227.8Ø PP	55.20	56.15	0.95	ANTISLIP HEELSAFE GRATE
28	GRATED PIT	D	E: 327278.362 N: 5814203.946	W: 600 L: 600	227.8Ø PP	55.47	227.8Ø PP	55.45	56.30	0.85	ANTISLIP HEELSAFE GRATE
31	JUNCTION PIT	В	E: 327211.684 N: 5814214.297	W: 900 L: 900	325.4Ø PP	55.12	325.4Ø PP	55.10	57.40	2.30	PIT IN LANDSCAPE
32	JUNCTION PIT	D	E: 327246.804 N: 5814209.396	W: 900 L: 900	325.4Ø PP	55.33	325.4Ø PP	55.30	56.12	0.84	-
32A	JUNCTION PIT	D	E: 327245.376 N: 5814199.124	W: 600 L: 600	325.4Ø PP 227.8Ø PP	55.72 55.75	325.4Ø PP	55.70	56.50	0.80	-
32B	GRATED PIT	В	E: 327242.938 N: 5814199.456	W: 600 L: 600			227.8Ø PP	55.80	56.50	0.70	PIT IN LANDSCAPE
34	GRATED PIT	D	E: 327353.639 N: 5814241.616	W: 600 L: 900	227.8ø PP	52.72	227.8Ø PP	52.70	53.80	1.11	ANTISLIP HEELSAFE GRATE
35	GRATED PIT	В	E: 327359.884 N: 5814231.738	W: 600 L: 900	227.8Ø PP	52.80	227.8Ø PP	52.77	53.90	1.71	PIT IN LANDSCAPE
36	GRATED PIT	В	E: 327358.726 N: 5814223.364	W: 600 L: 900	227.8ø PP	53.02	227.8Ø PP	53.00	54.15	1.15	PIT IN LANDSCAPE
36B	GRATED PIT	D	E: 327351.540 N: 5814217.738	W: 600 L: 600			227.8Ø PP	53.15	54.32	1.17	-
36A	JUNCTION PIT	D	E: 327357.779 N: 5814216.797	W: 600 L: 600	227.8Ø PP 227.8Ø PP	53.10 53.10	227.8Ø PP	53.08	54.50	1.42	-
37	GRATED PIT	В	E: 327356.878 N: 5814210.331	W: 900 L: 900	227.8ø PP	53.20	227.8Ø PP	53.16	55.70	2.54	PIT IN LANDSCAPE
38	GRATED PIT	В	E: 327353.994 N: 5814188.909	W: 900 L: 900			227.8Ø PP	55.10	56.10	1.00	PIT IN LANDSCAPE
39	GRATED PIT	D	E: 327316.398 N: 5814250.777	W: 900 L: 900			546.5Ø PP	52.35	53.79	1.44	ANTISLIP HEELSAFE GRATE
41	JUNCTION PIT	C	E: 327338.766 N: 5814192.372	W: 900 L: 900			227.8Ø PP	52.90	54.17	1.27	-

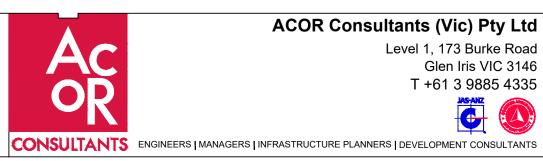
NOTE: FOR PITS GREATER THAN 1.20m, PROVIDE 24mm GALVANIZED HOT DIPPED STEP IRONS OR APPROVED EQUIVALENT AT 300mm CTS.

ROONDARA

Client

williams ross architects

Architect





TENDER ISSUE

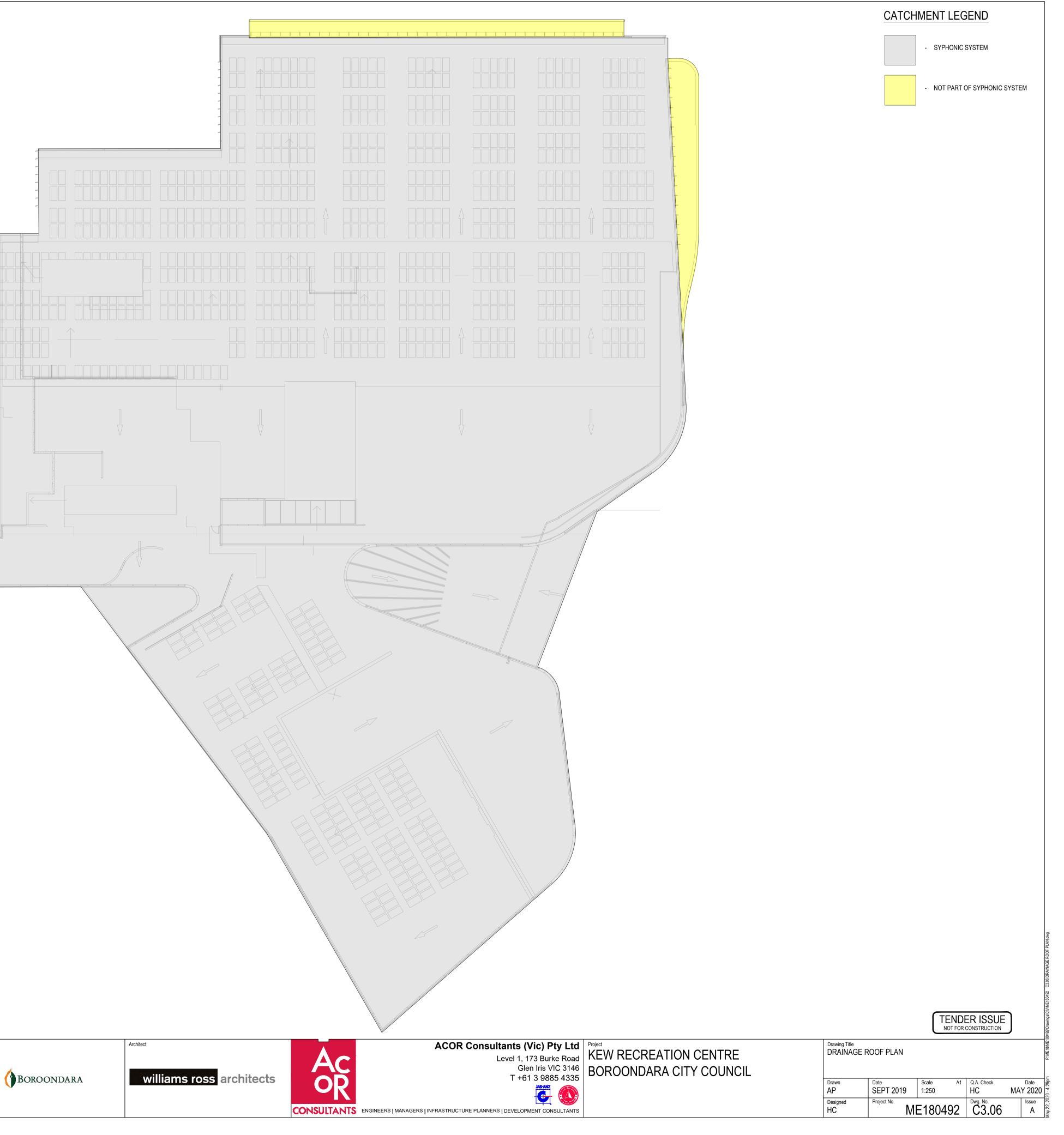
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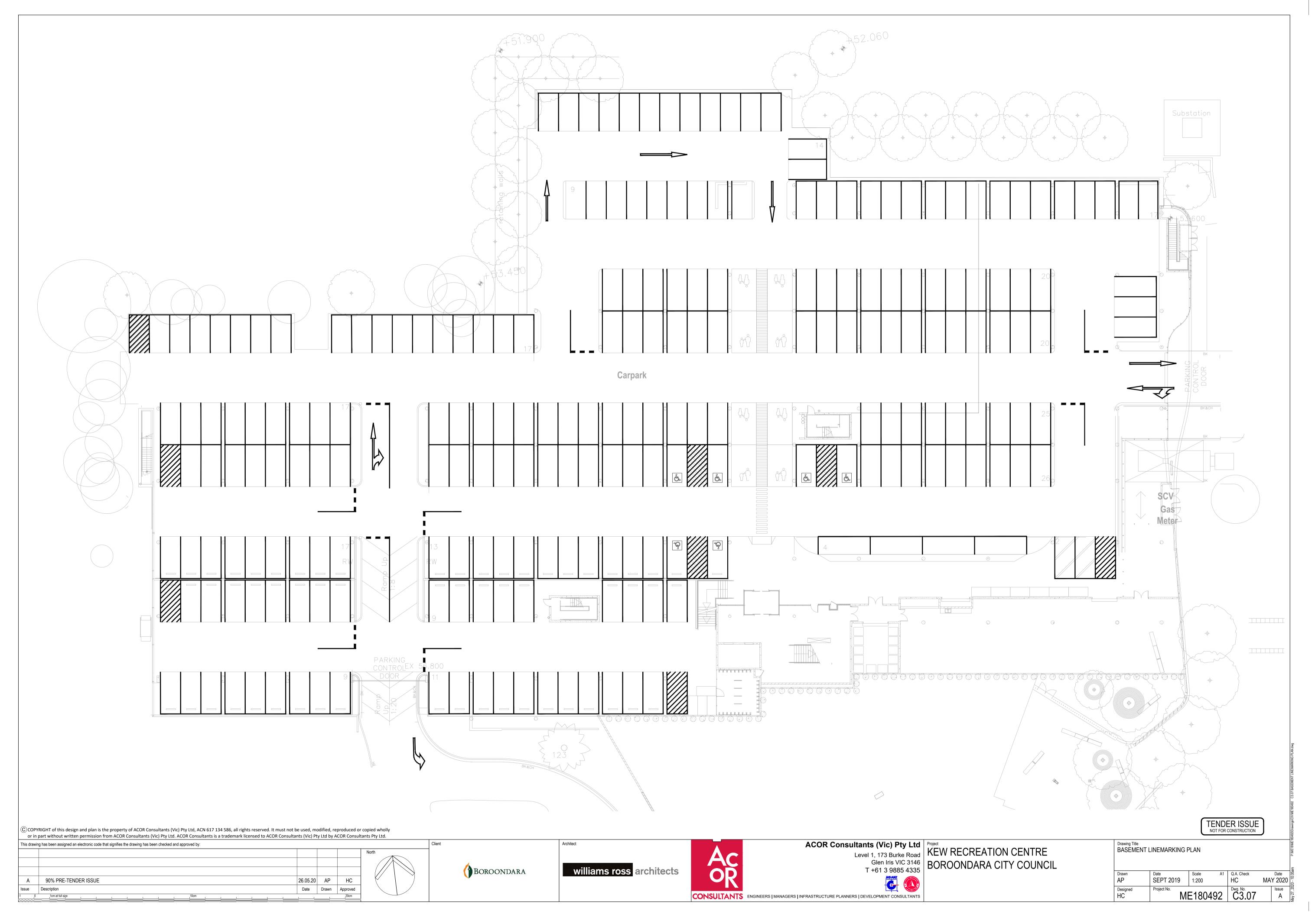
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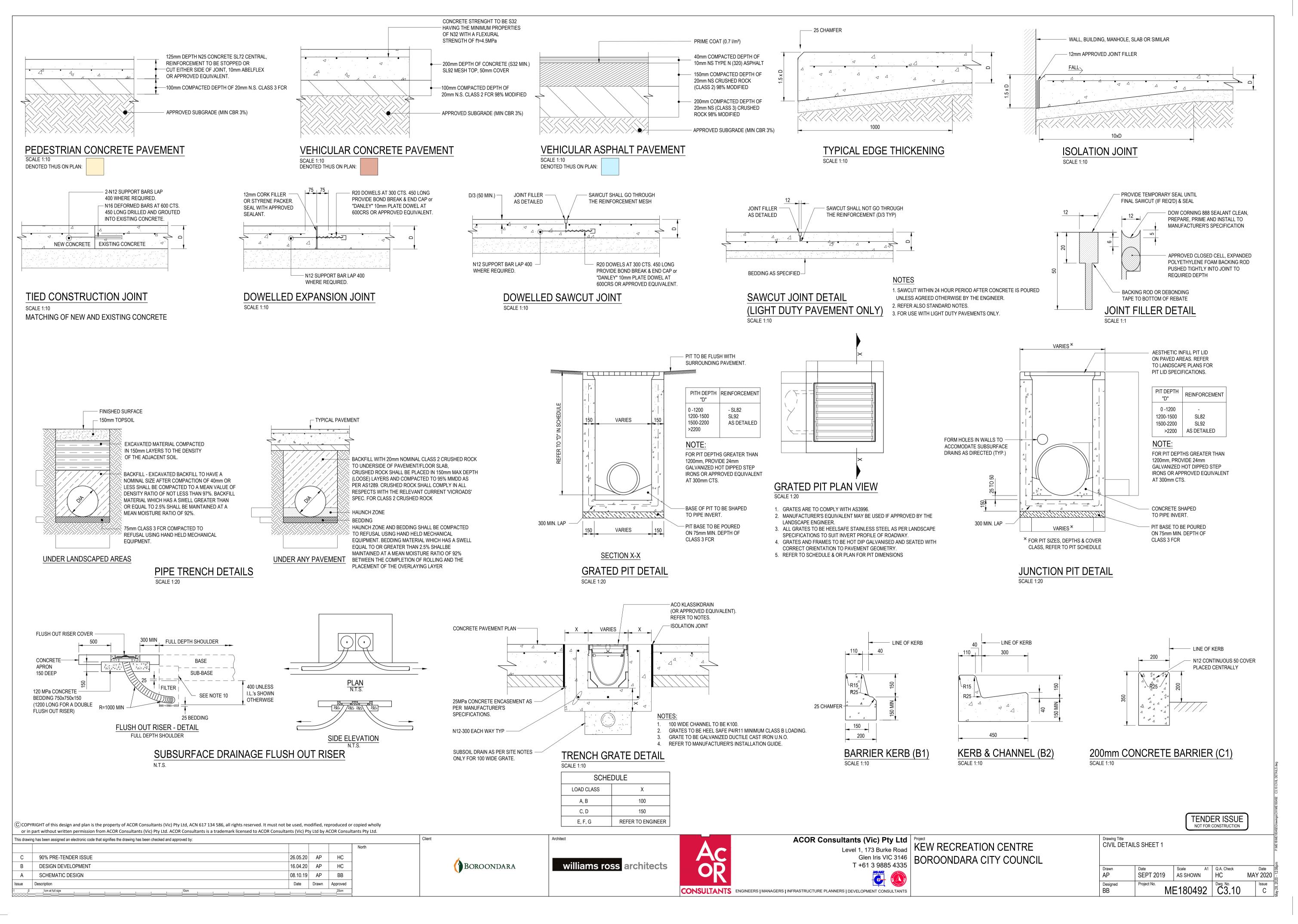
				North	
А	90% PRE-TENDER ISSUE 26.05.20	AP	HC		
Issue	Description Date	Drawn	Approved		
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Client

