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DEVELOPMENT APPROVAL



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& ASSOCIATES**

Structural and Civil Engineering Consultancy

Residential Development 11-23 Macarthur Avenue, Hamilton

Civil Engineering Report

FOR: Brookfield Portside East Pty Ltd


Report Number: R001-G23018

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Document Control

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1. Introduction

This report has been prepared to support the lodgement of a development application to approve the construction of a new high-density mixed-use development, comprising of a shared podium and two (2) towers, including one (1) shared basement parking level. The development is proposed to take place over the following parcel of land:

Property Address:

Part of 7 Wharf Street, Part of 11 Wharf Street, 11 Macarthur Avenue, Part of 23 Macarthur Avenue, and Part of 1A Macarthur Avenue, Hamilton QLD 4007

Property Description:

Part of Lot 101 on SP285542, Part of Lot 201 on SP287543, Lot 705 on SP287529, Part of Lot 703 on SP287531 and Part of Lot 951 on SPSP

Priority Development Area:

Northshore Hamilton Priority Development Area (PDA)

Registered Site Area:

9,836m²

This report describes the management of civil engineering issues associated with the development of the proposed site to ensure that the proposed development complies with all necessary state and local government policies.

This report intends to assess the likely impact of the proposed development in relation to stormwater quantity/quality and engineering services, and the adequacy of the existing engineering services infrastructure to accommodate the proposed development.

1.1 Revision History

This version of the report is the first version and has been prepared for coordination and feedback from the project team.

1.2 Related Reports

This report is intended to be read in conjunction with the associated development submission documents, current as of the date of this report.

2. Property Description

2.1 Site Locality

The proposed development is situated on Macarthur Avenue, Hamilton 4007, described as part of Lot 101 on SP285542, part of Lot 201 on SP287543, Lot 705 on SP287529, part of Lot 703 on SP287531 and part of Lot 951 on SP287536. The subject site is located within the Northshore Hamilton Priority Development Area (PDA) and is in close proximity to local commercial and residential centres. The proposed development is bounded by the Macarthur Avenue to the north, Wharf Street to the east and existing mixed-use developments to the south and west. The total registered area of the existing allotments in this proposal is 9,836m². Full details of the site topography and existing features are shown on the detailed site survey included in Appendix A.

A general locality plan is presented in Figure 2.1 below:

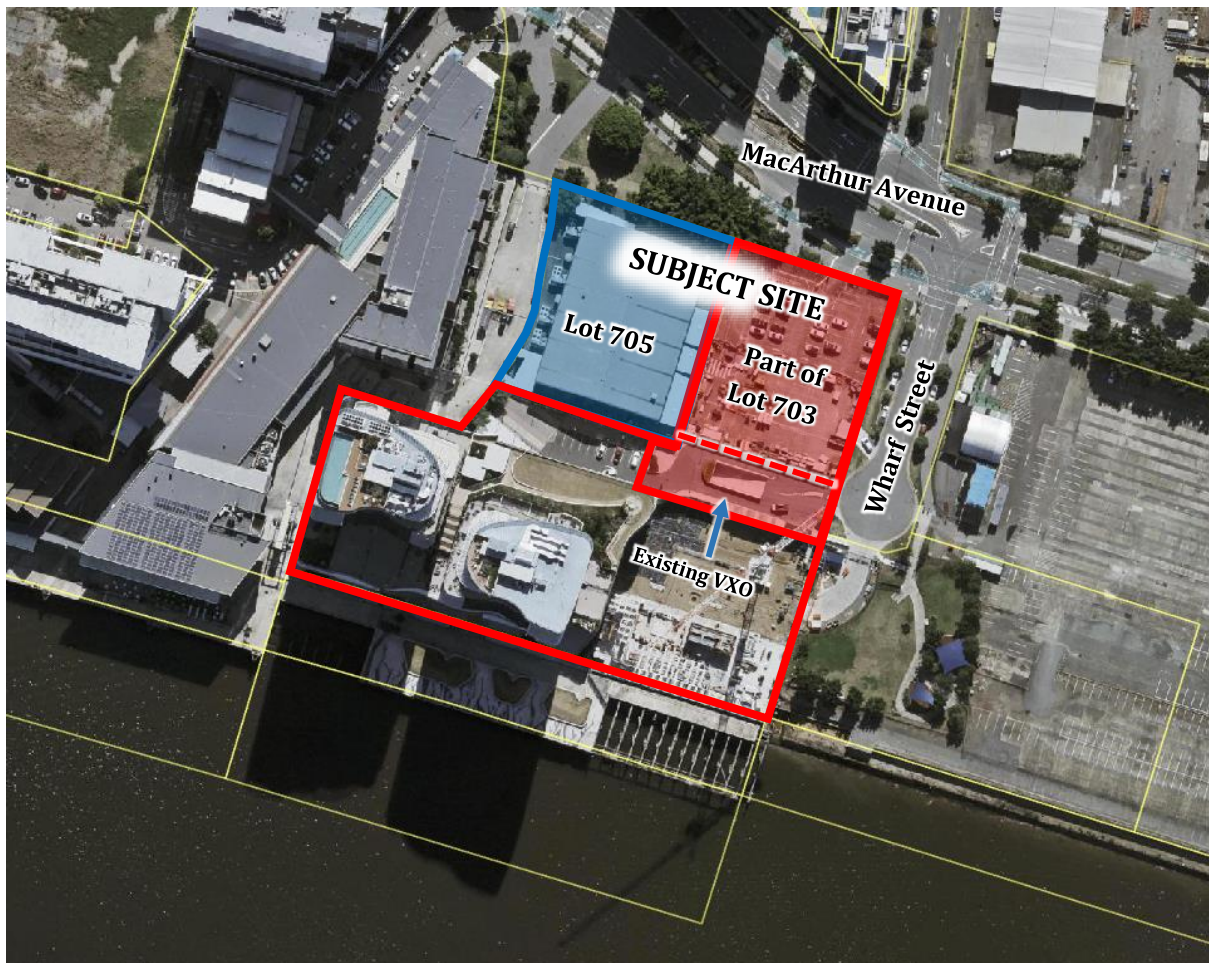


Figure 2-1: Site Locality (Courtesy of Queensland Globe - Accessed 20/04/2023)

2.2 Land Usage

The development site is currently occupied by a previously existing commercial cruise ship terminal building and a large on grade car parking area. The existing development contains impervious land uses, including roof, driveway, carpark and other hardstand areas. The existing impervious areas have been estimated from the survey to cover approximately 99% of the site area, as displayed on the pre-developed catchment plan attached as Appendix B of this report.

The site is accessible via two (2) existing vehicle crossovers (VXO's) along Macarthur Avenue and two (2) VXO's along Wharf Street.

2.3 Topography and Drainage

The detailed survey data obtained for the project site indicates that the site generally grades towards the south-east, with flows from Lot 705 draining towards the parking area consisting of Lot 703. Flows are then expected to discharge through the carpark allotment and into the stormwater infrastructure contained in Wharf Street. The southern portion of Lot 705 grades south towards internal stormwater infrastructure that discharges flows towards the Brisbane River. Approximate levels on the development site range from 3.60m (AHD) in the north-western corner to 3.10m (AHD) in the south western VXO. The average grade throughout the subject site has been calculated to be approximately 0.25%-0.5%.

The development site contains existing internal stormwater infrastructure that captures runoff generated from the roof catchment and hardstand areas, and discharges flows towards the Brisbane River.

A copy of the detailed survey by RPS and Benett & Benett has been attached to Appendix A of this report.

2.4 Upstream Catchment

The proposed development is bounded by Macarthur Avenue to the North. Flows from this catchment are expected to be captured in existing stormwater drainage and are not anticipated to enter the development site.

The development site is therefore not expected to receive overland flows from any significant upstream catchments.

3. Proposed Development

3.1 Development Description

The proposed development consists of:

- The construction of a new high-density mixed-use development, comprising of a shared podium and two (2) towers;
- The construction of one (1) shared level of basement parking for the two (2) towers and other hardstand surfaces associated with the proposed development.

The impervious area of the proposed development have been measured to cover approximately 78% of the proposed new development site area.

Construction works for the site will consist of bulk earthworks, with controlled excavation works and general lot shaping.

Additional works on site shall include the construction of water reticulation, sewer reticulation, electrical and telecommunications services and stormwater management.

External works for the development will comprise of verge works in Wharf Street to facilitate new stormwater connections as well as water and sewer connections to the West of Lot 705. No further external civil works are proposed as part of this development.

4. Lawful Point of Discharge

In the existing case, the majority of the subject site is expected to discharge flows towards the South-East boundary, and ultimately discharges towards the stormwater infrastructure in Wharf Street. There is no on-site detention or water quality treatment found within the existing subject site.