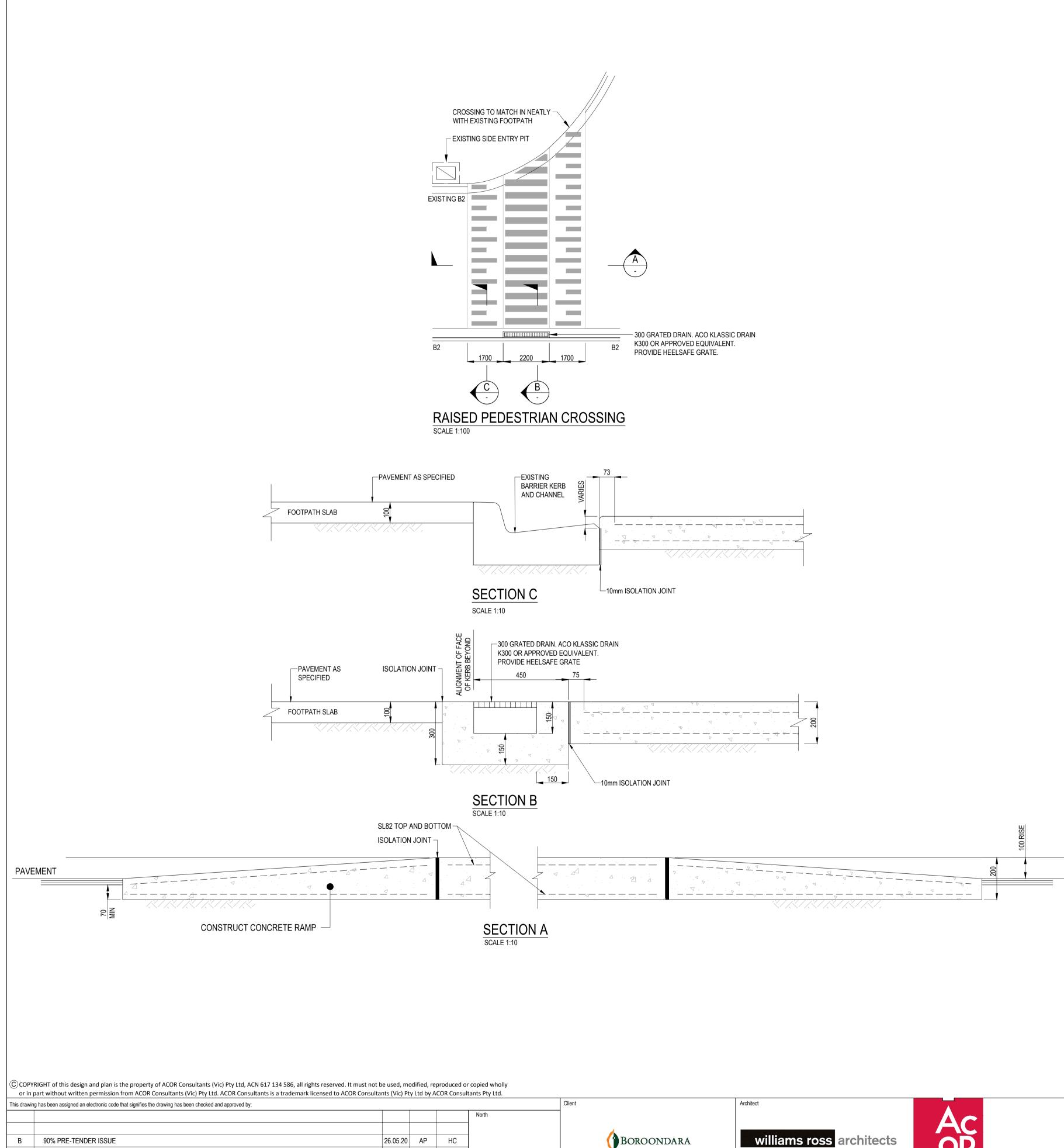








202



16.04.20 AP HC

Date Drawn Approved

А

Issue Description

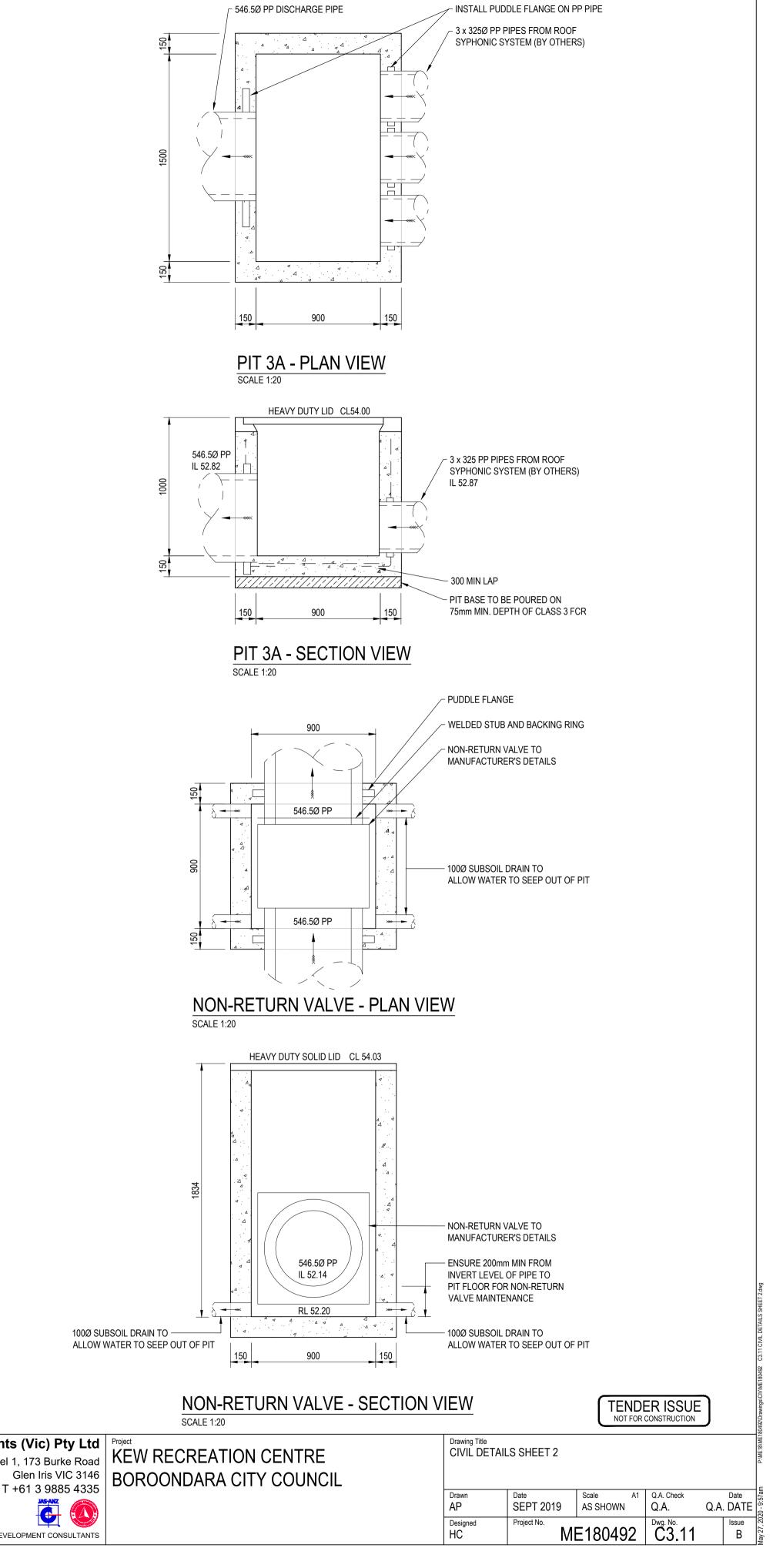
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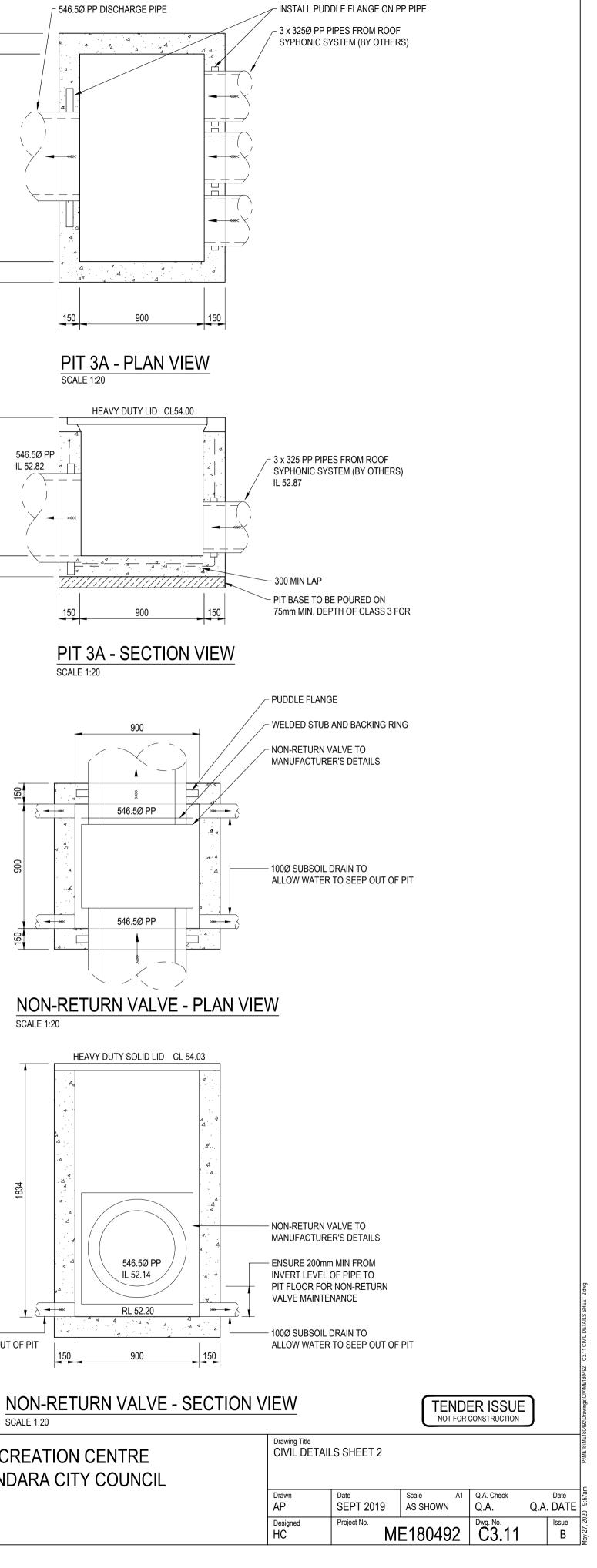