In the developed case, stormwater flows are to be treated internally and discharged towards the existing stormwater infrastructure located within the Wharf Street road reserve. It is proposed that the development will connect directly into the Wharf Street stormwater infrastructure via a proposed Ø750 pipe flowing into a proposed Ø1500 manhole (located within the VXO), with an upgraded section of pipe to Ø1050 to discharge into an upgraded maintenance hole to Ø2100 at the LPOD in Wharf Street. Downstream stormwater infrastructure will be maintained with no proposed upgrades. This arrangement is outlined in the Engineering Drawings attached as Appendix B.

The proposed discharge arrangement is considered to comply with the requirements of a lawful point of discharge and will be maintained following the development of the site. It is not anticipated that any stormwater will be directed towards any adjacent properties.

QUDM (2017) provides a three-part framework for the identification of a lawful point of discharge for a development site. The first assessment item is to consider if the proposed development will alter the site's stormwater discharge characteristics in a manner that may substantially damage a third-party property. As the imperviousness of the site is reduced from the existing development, consequently the proposed development is not considered likely to worsen the flows to council stormwater infrastructure received by the existing infrastructure located within the Wharf Street road reserve, the proposed point of discharge is considered to satisfy the requirements set out in Section 3.9.1 – Lawful Point of Discharge Test.

This compliance is further demonstrated in the following pages where it is shown that the proposed development will result in no worsening of peak flows from the development site.

5. Site Specific Hydrology

5.1 Introduction

The proposed development will involve the construction of a new high density mixed-use development, comprising of a shared podium and two (2) towers. The development will also include basement carparking areas and other hardstand surfaces. The construction of these hardstand surfaces will alter the flow characteristics of the development site. This includes the time of concentration and the volume of rainfall converted to runoff.

This section of the report addresses peak stormwater discharge resulting from the site, identifies whether attenuation measures are necessary to ensure “no-worsening” of the peak flows from the site and provides sizing information for any required attenuation measures.

5.2 On-site Stormwater Detention Assessment

Stormwater quantity management for the Northshore Hamilton Priority Development Area (PDA) is designed to comply with the Brisbane City Plan Infrastructure planning scheme. Brisbane City Council provide exceptions to the requirement of stormwater detention under Schedule 6.16: Infrastructure Design Planning Scheme Policy. The following site-specific exceptions are as follows:

- SC6.16/7.5.2.1 - Stormwater detention is less likely to be required at the bottom one-third of the catchment
- SC6.16/7.5.5.2 – Sites with greater than 60% existing sealed impervious surfaces will generally not require stormwater detention because there is little change in peak flow, and redevelopment will often improve and augment older roof-water and stormwater drainage systems.

As the development is located within the bottom one-third of the Brisbane River catchment and has an existing impervious surface of greater than 60% it is anticipated that the above will apply to the proposed development. Therefore, on-site detention will not be required as part of the development.

5.3 Wharf Street Point of Discharge

The post-developed site is proposed to discharge the entirety of the development site towards the existing stormwater infrastructure located within the Wharf Street road reserve. Despite the site not requiring stormwater detention, a hydrologic analysis of the pre- and post-development peak flows is required to demonstrate non-worsening and no actionable nuisance to the existing stormwater infrastructure.

The Rational Method was used to calculate the peak flows generated from the entirety of the development site, The results are detailed below.

Catchment Definition

In the existing case, the site has been modelled as a single catchment, with the Fraction Imperviousness measured from the site survey. In the developed case, the development site is also represented as a single catchment, with the imperviousness measured from the current architectural plans. Table 5.1 below summarises the catchment properties used for the stormwater modelling.

Table 5-1: Catchment Definition

Catchment	Catchment Size	Fraction Impervious (f_i)
Pre-Developed Site	6,385m ²	0.99
Post-Developed Site	6,385m ²	0.78

5.4 Hydrologic Parameters

Time of Concentration

The time of concentration for the pre- and post-development catchments have been calculated in accordance with QUDM. The Friends sheet flow equation has been used to determine the time of concentration (t_c) for the ground catchments. The time of concentration for the roof catchments have been estimated using standard inlet times in combination with expected length of piped flows. Refer to Table 5.2 for the calculated time of concentration for each catchment.

Table 5-2: Time of Concentration Summary

Catchment	Catchment Area	Time of Concentration
Pre-Developed Site	6,385m ²	5.0 minutes
Post-Developed Site	6,385m ²	5.0 minutes

C_{10} Value

The C_{10} values for the existing site conditions and developed site conditions have been calculated in accordance with Table 4.5.3 of the Queensland Urban Drainage Manual (QUDM). A summary of the C_{10} values adopted for the site are presented in Table 5.3 below.

Table 5-3: C_{10} Values

	Area	Development Category	C_{10}
Pre-development	6,385m ²	Medium Density Residential ($f_i = 0.99$)	0.898
Post-development	6,385m ²	Medium Density Residential ($f_i = 0.78$)	0.845

Summary of Flow – Rational Method

The Rational Method was used to calculate runoff from the site in the pre-developed and post developed scenario. The anticipated peak discharge is detailed in Table 5.4 below.

Table 5-4: Rational Method Calculation Summary

AEP	39% (m ³ /s)	18% (m ³ /s)	10% (m ³ /s)	5% (m ³ /s)	2% (m ³ /s)	1% (m ³ /s)
Pre-Developed	0.174	0.265	0.329	0.395	0.492	0.547
Post-Developed	0.164	0.249	0.309	0.372	0.478	0.547
Flow Increase	-0.010	-0.016	-0.019	-0.023	-0.014	0.000

As the proposed development does not increase the fraction imperviousness of the site, there will be a decrease in the peak discharge stormwater flow at the point of lawful discharge in all the stormwater events from AEP 39% to 1%. Therefore, it is our opinion that it will **not** be necessary to provide the development with an on-site stormwater detention system or mitigation methods to reduce the peak discharge of local storm events.

Stormwater Quality

5.5 Introduction

This section of the report aims to identify the requirements for stormwater quality management resulting from the proposed development and identify suitable stormwater treatment devices to comply with relevant requirements of the State Planning Policy and the Northshore Hamilton Priority Development Area (PDA).

5.6 State Planning Policy Assessment

An assessment has been undertaken to determine whether the development proposal necessitates compliance with the State Planning Policy (SPP) objectives. The following trigger questions are used to determine whether SPP compliance is required.

Table 5-5: State Planning Policy Trigger Questions

Trigger Question	Development Response
Material Change of Use for Urban Purposes with a land area greater than 2,500m ² and:	-
a) Will result in an impervious area greater than 25% of the net developable area; or	Yes
b) Will result in 6 or more dwellings.	Yes
Reconfiguration of Lot for Urban Purposes that involves a land area greater than 2,500m ² , and will result in 6 or more lots	No

As the above trigger questions are applicable to this development, the site is required to achieve the design objectives of the State Planning Policy.

5.7 Water Quality Objectives and Methodology

Table 6.1 indicates that the proposed development triggers the requirement for the development to achieve the Water Quality Objectives outlined in the Water Sensitive Urban Design (WSUD) guidelines. As such, the development must demonstrate the following minimum reductions in mean annual pollutant loads from the unmitigated development:

Table 5-6: Water Quality Objectives

Pollutant	Minimum Reduction in Mean Load (%)
Total Suspended Solids (kg/yr)	80
Total Phosphorus (kg/yr)	60
Total Nitrogen (kg/yr)	45
Gross Pollutants (kg/yr)	90

To design and assess the achievement of these stormwater quality objectives the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) Version 6.3 has been utilised to size suitable stormwater quality improvement devices as described in the following sections

5.8 Catchment Areas & Source Nodes

The catchment areas used for the water quality assessment are limited to the subject site and reflects the proposed lawful point of discharge arrangement. The subject site has been separated into pollutant source nodes for MUSIC modelling using the “split catchment” approach as follows:

- Roof Area = 2403m² (100% Impervious)
- Landscaped Area = 1412m² (0% Impervious)
- Hardstand Area = 2570m² (100% Impervious)

5.9 Recorded Rainfall Data – Brisbane City Council (Central)

Rainfall data for the site was taken from the Brisbane City Council (Central) Brisbane Regional Office (ID 40214) using the dates 1/1/1980 – 31/12/1989 in accordance with the Water By Design – MUSIC Modelling Guidelines (2010) using a 6 minute time step. The mean average rainfall over the period is 1,178mm.

Rainfall over this time period was modelled using MUSIC to calculate the pollutant generation and treatment effectiveness of the proposed systems.

5.10 Rainfall-Runoff Parameters

Rainfall-runoff parameters were taken in accordance with the Water by Design – MUSIC Modelling Guidelines (2010) using *Urban Residential* land use, as the site is to contain residential dwellings only. The MUSIC modelling parameters used are tabulated in Table 6.3 below:

Table 5-7: MUSIC Modelling Parameters

Parameter	Value
Rainfall threshold (mm)	1.00
Soil storage capacity (mm)	500
Initial storage (%)	10
Field capacity (mm)	200
Infiltration capacity coefficient a	211
Infiltration capacity exponent b	5.0
Initial depth (mm)	50
Daily recharge rate (%)	28
Daily baseflow rate (%)	27

5.11 Pollutant Export Parameters

Pollutant export parameters were taken in accordance with Water by Design – MUSIC Modelling Guidelines (2010) using *Urban Residential* land use.

The split catchment approach was utilised for each surface type, with the input parameters shown in Table 5-8 below:

Table 5-8: Pollutant Export Parameters

Flow Type	Surface	TSS log ¹⁰ values		TP log ¹⁰ values		TN log ¹⁰ values	
Baseflow	Roof	N/A	N/A	N/A	N/A	N/A	N/A
	Roads	1.00	0.34	-0.97	0.31	0.20	0.20
	Ground	1.00	0.34	-0.97	0.31	0.20	0.20
Stormflow	Roof	1.30	0.39	-0.89	0.31	0.26	0.23
	Roads	2.43	0.39	-0.30	0.31	0.26	0.23
	Ground	2.18	0.39	-0.47	0.31	0.26	0.23

5.12 Proposed Treatment Device Details

The proposed stormwater quality treatment train includes a SPEL Environmental cartridge system to treat stormwater flows from the building. This system is to provide primary treatment of stormwater flows. Flows from the entire catchment of the development site are proposed to be directed towards the stormwater treatment chamber to be located within the basement of the proposed development as shown on the engineering drawings attached as Appendix B.

Proprietary Treatment Device (SPEL Environmental Products)

The SPEL treatment train is a compact implementation of multiple stormwater treatment elements. It is comprised of SPEL Stormsack gully pit inserts which act as a pre-treatment device and SPEL Filter cartridge filters which provide primary treatment for the site. The SPEL treatment train is typically designed to provide stormwater treatment in ultra-urban environment by meeting water quality standard whilst increasing yield and hence cost effectiveness for developers.

SPEL StormSack filtration solutions are water quality devices that are installed within stormwater inlet pits to capture contaminants close to the surface for ease of maintenance. SPEL StormSack filtration offers a decentralized approach to stormwater treatment which assists in achieving site water quality goals.

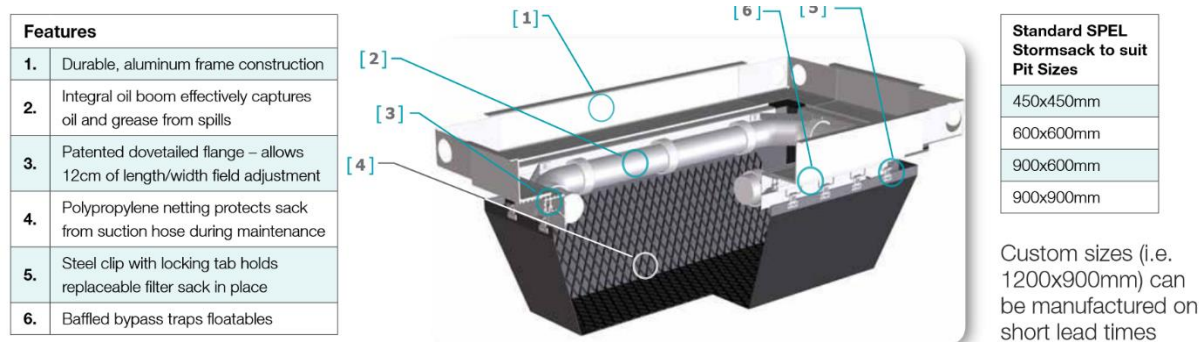


Figure 5-1: SPEL Stormsack Gully Insert Pre-Treatment Filters

The SPEL Filter cartridge system provides a significantly greater surface contact area to footprint ratio than other filters. With a flow rate of 2.82L/s per cartridge and underground installation, the SPELFilter provides excellent removal efficiency whilst maintaining site surface yield.

The high flow capacity and modular cartridge design means the SPELFilter system can be effectively deployed in a variety of structures including manholes, precast vaults, or cast-in-place structures.



Figure 5-2: SPEL Filter cartridge filter

The SPEL Treatment Train system has proven compliance with the South-East Queensland Water by Design Music Modelling Guidelines requirements (2010) and has been accepted for use by the City of Gold Coast Council.

The total requirement for treatment devices for the subject site is presented in 6.5 below:

Table 5-9: Site Specific SPEL Treatment Train Requirements

Device Type	Basement Detention Tank
SPEL Filter Cartridges	10
SPEL Stormsack	1

It is proposed to contain the SPEL Filters within an underground tank to be constructed within the basement of the proposed development.

5.13 MUSIC Model Diagram

A diagrammatic layout of the MUSIC model interface used to model the proposed development with the proposed treatment devices incorporated is presented in Figure 6.3 below:

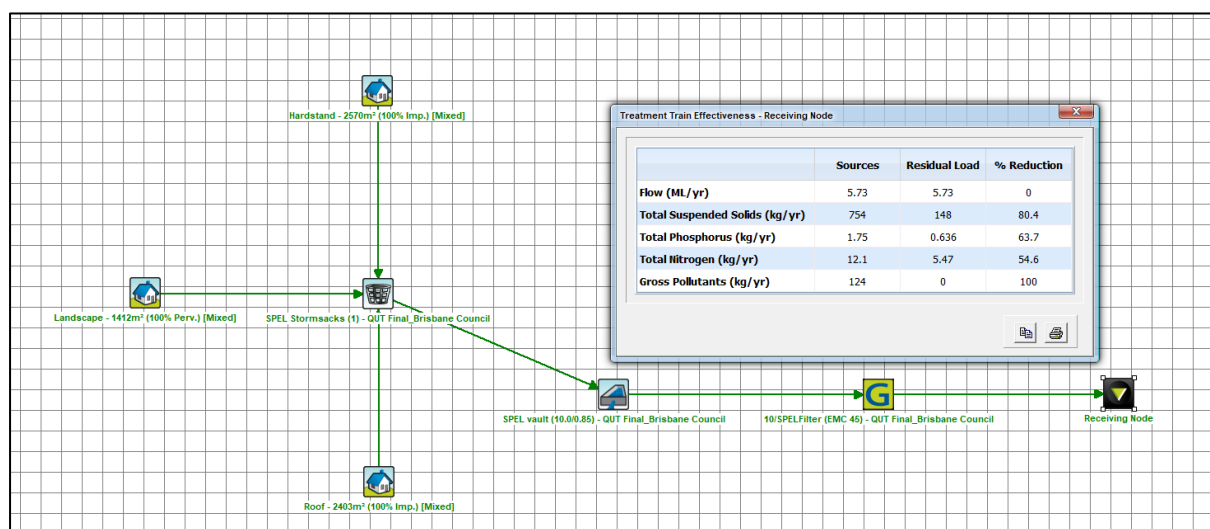


Figure 5-3 - MUSIC Model Results

5.14 MUSIC Modelling Results

MUSIC was used to model the treatment train effectiveness in terms of the percentage of pollutants being removed from the system using the proposed treatment devices.

The results of the MUSIC modelling compared to the stated Water Quality Objectives (WQO's) are presented below:

Table 5-10: MUSIC Modelling Results

Potential Pollutant	Target WQO's	MUSIC Results
Total Suspended Solids (kg/yr)	80%	80.4%
Total Phosphorus (kg/yr)	60%	63.7%
Total Nitrogen (kg/yr)	45%	54.6%
Gross Pollutants (kg/yr)	90%	100%

The results indicate that the proposed treatment devices are efficient in achieving the water quality objectives and exceeds the minimum required pollutant reduction targets.

6. Conceptual Erosion and Sediment Control Plan

6.1 Introduction

During construction, it shall be the responsibility of the Principal Contractor to ensure that the development complies with the relevant erosion and sediment control objectives, as outlined in the State Planning Policy and the Brisbane City Council Planning Scheme.

This section of the report provides suggested inclusions in an erosion and sediment control plan for the proposed development site. This plan includes recommendations for monitoring & reporting responsibilities and the construction of site-specific sedimentation and erosion control measures. Detailed drawings specifying the proposed erosion and sediment control measures are to be provided at the Operational Works stage of the development.