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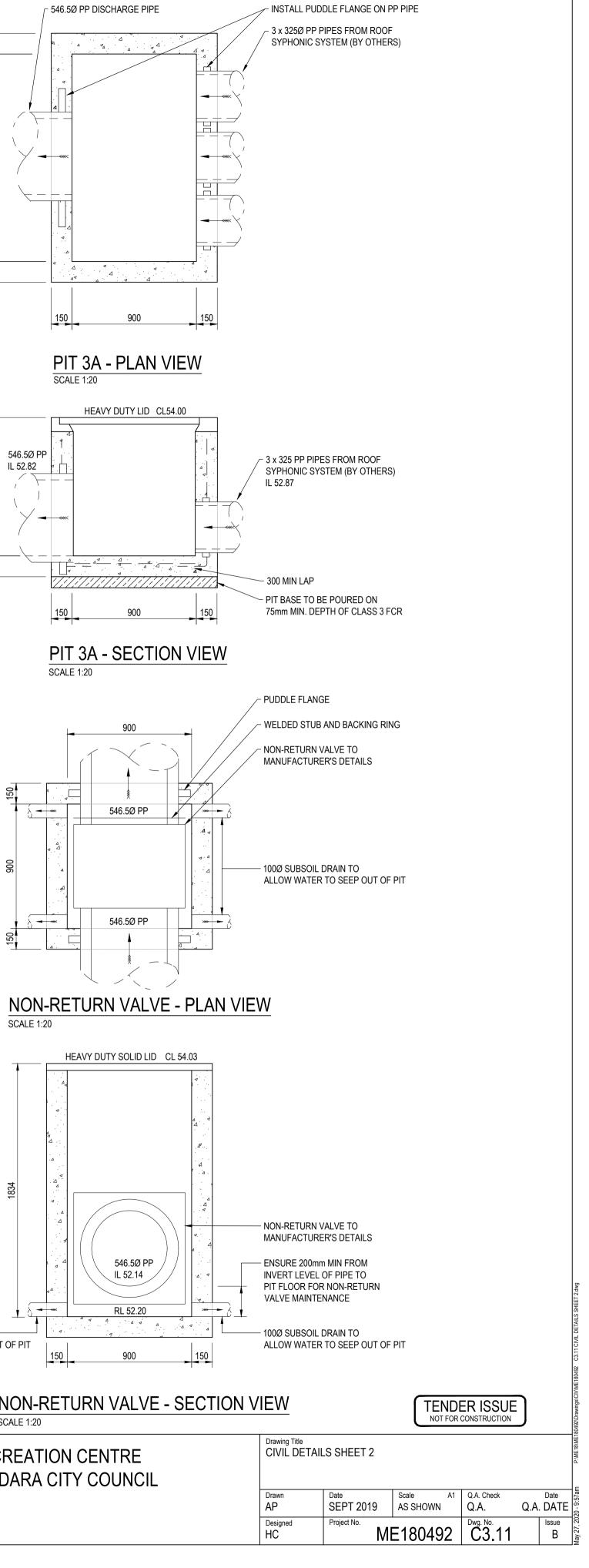


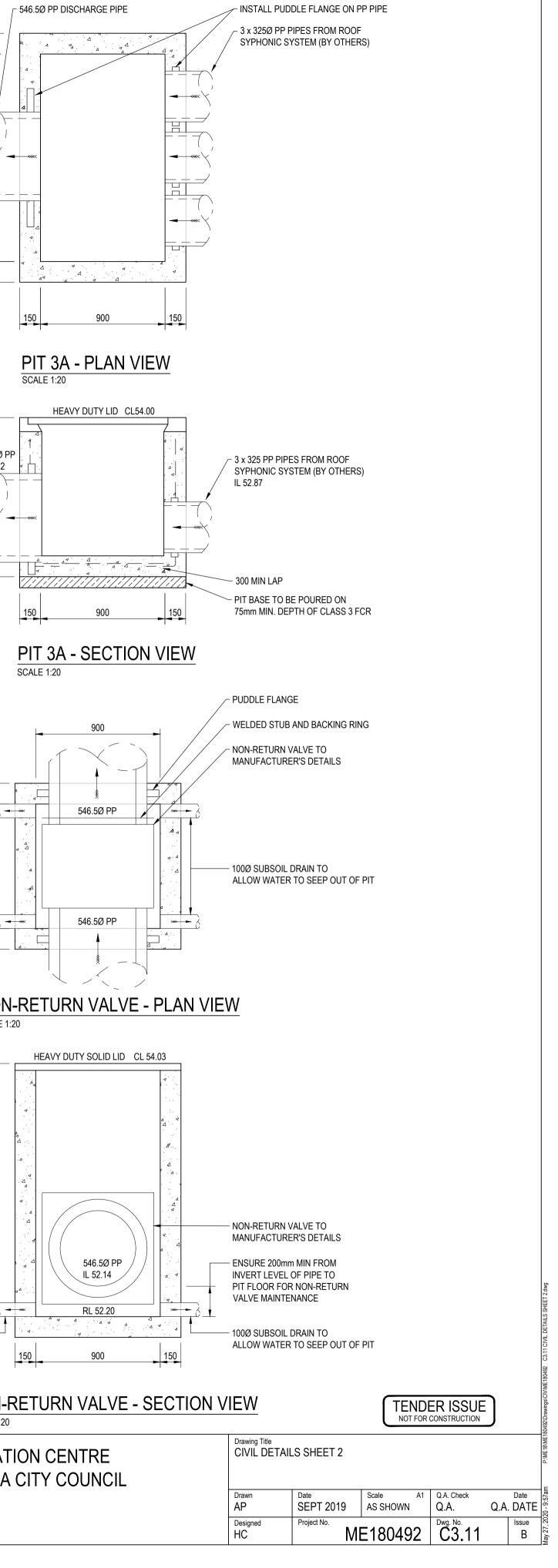
CONSULTANTS ENGINEERS | MANAGERS | INFRASTRUCTURE PLANNERS | DEVELOPMENT CONSULTANTS