6.2 General Erosion and Sediment Control Measures

It shall be the responsibility of the Principal Contractor to ensure the following erosion and sediment control measures are implemented on site:

- Clean stormwater runoff from upstream allotments is to be directed away from the development site using earth bunds or cut-off drains, as deemed appropriate by a suitable supervisor;
- The prevention of sediment runoff towards other allotments via the effective implementation of silt fences, sediment basins or other mitigation devices as deemed appropriate by a suitable supervisor;
- Sediment runoff shall also be prevented from entering the Council stormwater drainage system via the implementation of control measures such as gully pit sediment barriers;
- Erosion shakedown points shall be established at all vehicular access points, with shakedown areas regularly swept clean and sediment removed; and
- Erosion and sediment control measures are not to be removed from the development site until the site is completely rehabilitated and the surface is capable of resisting erosion.

6.3 Spoil and Stockpile Management Measures

It shall be the responsibility of the Principal Contractor to ensure the following spoil and stockpile management measures are implemented on site:

- Where the stockpiling of spoil and excess earthworks is necessary on the development site, stockpiles shall be established as far away as possible from stormwater inlets and pipelines to reduce the likelihood of sediment runoff; and
- Stockpiles are to be established within a designated zone of fill material and should be surrounded with appropriate erosion and sediment control measures.

6.4 Training Requirements

It shall be the responsibility of the Principal Contractor to ensure the following training protocols are implemented on the development site:

- Site induction courses shall include details of an environmental management reporting system, through which personnel will be able to report perceived erosion and sediment control issues on site.

7. Engineering Constraints

7.1 Earthworks

The development will involve earthworks excavation to reshape the current surface, and provide infrastructure trenches, and facilitate the construction of one (1) underground basement level.

The development site is shown as being potentially affected by Acid Sulfate Soils on Brisbane City Council's ePlan Mapping service, as shown in Figure 9.1 below: of the Brisbane City Plan Interactive Mapping below:

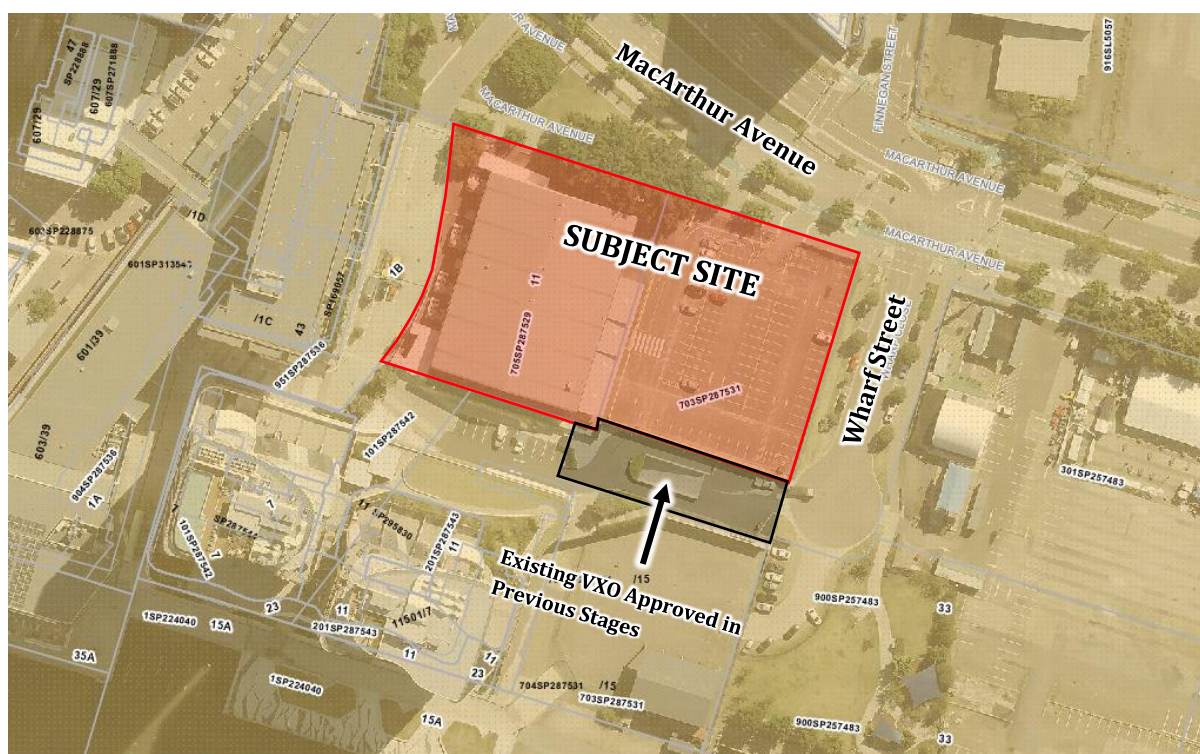


Figure 7-1 - Excerpt from BCC's ePlan – Potential Acid Sulfate Soils

Given that the proposed development will disturb greater than 500m³ of soil, a full acid sulphate assessment will be required for the proposed development. It is expected that the preparation of this report be included in the development application conditions, to be completed prior to construction of the development site.

7.2 Erosion and Sediment Control

During earthworks, there will be inevitable areas of exposed earth, stripped areas and stockpiles. Appropriate methods to manage this process and ensure minimal impacts to surrounding properties, infrastructure and receiving waters will therefore be required.

The current Brisbane City Council Erosion Hazard Assessment form is attached in Appendix C of this report.

The resulting hazard risk rating is **medium risk**.

The development will therefore require the preparation of an Erosion and Sediment Control Program and Plan with supporting documentation, certified by a Registered Professional Engineer and Certified Professional in Erosion and Sediment Control. It is anticipated that the development conditions will reflect these requirements and require compliance prior to the commencement of construction.

7.3 **Vehicular Access and External Verge Works**

External works will be required within the Council verge to facilitate stormwater connections to the proposed development within the Wharf Street road reserve as well as landscaping and streetscape works.

Internal driveways and parking facilities will be required to comply with AS2890.1:2004 with relevant private certification included as part of the building works.

Verge upgrades will be the subject of detailed design by a qualified landscape architect with RPEQ certification of as-constructed drawings provided to Council at the completion works.

7.4 Flooding

The development site is located outside the Brisbane River flood constraints and overland flow flooding, as shown from the screen shot of the Brisbane City Plan Interactive Mapping below:

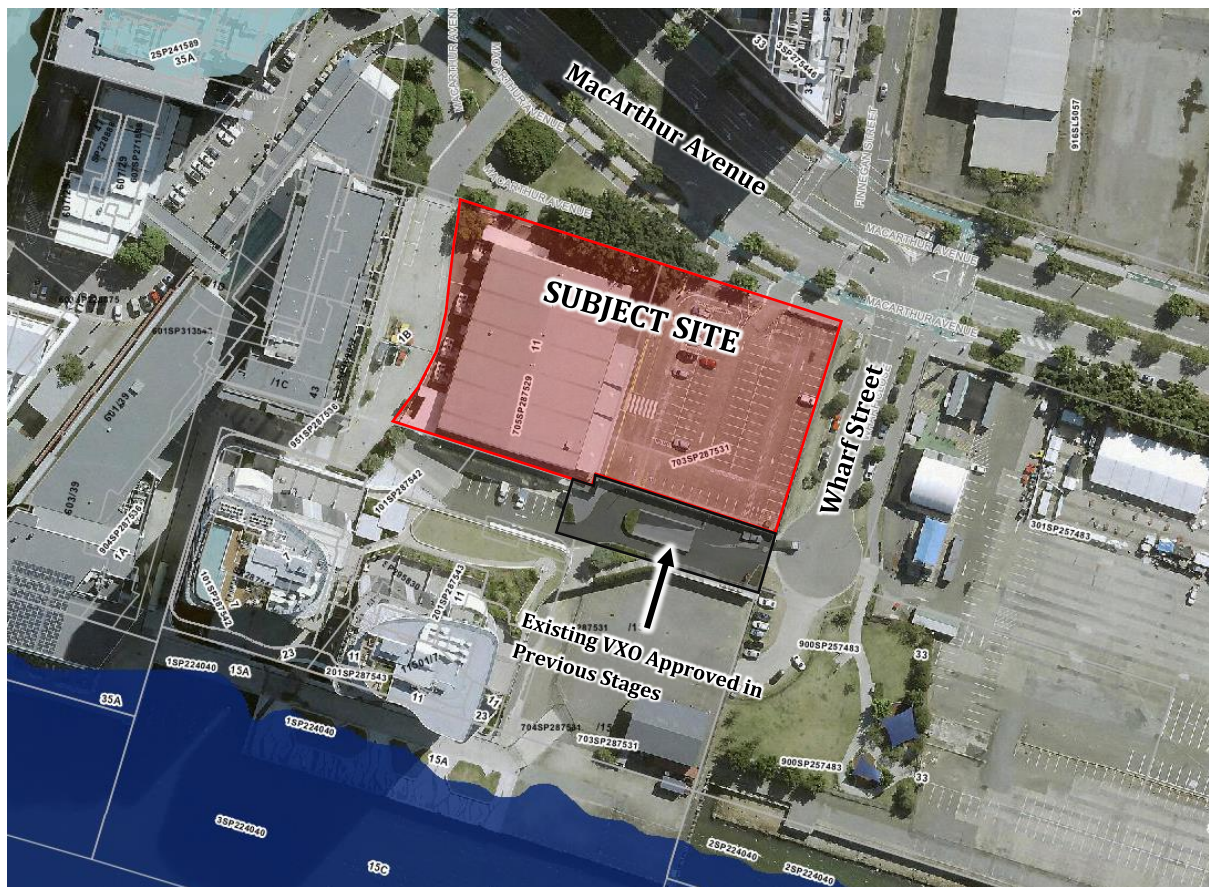


Figure 7-2 - Excerpt from BCC's ePlan – Brisbane River Flood Planning Area

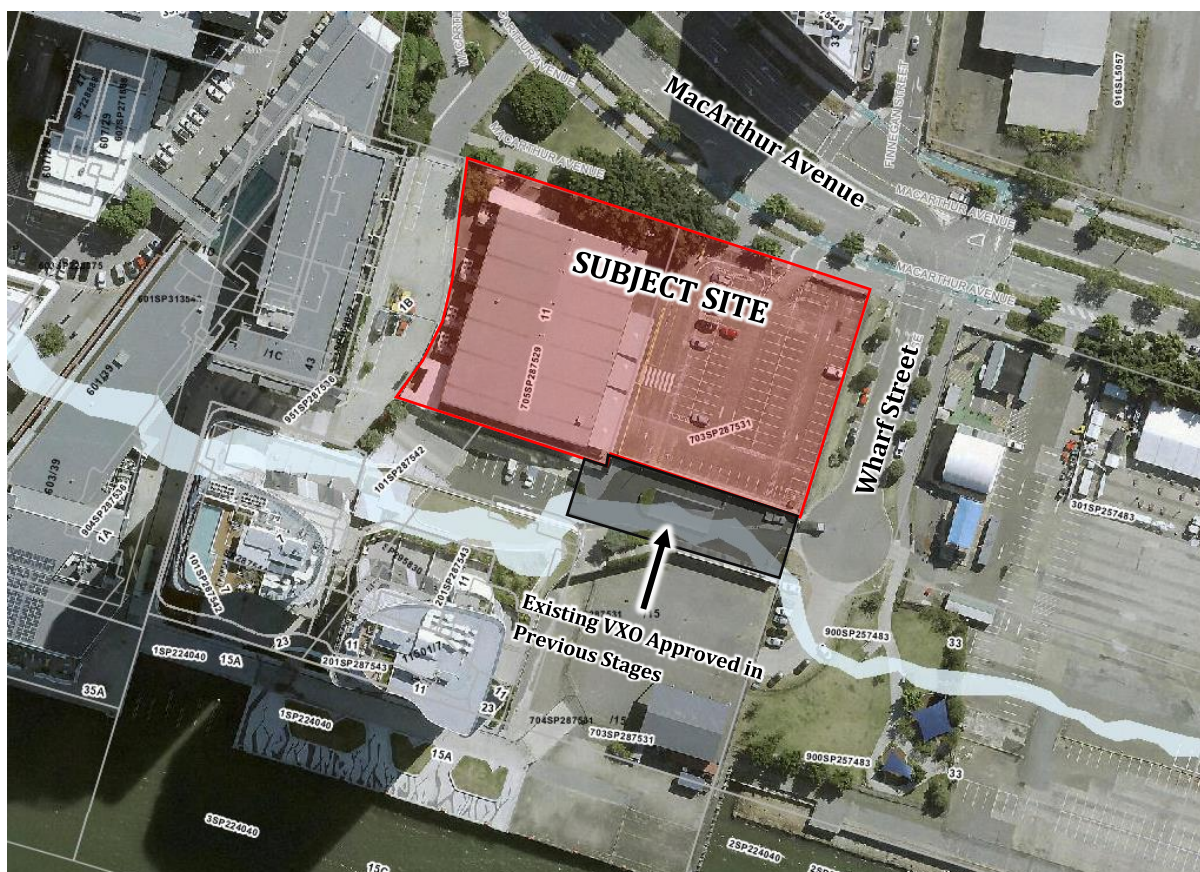


Figure 7-3 - Excerpt from BCC's ePlan – Brisbane Overland Flow Flood Planning Area

Figures 7-2 and 7-3 demonstrate that the proposed development site is not impacted by Brisbane River or overland flow flooding.

Figure 7-3 shows an overland flow path is located to the south of the development site. No change to the ground floor surface levels are proposed as part of this development application. Therefore, the overland flow path will remain unaltered. No further assessment of flood mitigation is required

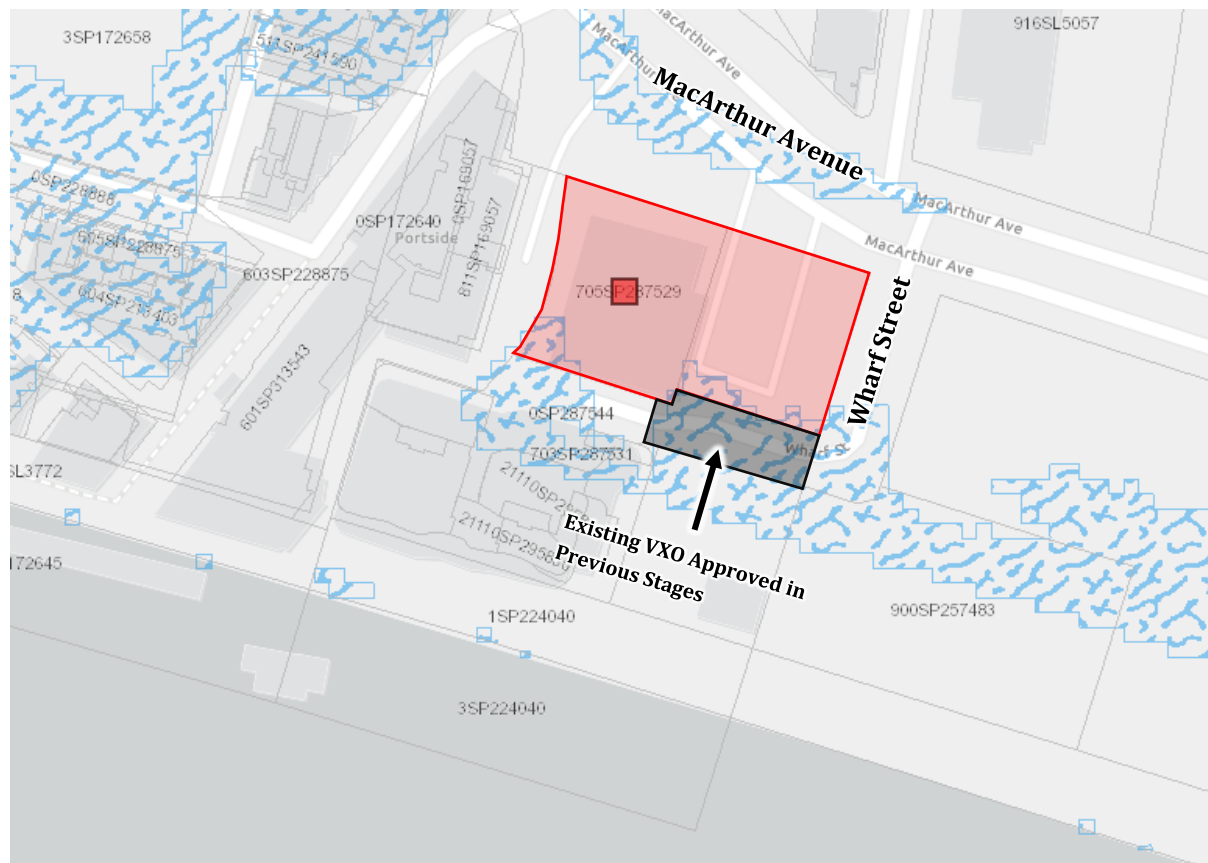


Figure 7-4 - Excerpt State Planning Policy – Medium Storm Tide Inundation Area

Figure 7-4 displays that the southern portions of the subject site are subject to moderate storm-tide inundation. As per the FloodWise Property Reports, the 1% Annual Exceedance Probability (AEP) storm-tide inundation reaches a height of 3.1m (AHD). Table 8.2.6.3.C – Flood Planning Levels for Development Types from the Brisbane City Council (BCC) Plan adopts the minimum lot level of 3.1m (AHD) + 0.3m. The ground floor level is proposed at 4.70m (AHD), while the basement access point is approximately located at 4.30m (AHD). These floor levels comply with the minimum 300mm storm-tide freeboard requirement outlined in section 2.5.8 of the Northshore Hamilton PDA Development Scheme and the BCC Plan Coastal Hazard Overlay Code. Ultimately, suggesting that no storm tide inundation will enter the subject site for both the floor levels and the crest of basement vehicular ramp.