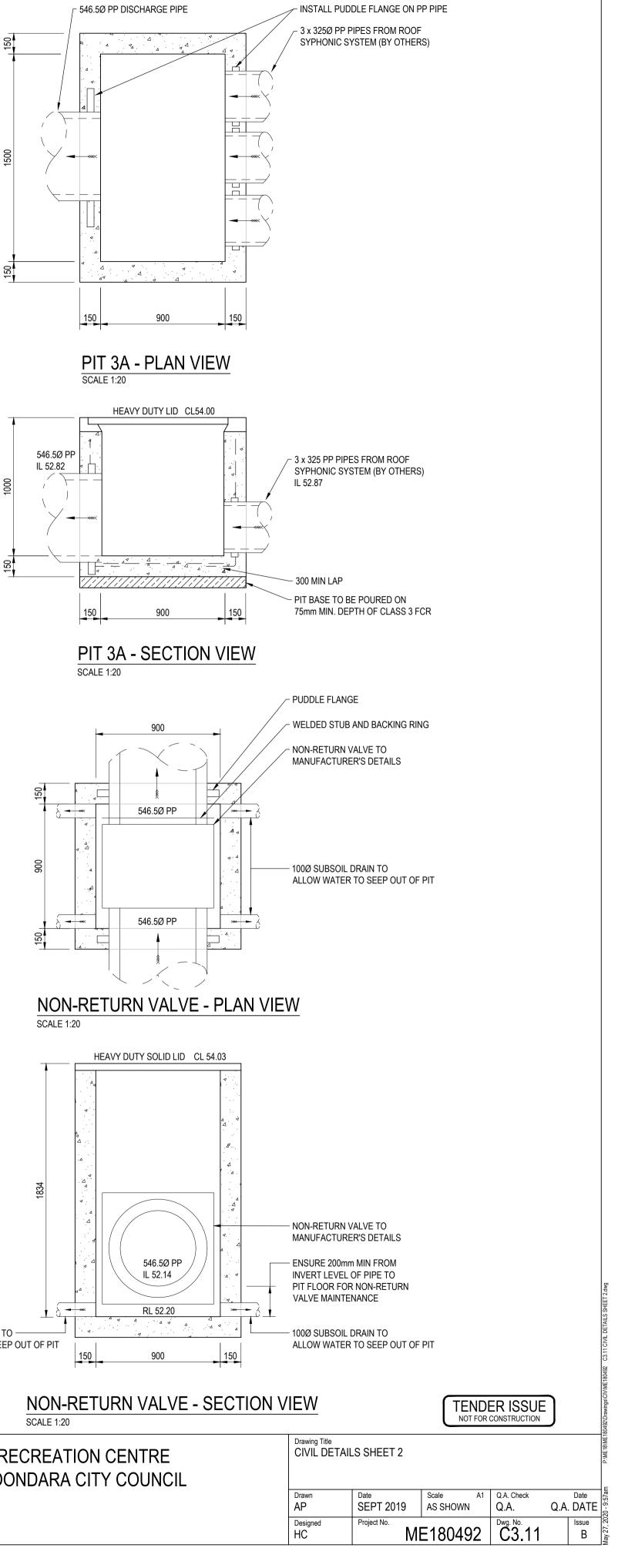
williams ross architects

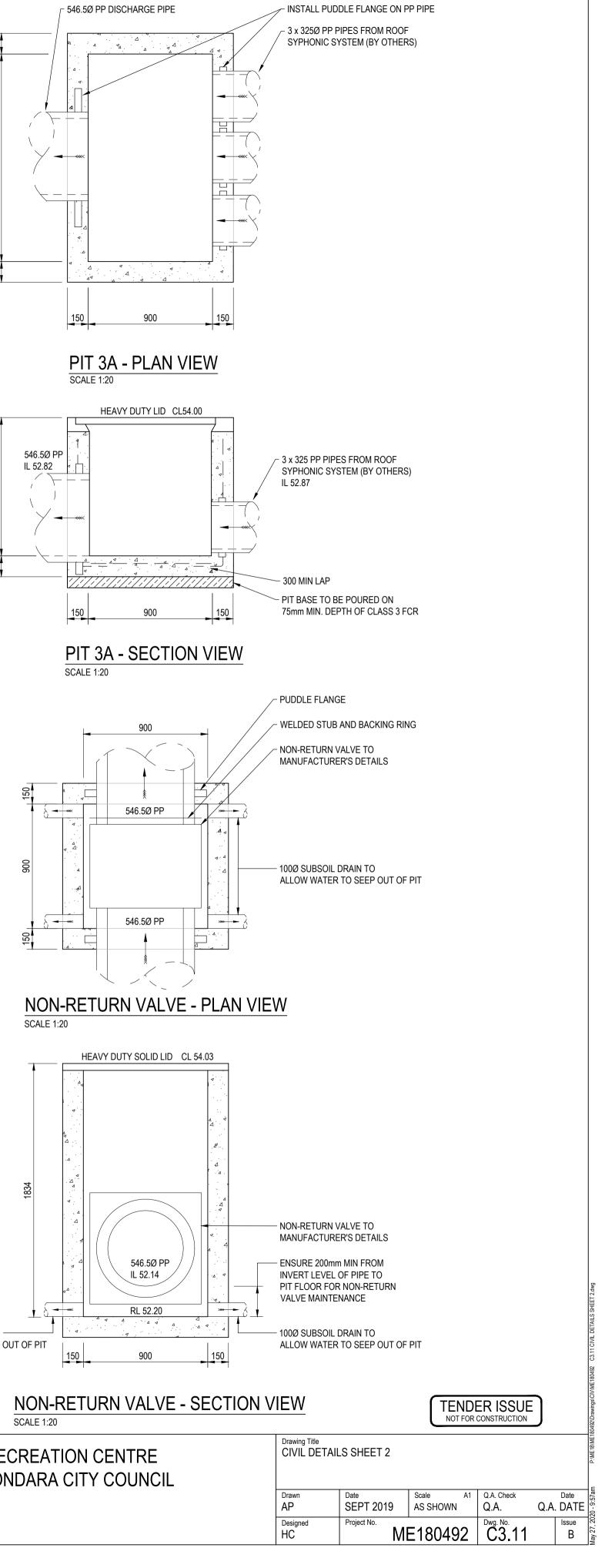




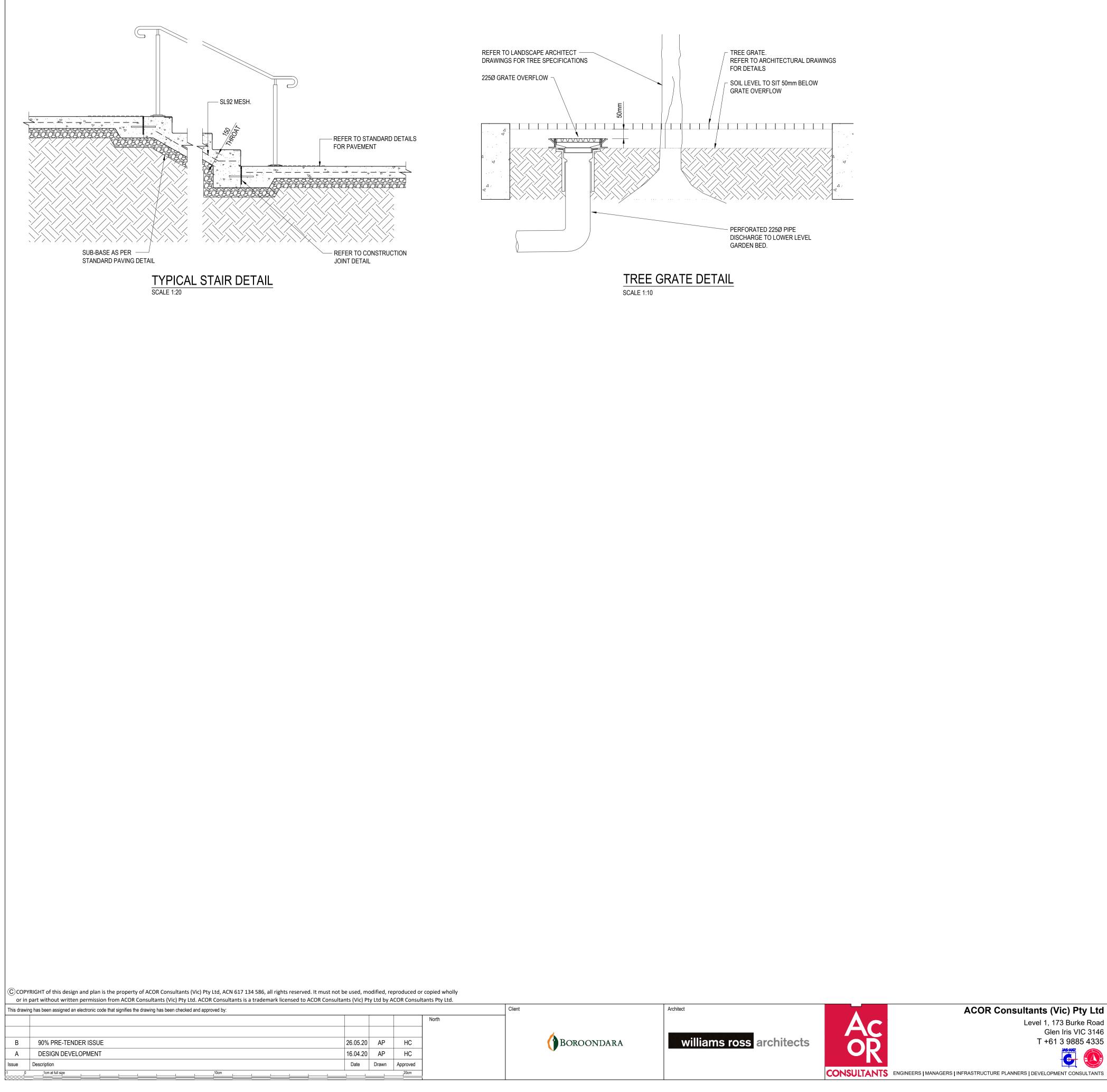










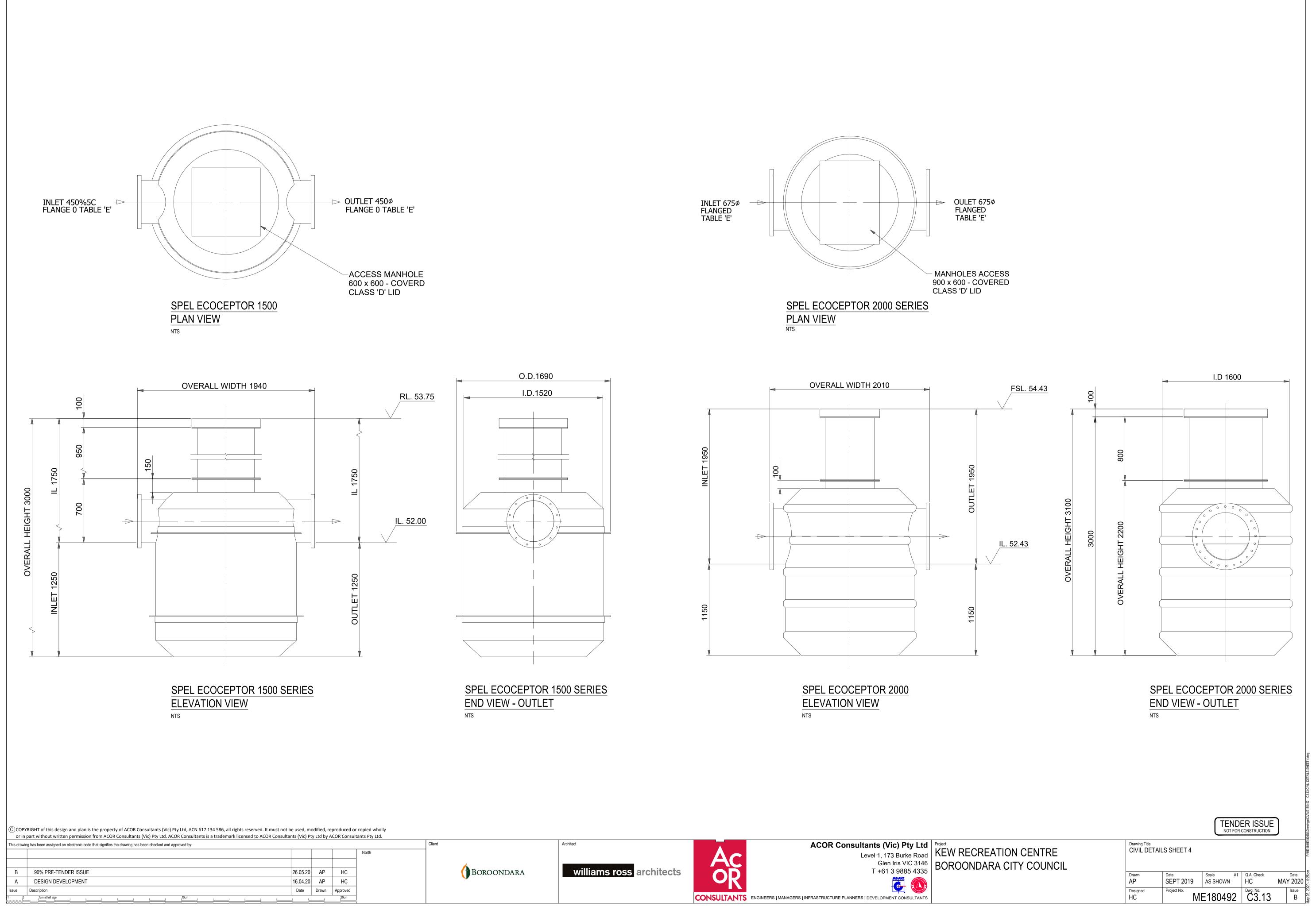


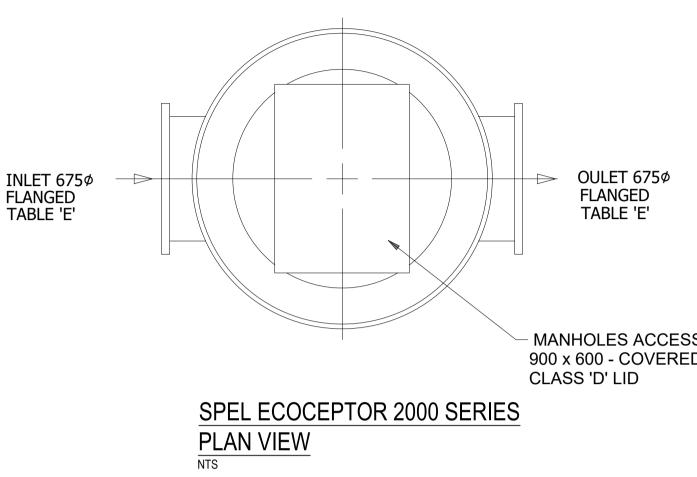
ACOR Consultants (Vic) Pty Ltd Level 1, 173 Burke Road Glen Iris VIC 3146 T +61 3 9885 4335 AS-ANZ