7.5 Water and Sewer Connection and Capacity

Existing Services

The site survey by RPS has been reviewed to assess the presence of water and sewer services available for the proposed development. It is confirmed the service lane located west of Lot 705 accessible via a VXO from Macarthur Avenue contains water and sewer services servicing the development.

Proposed Services

The proposed development will be serviced via a singular water and sewer connection each connecting into the existing sewer and water mains located within the service lane to the west of Lot 705, ultimately apart of the existing service infrastructure mains in the Macarthur Avenue road reserve. A Service Advise Notice (SAN) has been lodged to Urban Utilities (UU) [UU Ref: 23-SAN-65864]. The received service advice notice confirms that the proposed connections are feasible and the existing sewer and water mains expected to service the development site have adequate capacity. A copy of the SAN by Urban Utilities is attached within Appendix E of this report.

8. Response to Information Request

The Minister for Economic Development Queensland (MEDQ) has undertaken a preliminary assessment of the PDA development application under s.83 of the Economic Development Act 2012 (the Act) to allow the MEDQ to decide the application. Relevant items are listed and responded to below.

Overland Flow Channel and Storm Tide Inundation

1. There is an overland flow channel running parallel to the southern boundary of the subject site. Please demonstrate that the proposed development will not obstruct the overland flow corridor. Submit to EDQ a drainage plan showing the overland flow path and its interface with the proposed carparking and/or adjoining structures.

In addition to the above, the site is also subject to medium storm-tide inundation area. Please demonstrate that the development, particularly the floor level and basement ramps will attain flood resilient design.

Response

BCC interactive mapping indicates an existing overland flow path is located to the south of the development site. No change to the existing surface levels are proposed as part of this development. As the proposed development works remain clear from the overland flow path, the development will not obstruct the overland flow path corridor.

The southern portions of the subject site are subject to moderate storm-tide inundation. The ground floor levels and basement access ramps are positioned to exceed the minimum 300mm freeboard requirement specified in section 2.5.8 of the Northshore Hamilton PDA Development Scheme and the BCC Plan Coastal Hazard Overlay Code Table 8.2.6.3.C. For additional information, please refer to section 7.4 of this report.

Urban Utilities SAN

3. Provide a water and sewerage network impact assessment report, certified by RPEQ, that identifies any augmentations required to service the development maintaining the DSS at every planning scenario; or

Provide an Urban Utilities SAN that identifies that the development can be adequately serviced by the existing water and sewerage networks.

Response

The Urban Utilities Service Advice Notice (REF: 23-SAN-65864) has been received and will be included in Appendix E of this report. According to the Network Demand and Capacity Assessment results, the downstream services have sufficient capacity to accommodate the proposed development for water and sewerage networks, as per the guidelines outlined in the SEQ Water Supply and Sewerage Design and Construction Code, 2013 (SEQ WS&S D&C Code).

9. Conclusion

This report has been prepared to support the lodgement of a development application to approve the construction of a new high-density mixed-use development, comprising of a shared podium and two (2) towers, including one (1) shared basement parking level. The development is proposed to take place over the following parcel of land:

Property Address:

Part 7 Wharf Street, Part 11 Wharf Street, 11 Macarthur Avenue, Part 23 Macarthur Avenue, and Part 1A Macarthur Avenue, Hamilton QLD 4007

Property Description:

Part Lot 101 on SP285542, Part Lot 201 on SP287543, Lot 705 on SP287529, Part Lot 703 on SP287531 and Part Lot 951 on SP287536

Priority Development Area:

Northshore Hamilton Priority Development Area (PDA)

Registered Site Area:

9,836m²

The purpose of this report is to address the management of stormwater quantity and quality to ensure that the proposed development complies with all necessary state and local government policies.

This report intends to assess the likely impact of the proposed development in relation to stormwater quantity and quality, and the adequacy of the existing stormwater infrastructure to accommodate the proposed development.

This report has addressed the management of stormwater quantity and quality to ensure that the proposed development complies with all necessary state and local government policies.

This report describes the design process with respect the key infrastructure elements that will ensure the management of stormwater to achieve necessary standards.

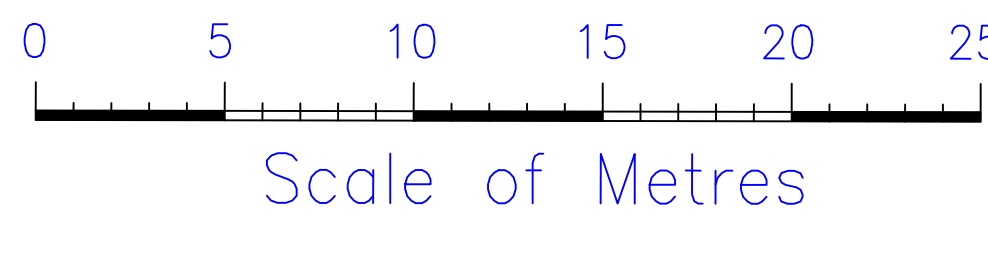
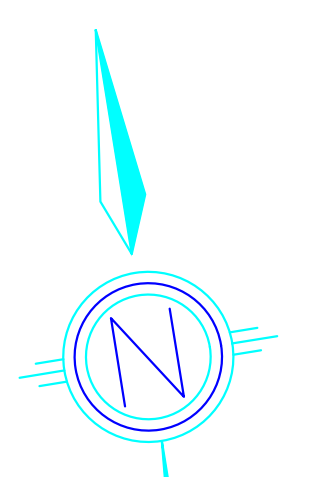
This report has addressed the management of stormwater quantity and quality, and demonstrated that no additional works are required beyond what was stated within this report to ensure that the proposed development complies with all necessary state and local government policies.