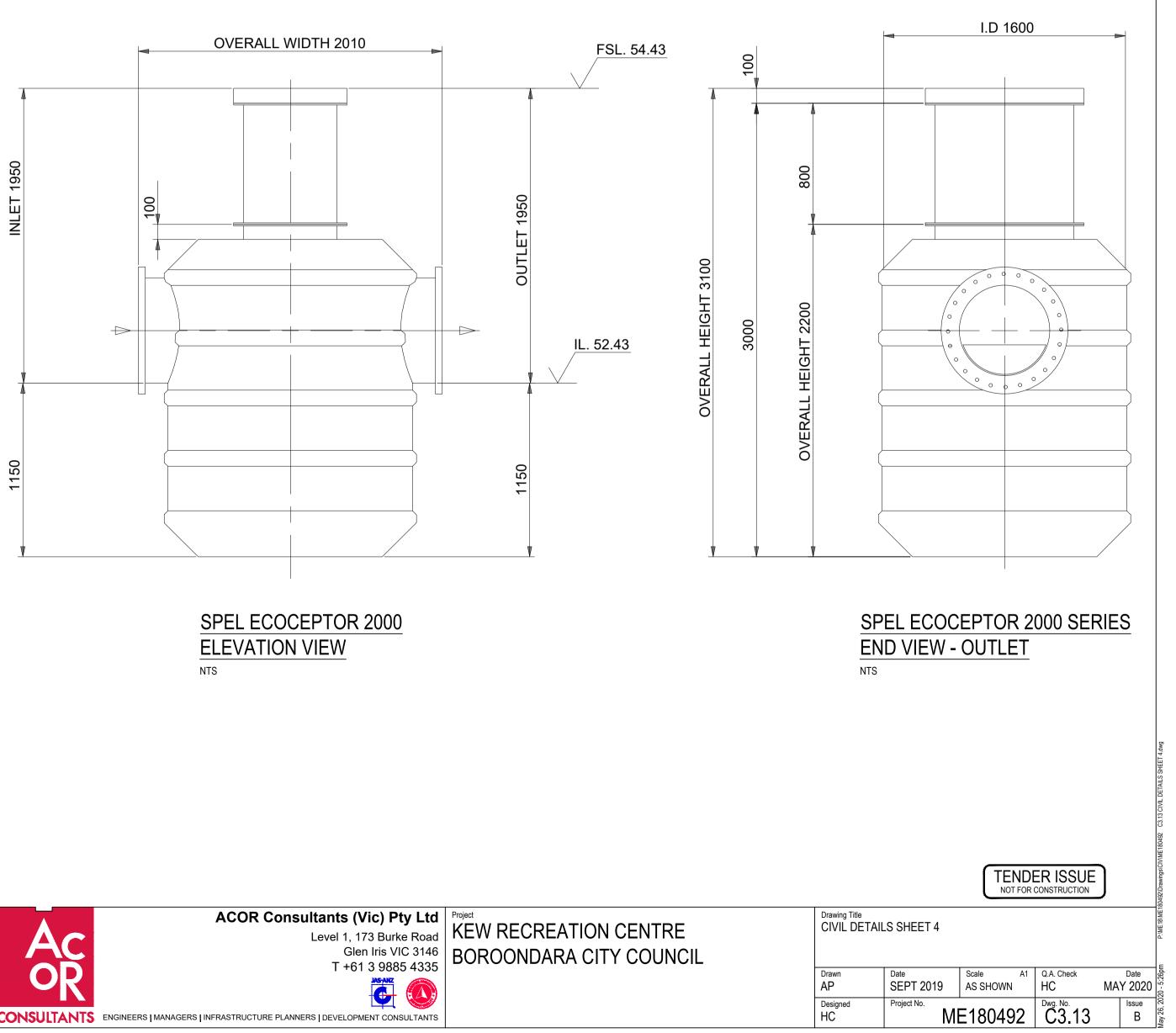
26/07/20	21

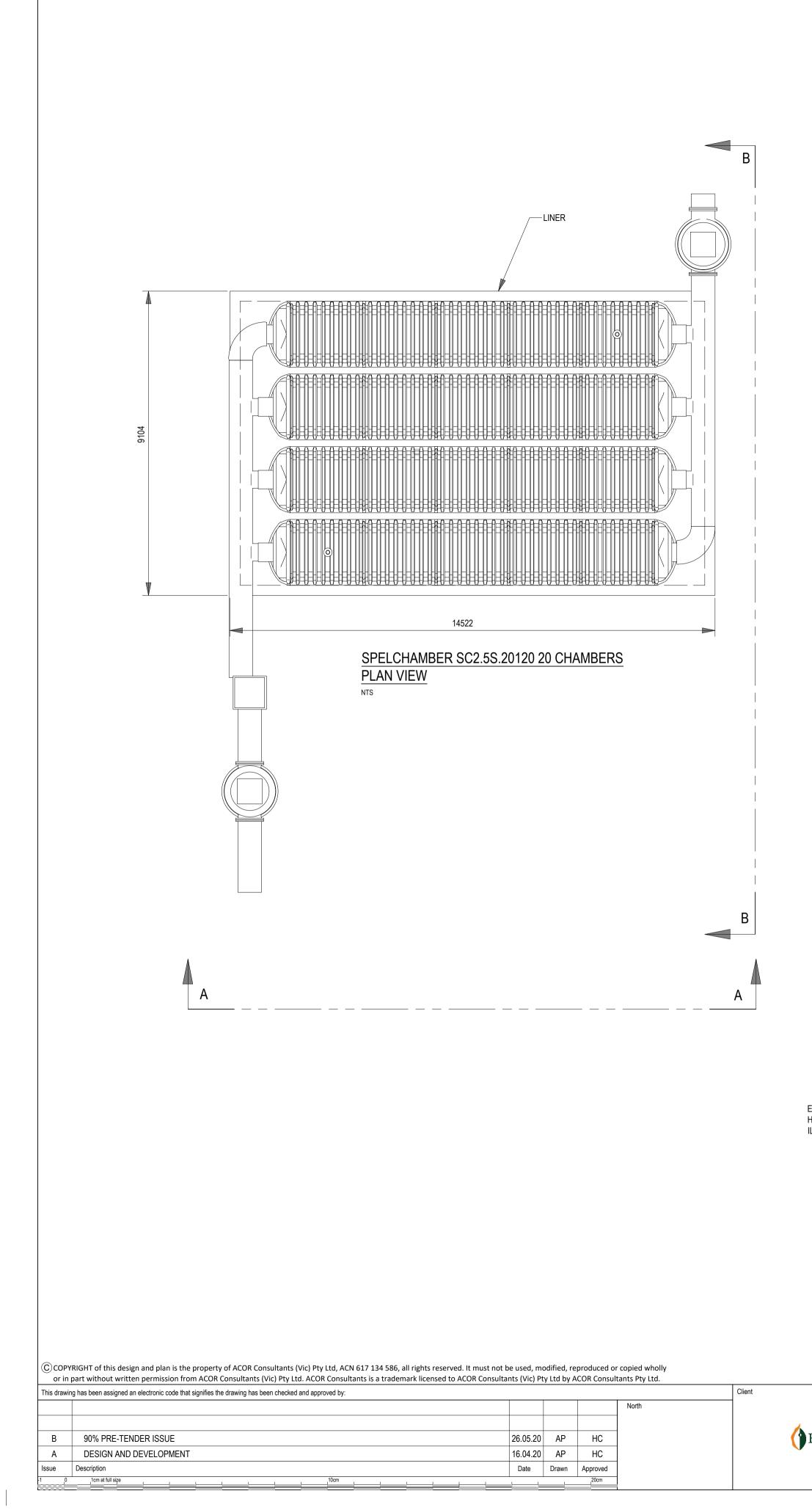
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ON CENTRE	Drawing Title CIVIL DET	AILS SHEET 3			P:WE 18/WE1
	Drawn AP	Date SEPT 2019	Scale A1 AS SHOWN	Q.A. Check Q.A.	Date Date Q.A. DATE
	Designed AP	Project No.	Issue B May 26, 202		