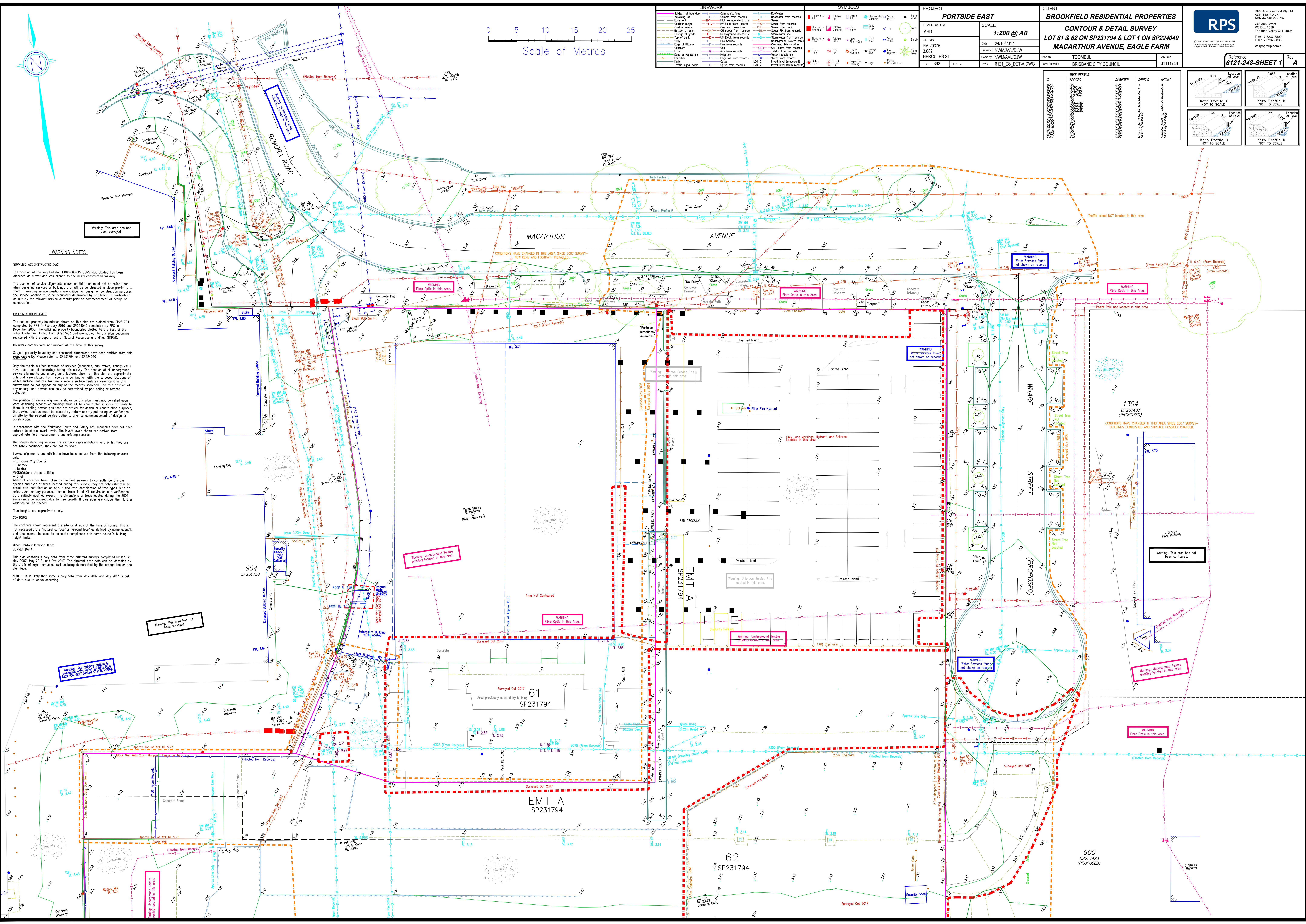
Appendix A

Site Surveys and Architectural

Drawings



LINEWORK		SYMBOLS		PROJECT		CLIENT	
Subject lot boundary	Communications	Roofwater	Electricity	LEVEL DATUM	PORTSIDE EAST	BROOKFIELD RESIDENTIAL PROPERTIES	
Adjacent lot boundary	High voltage electricity	Roofwater from records	Water	AHD	1:200 @ A0	CONTOUR & DETAIL SURVEY	
Carriageway	Water	Water from records	Water	DATE	24/10/2017	LOT 61 & 62 ON SP231794 & LOT 1 ON SP224040	
Change of grade	Water from records	Water from records	Water	PROJECT	PM 20375	MACARTHUR AVENUE, EAGLE FARM	
Change of grade	Water from records	Water from records	Water	SURVEYOR	NWM/ALD/JW	TOOMBUL	
Change of grade	Water from records	Water from records	Water	COMPANY	NWM/ALD/JW	BRISBANE CITY COUNCIL	
Change of grade	Water from records	Water from records	Water	JOB NO.	J1111749	Reference 6121-248-SHEET 1	
Change of grade	Water from records	Water from records	Water	DATE	24/10/2017	Rev A	
Change of grade	Water from records	Water from records	Water	DATE	24/10/2017	Rev A	
Change of grade	Water from records	Water from records	Water	DATE	24/10/2017	Rev A	



WARNING NOTES

SUPPLIER ASSUMED DIMS
The position of the supplied day 1010-AC-AS CONSTRUCTED day has been attached as a red and was aligned to the newly constructed roadway.

The position of service alignments shown on this plan must not be relied upon when designing services or buildings that will be constructed in close proximity to them. If existing service positions are critical for design or construction purposes, the service location must be accurately determined by pit holding or verification on site by the relevant service authority prior to commencement of design or construction.

PROPERTY BOUNDARIES
The subject property boundaries shown on this plan are plotted from SP231794 completed by RPS in February 2010 and SP224040 completed by RPS in December 2008. The adjoining property boundaries plotted to the East of the subject site are plotted from SP237483 and are a subject to this plan becoming registered with the Department of Natural Resources and Mines (DNRM). Boundary corners were not marked at the time of this survey.

Subject property boundary and easement dimensions have been omitted from this plan for clarity. Please refer to SP231794 and SP224040.

Only the visible surface features of services (manholes, pits, valves, fittings etc.) have been located accurately during this survey. The position of all underground service alignments and underground features shown on this plan are approximate only and were plotted from records in conjunction with the surveyed locations of visible surface features. Numerous service surface features were found in this survey that do not appear on any of the records searched. The true position of any underground service can only be determined by pit-holding or remote detection.

The position of service alignments shown on this plan must not be relied upon when designing services or buildings that will be constructed in close proximity to them. If existing service positions are critical for design or construction purposes, the service location must be accurately determined by pit holding or verification on site by the relevant service authority prior to commencement of design or construction.

In accordance with the Workplace Health and Safety Act, manholes have not been entered to obtain invert levels. The invert levels shown are derived from approximate field measurements and existing records.

The slopes depicting services are symbolic representations, and whilst they are accurately positioned, they are not to scale.

Service alignments and attributes have been derived from the following sources only:
- Brisbane City Council
- Energex
- SEQANET
- Queensland Urban Utilities

Whilst all care has been taken by the field surveyor to correctly identify the species and type of trees located during this survey, they are only estimates to assist with identification on site. If accurate identification of tree types is to be relied upon for any purposes, then all trees listed will require on site verification by a suitably qualified expert. The dimensions of trees located during the 2007 survey may be incorrect due to tree growth. If tree sizes are critical then further verification will be needed.

Tree heights are approximate only.

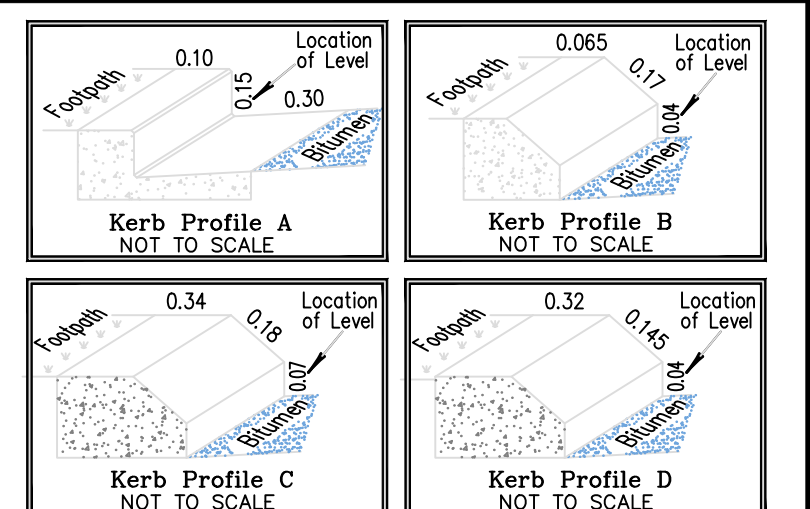
CONTOURS
The contours shown represent the site as it was at the time of survey. This is not necessarily the "natural surface" or "ground level" as defined by some councils and thus cannot be used to calculate compliance with some council's building height limits.