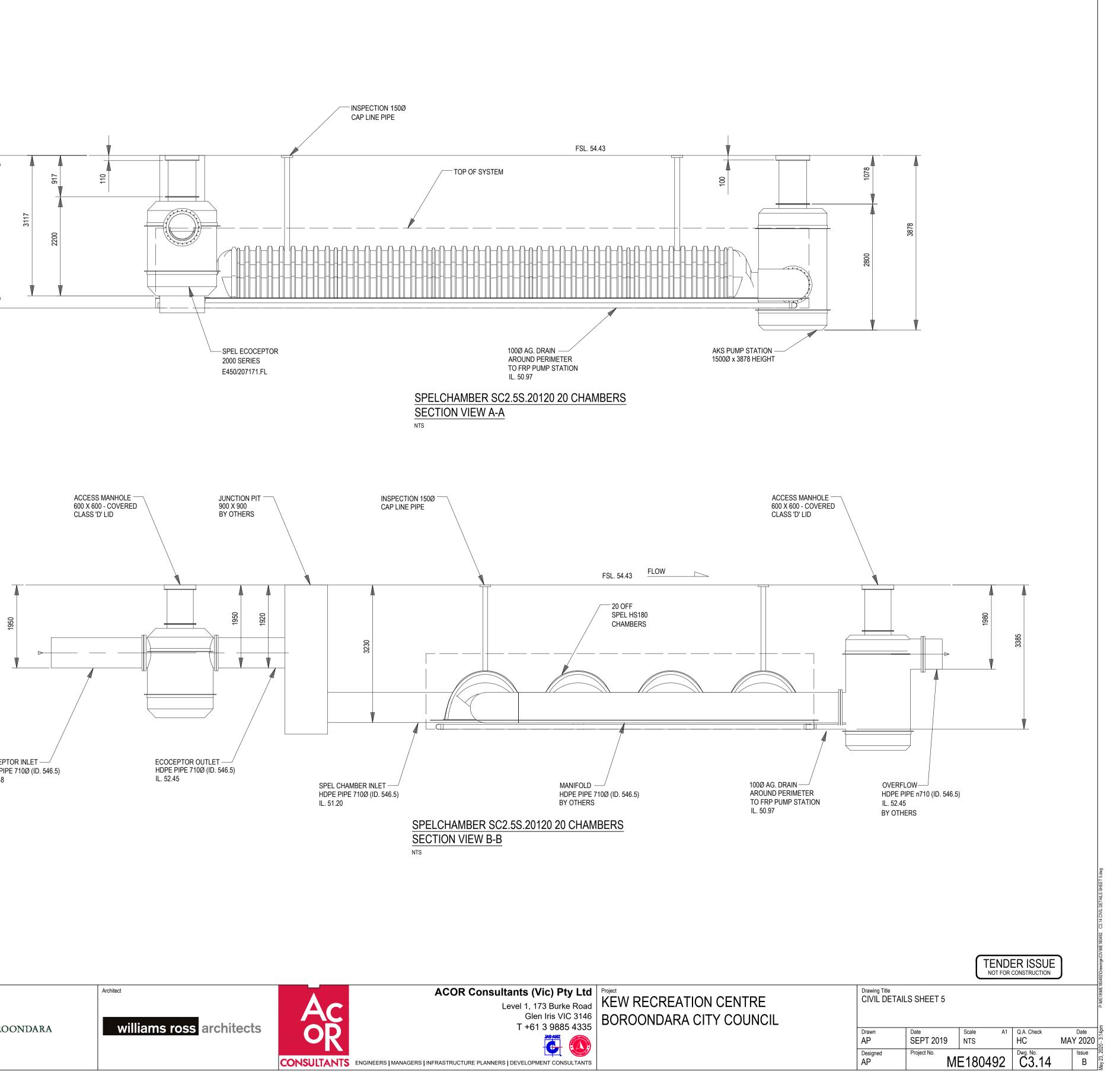
TENDER ISSUE

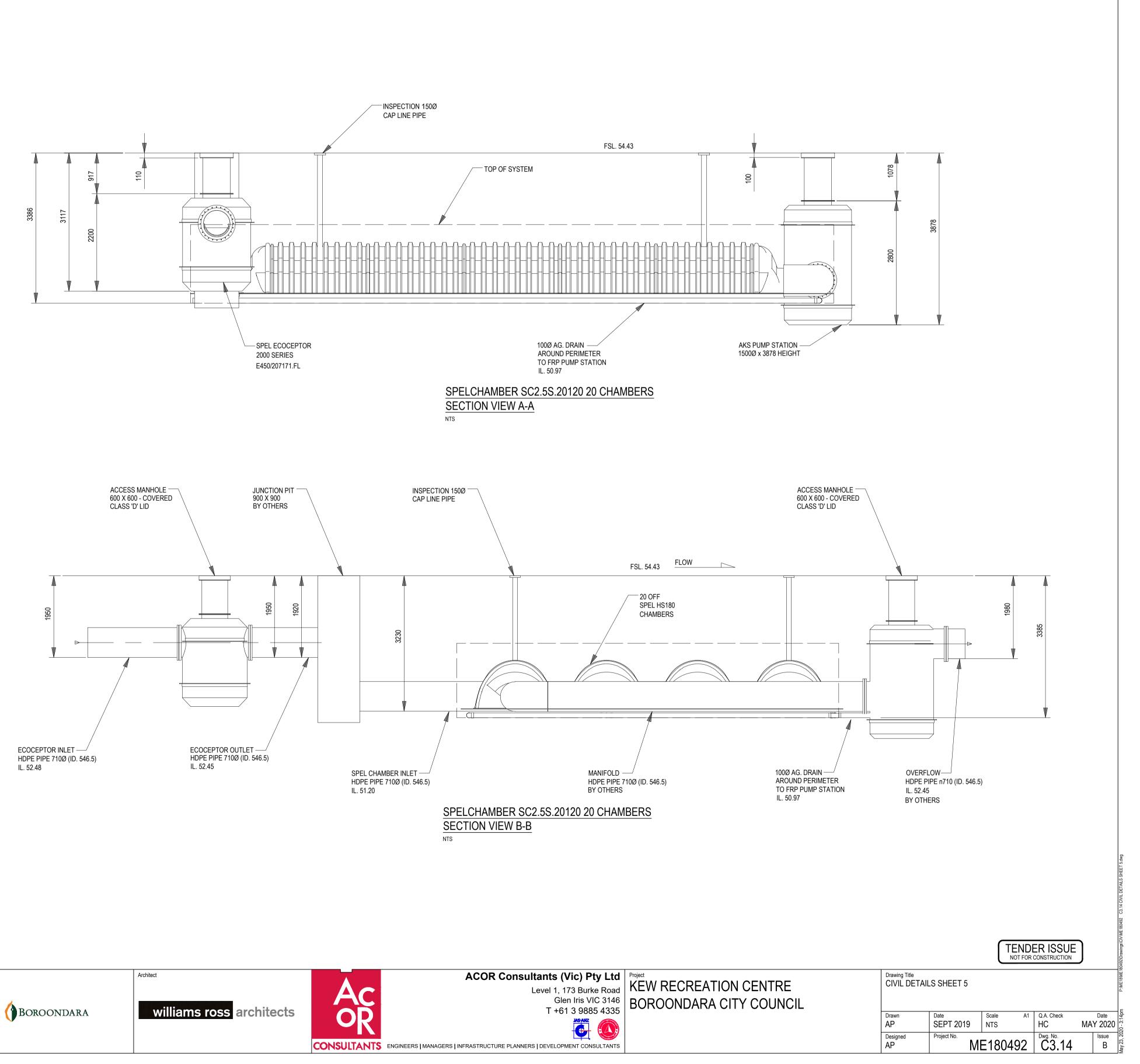


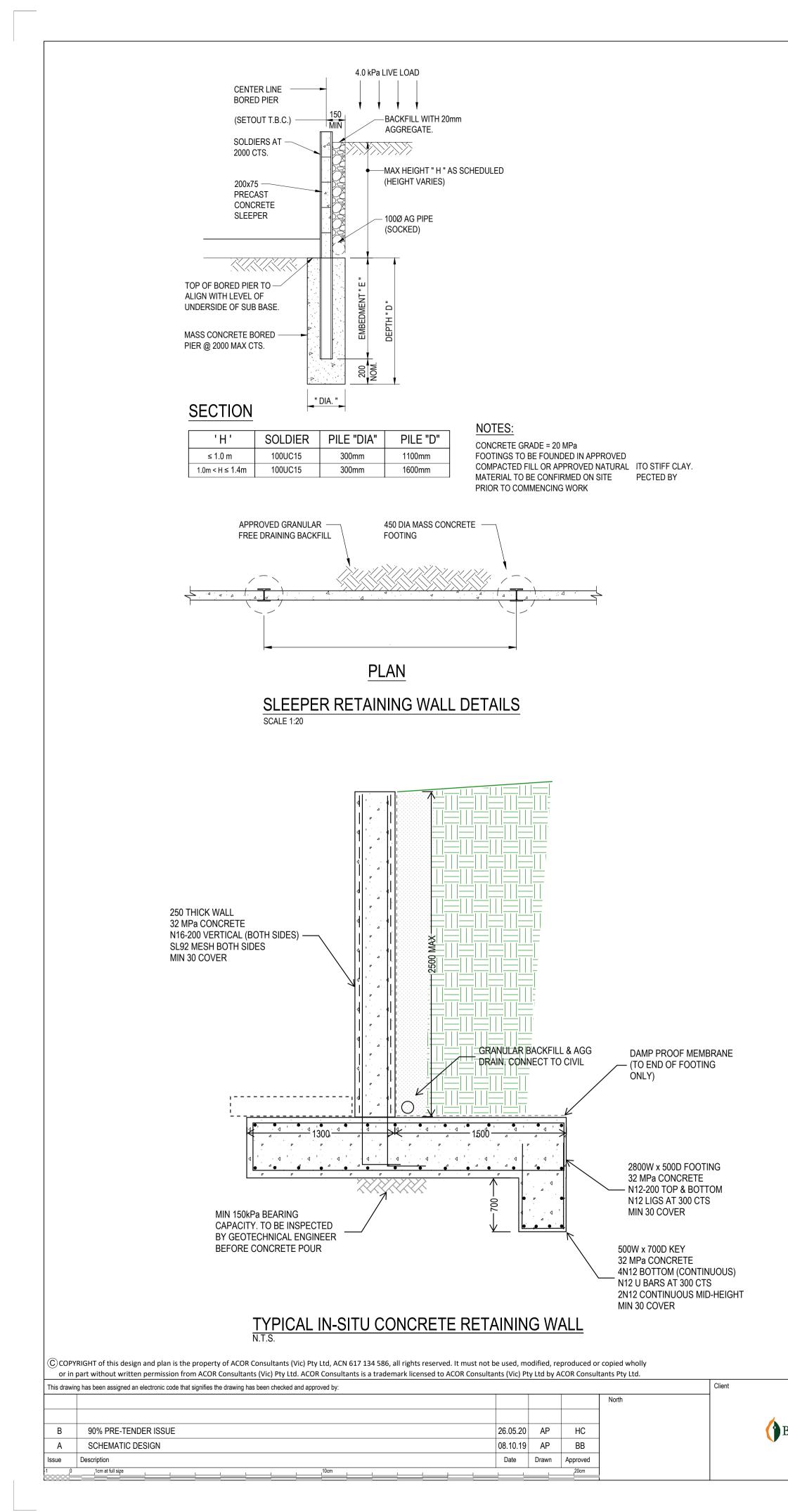


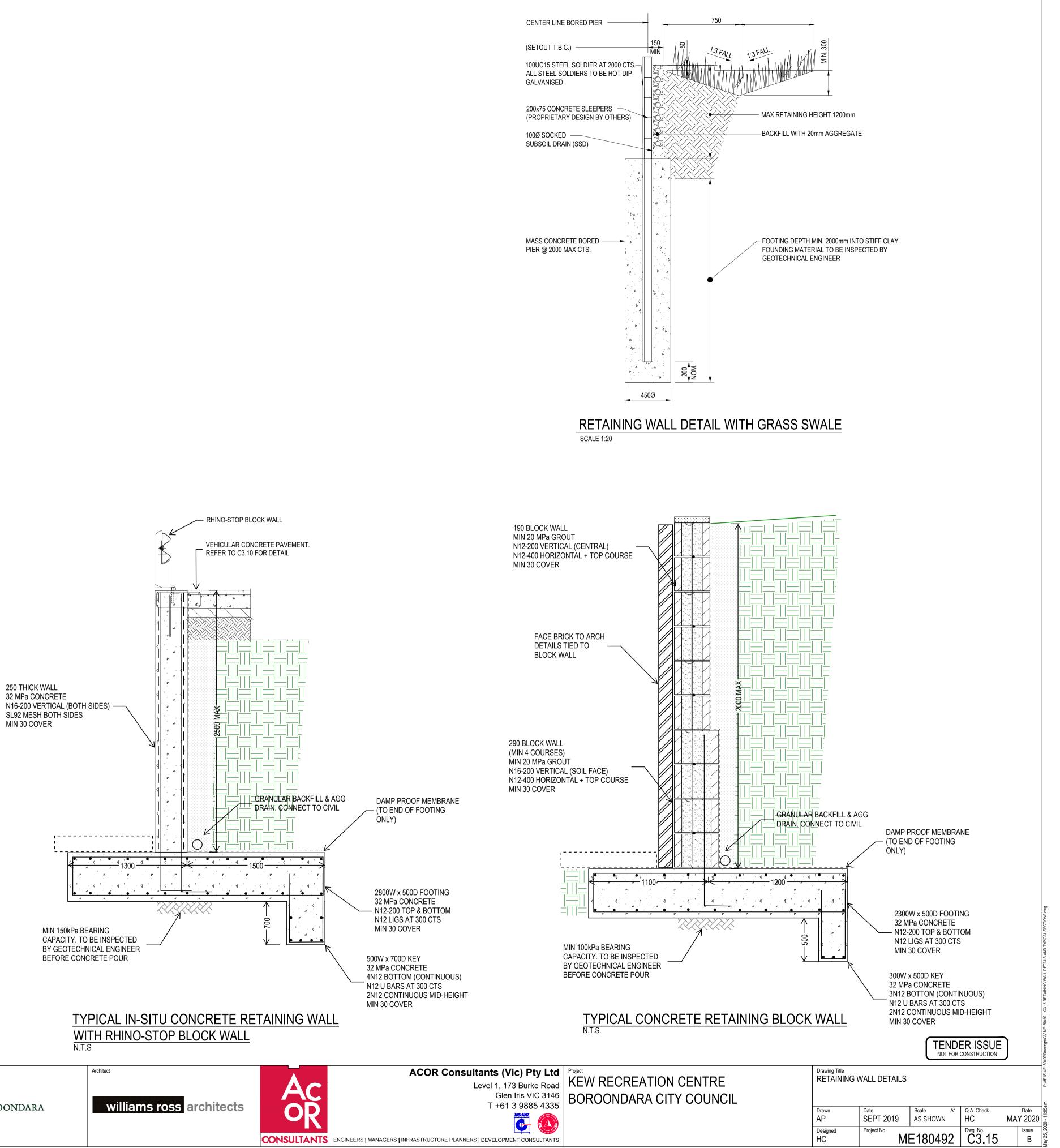


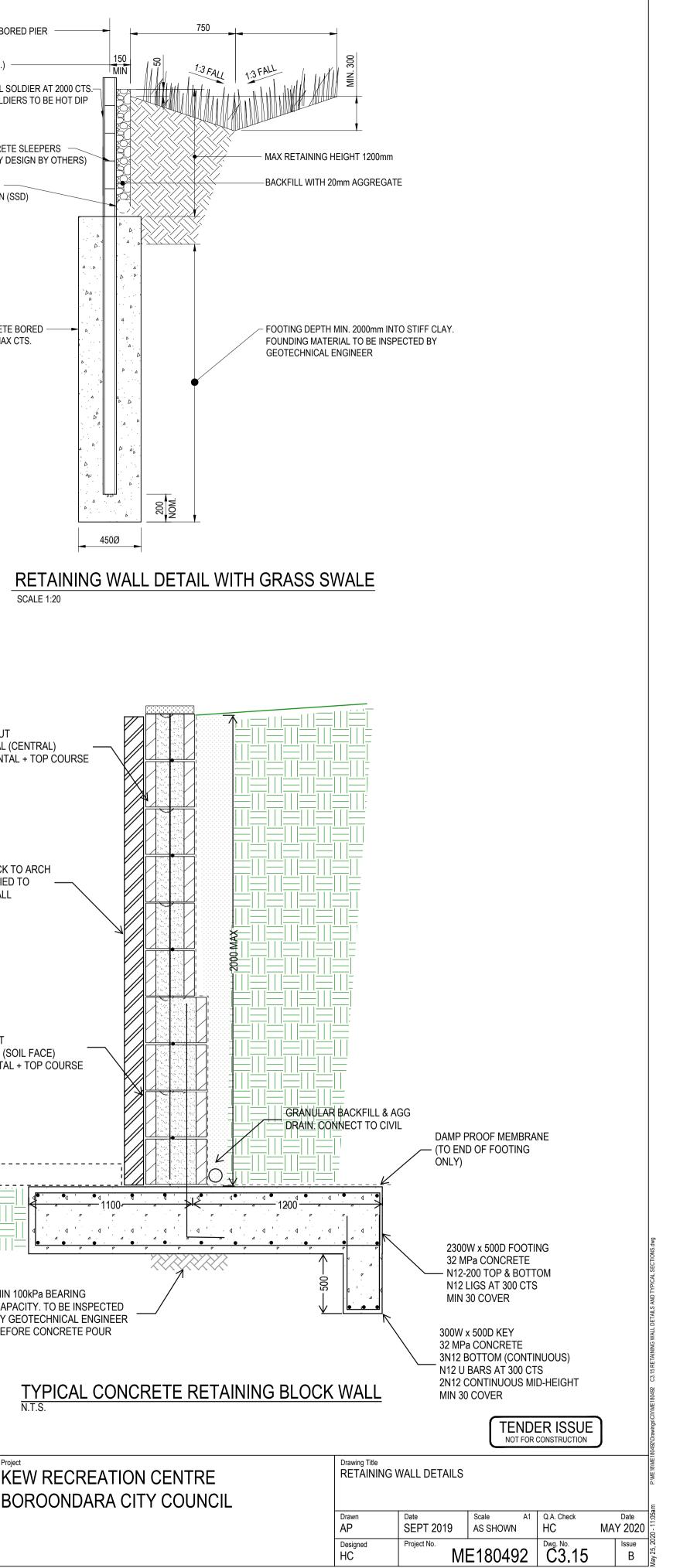


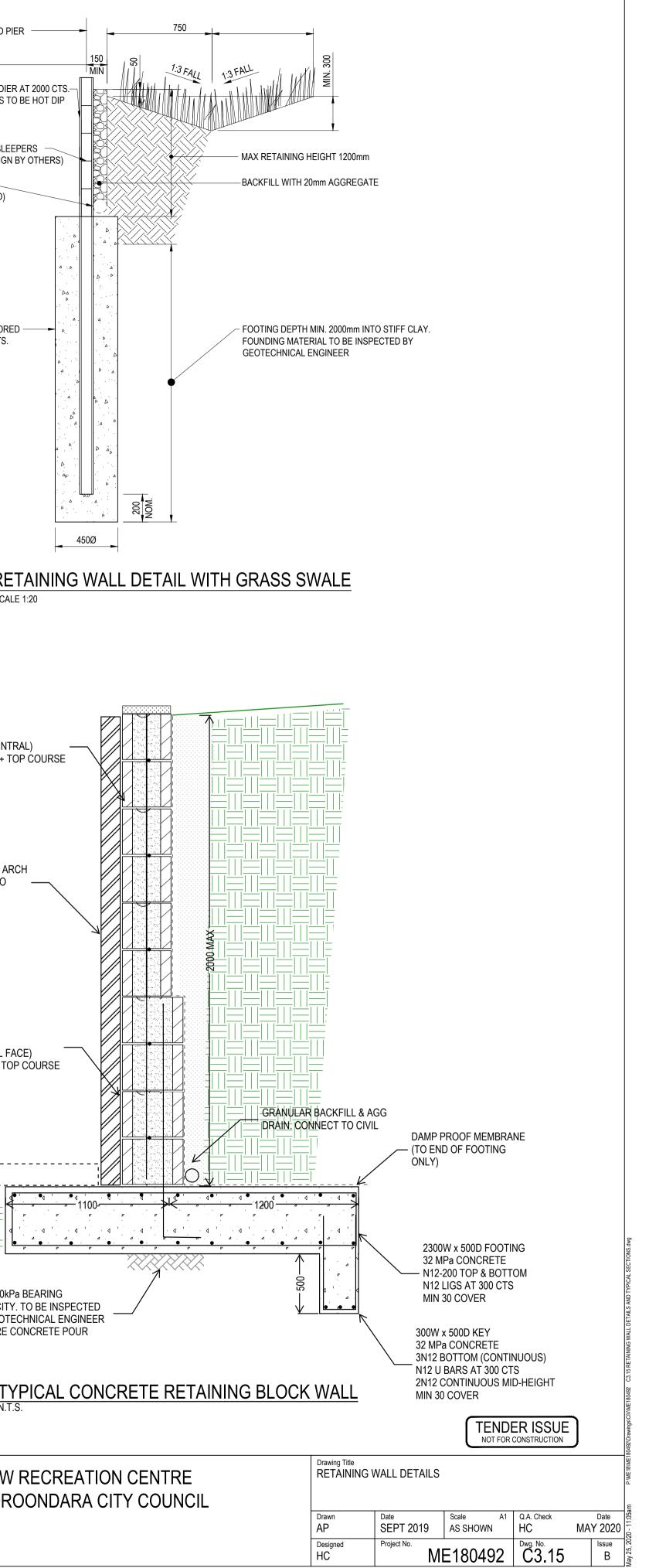












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					North	
						<b>^</b>
В	TENDER ISSUE	08.05.20	AP	HC		() ВО
А	DESIGN DEVELOPMENT	16.04.20	AP	HC		
Issue	Description	Date	Drawn	Approved		
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#### DRAINAGE LONG SECTION PITS No 1 TO 6 HORIZONTAL SCALE 1:200 VERTICAL SCALE 1:100

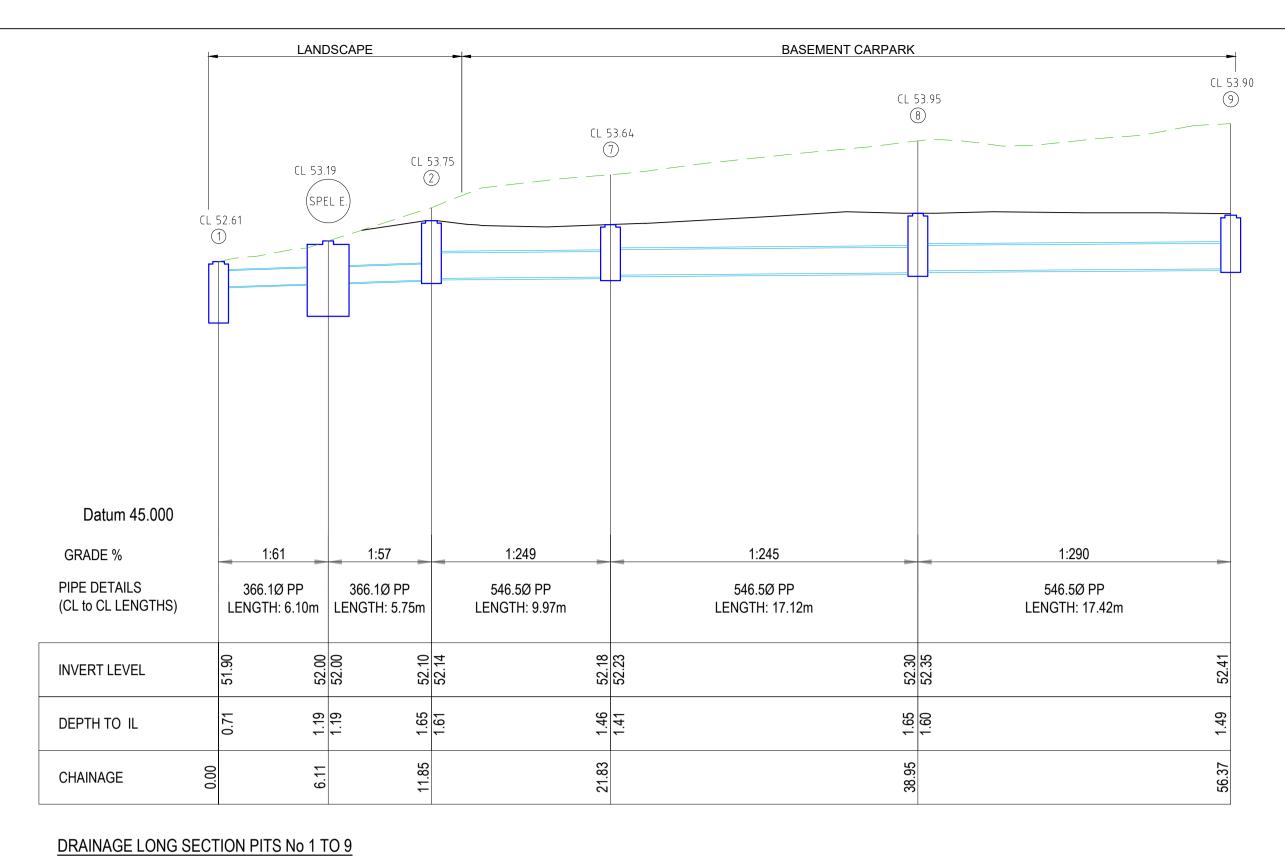
CHAINAGE

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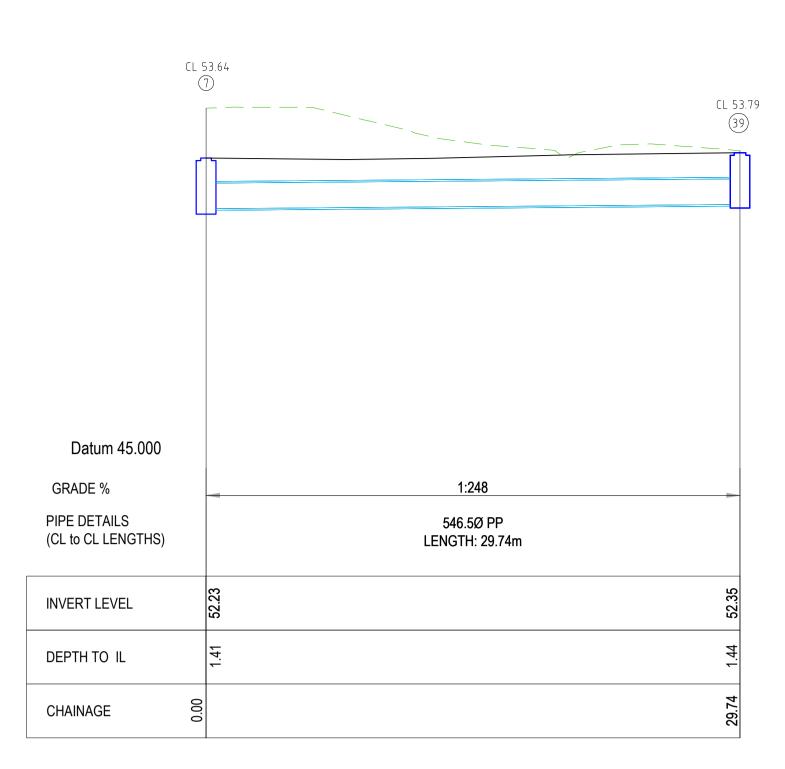
# - - -

	CL 53. 52.61		53.75
Datum 45.000			
GRADE %	1:61	1:57	1:252
PIPE DETAILS (CL to CL LENGTHS)	366.1Ø PP LENGTH: 6.10m	366.1Ø PP LENGTH: 5.75m	546.5Ø PP LENGTH: 32.82m
NVERT LEVEL	51.90 52.00	52.00 52.10	52.14
DEPTH TO IL	0.71	1.19	1.61

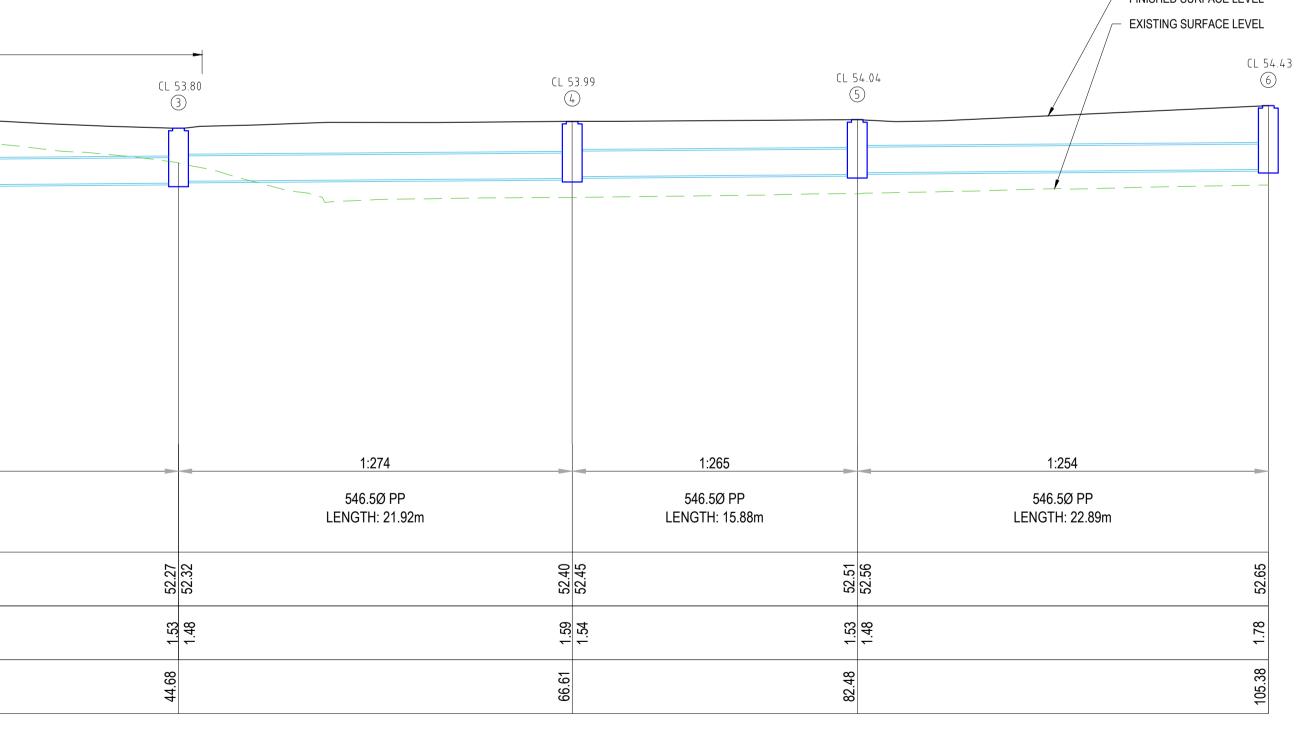
HORIZONTAL SCALE 1:200 VERTICAL SCALE 1:100



LANDSCAPE



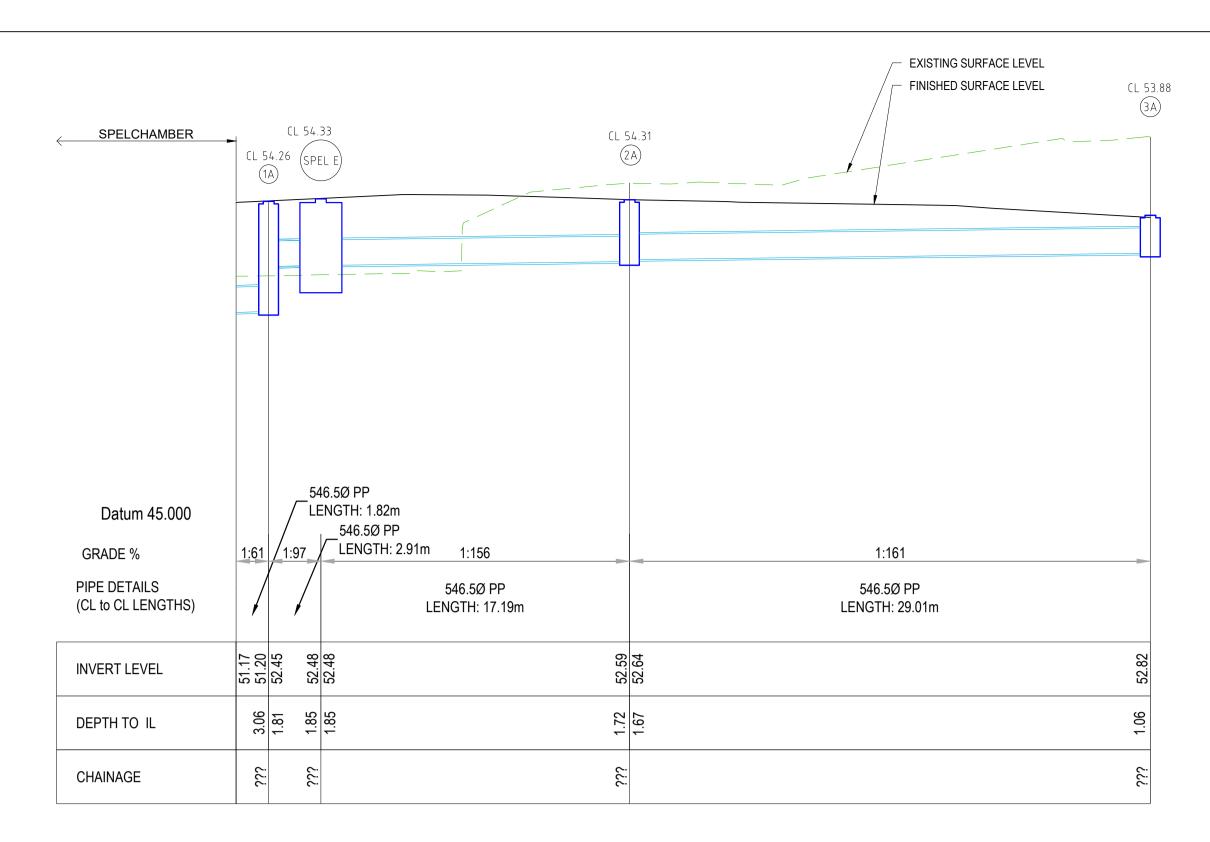
DRAINAGE LONG SECTION PITS No 7 TO 39 HORIZONTAL SCALE 1:200 VERTICAL SCALE 1:100





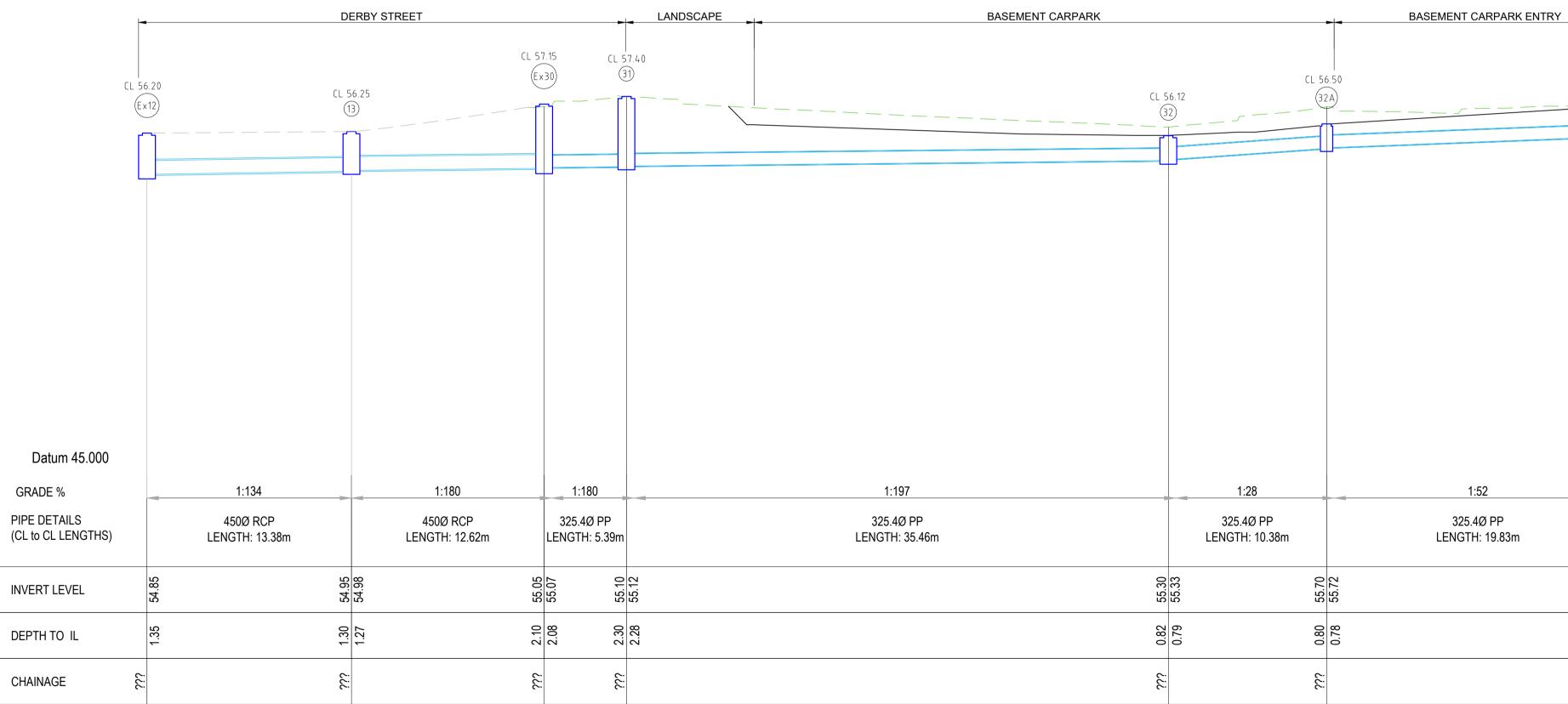
		Drawing Title DRAINAGE LONG SECTIONS SHEET 1							
N CENTRE TY COUNCIL	Drawing Title DRAINAGE LONG SECTIONS SHEET 1								
	Drawn AP	Date SEPT 2019	Scale A1 AS SHOWN	Q.A. Check Q.A.	Date Q.A. DATE				
	Designed HC	Project No.	Issue B						
	·	·		•	e				

FINISHED SURFACE LEVEL



### DRAINAGE LONG SECTION SPEL CHAMBER TO PIT 3A HORIZONTAL SCALE 1:200





#### DRAINAGE LONG SECTION PITS Ex12 to Ex 33 HORIZONTAL SCALE 1:200 VERTICAL SCALE 1:100

,20cm

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This drawing has been assigned an electronic code that signifies the drawing has been checked and approved by:						
					North	1
В	TENDER ISSUE	08.05.20	AP	HC		
Α	DESIGN AND DEVELOPMENT	16.04.20	AP	HC		
Issue	Description	Date	Drawn	Approved		

City of Boroondara

-1 \_\_\_\_0 \_\_\_\_1cm at full size



Ø PP : 19.83m							
	56.10						
	1.00						
	ととと						
				TEND NOT FOR	ER ISSU	E	
N CENTRE		Drawing Title DRAINAG	E LONG SECTION	IS SHEET 2			
····		Drawn AP	Date SEPT 2019	Scale A1 AS SHOWN	Q.A. Check Q.A.		Date . DATE Issue B
		Designed AP	Project No.	E180492	Dwg. No. C3.21		lssue B

CL 57.10

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