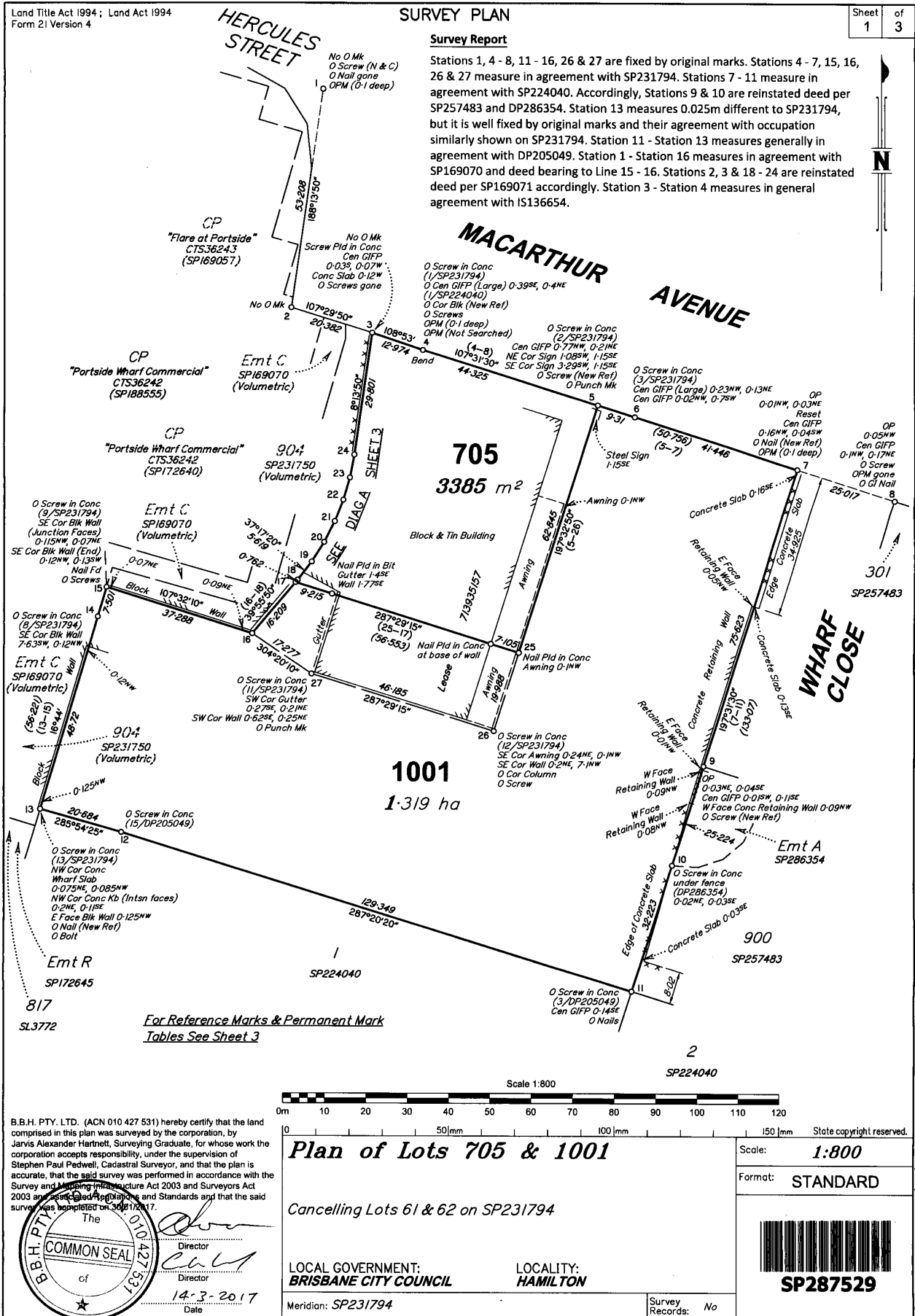
Minor Contour Interval: 0.5m

SUBJECT DATA
This plan contains survey data from three different surveys completed by RPS in May 2007, May 2013, and Oct 2017. The different data sets can be identified by the prefix of layer names as well as being demarcated by the orange line on the plan face.

NOTE - It is likely that some survey data from May 2007 and May 2013 is out of date due to works occurring.

ID	REF DETAILS	DIAMETER	SPREAD	DEPTH
1	0.10 Location of Level NOT TO SCALE			
2	0.065 Location of Level NOT TO SCALE			
3	0.34 Location of Level NOT TO SCALE			
4	0.32 Location of Level NOT TO SCALE			





Land Title Act 1994 ; Land Act 1994
Form 21 Version 4

SURVEY PLAN

Sheet 1 of 12

PM	ORIGIN	BEARING	DIST	NO	TYPE
3-OPM (0-1 deep)	1/SP257483	312°05'25"	96.787	35295	

STN	TO	ORIGIN	BEARING	DIST
1	O Screw in Kb	5/SP287529	358°03'	6.361
1	O Punch Mk in NE Bolt of Light Pole	2/SP231794	285°01'20"	8.384
1	O Nail in Conc	5/SP287529	95°45'	9.039
3	OIP	7/SP287529	105°08'	2.039
3	O Nail in Kb (in crack)	7/SP287529	26°16'	5.979
3	O Screw in Kb	7/SP287529	84°25'	7.453
4	O Screw in Manhole	9/SP287529	76°03'	7.89
6	O Nail in Conc	3/SP224040	35°36'	0.08
6	O Nail in Conc	154/SP195300	309°08'	1.73
8	O Nail in Conc	13/SP287529	165°31'	1.893
8	O Bolt in Conc	24/SP195300	163°49'35"	11.905
8	O Nail in Conc	13/SP287529	340°15'10"	16.691
10	O Nail in Conc	15/SP287529	306°46'	1.292
10	O Screw in Conc	23/SP169070	238°11'50"	5.427
10	O Screw in Conc	4/SP224040	334°07'50"	10.095
11	O Nail in Conc	16/SP287529	324°34'	2.294
11	O Screw in Bit	22/SP169070	101°53'15"	4.99
11	O Screw in Conc	10/SP231794	8°48'	6.33
12	O Nail in Conc	17/SP287529	276°39'	7.816
14	O Nail in Kb	25/SP287529	178°38'	5.402
14	O Nail in Kb	25/SP287529	35°07'	5.748

Footprint Area

Lot 702 4126 m²
Lot 704 2829 m²

Lot 703 is a Standard Format Lot

Lots 702 & 704 are bounded by vertical planes.

Boundary of Lot 702 is coincident with the boundaries of the base parcel at Stns 19-21 & 11-12-15.

Boundary of Lot 704 is coincident with the boundaries of the base parcel at Stns 18-6-57.

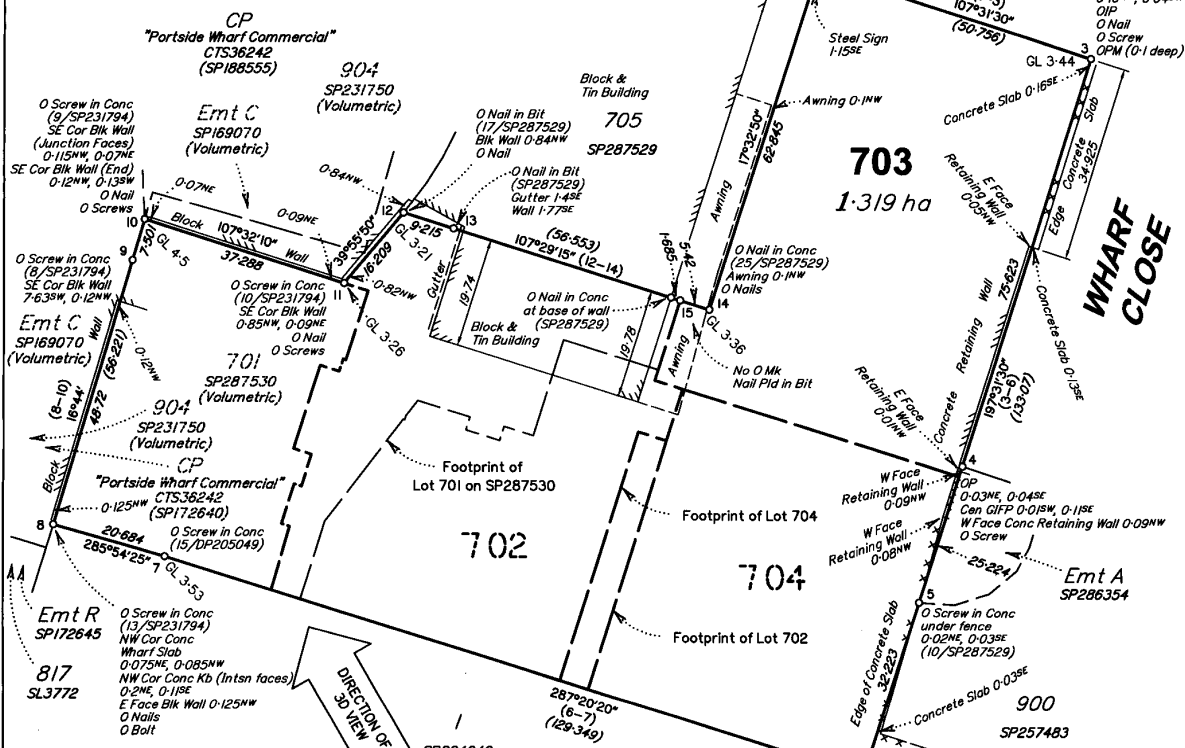
All footprint corner marks & reference marks are at ground level unless noted otherwise.

Vertices of volumetric lots not marked unless noted otherwise, in air, underground or within structures.

All levels are referred to Australian Height Datum as determined by PM.35295, RL 3.11 m (AHD).

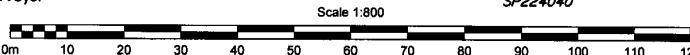
GL denotes approximate ground level.

For the Reduced Levels See Sheet 12.



Survey Report

Original marks placed and referenced on SP287530 have been used to reinstate and mark the subject boundaries shown on this plan. All marks and dimensions were found to be in agreement with the subject survey and other surveys.



B.B.H. PTY. LTD. (ACN 010 427 531) hereby certify that the land comprised in this plan was surveyed by the corporation, by Jarvis Alexander Harnett, Surveying Graduate, for whose work the corporation accepts responsibility, under the supervision of Stephen Paul Pedwell, Cadastral Surveyor, and that the plan is accurate, that the said survey was performed in accordance with the Survey and Land Information Management Act 2003 and Surveyors Act 2003 and the Cadastral Regulations and Standards and that the said survey was completed on 15/06/2017.



Plan of Lots 702-704

Canelling Lot 1002 on SP287530

LOCAL GOVERNMENT:
BRISBANE CITY COUNCIL

LOCALITY:
HAMILTON

Meridian: SP287530

Survey Records: No

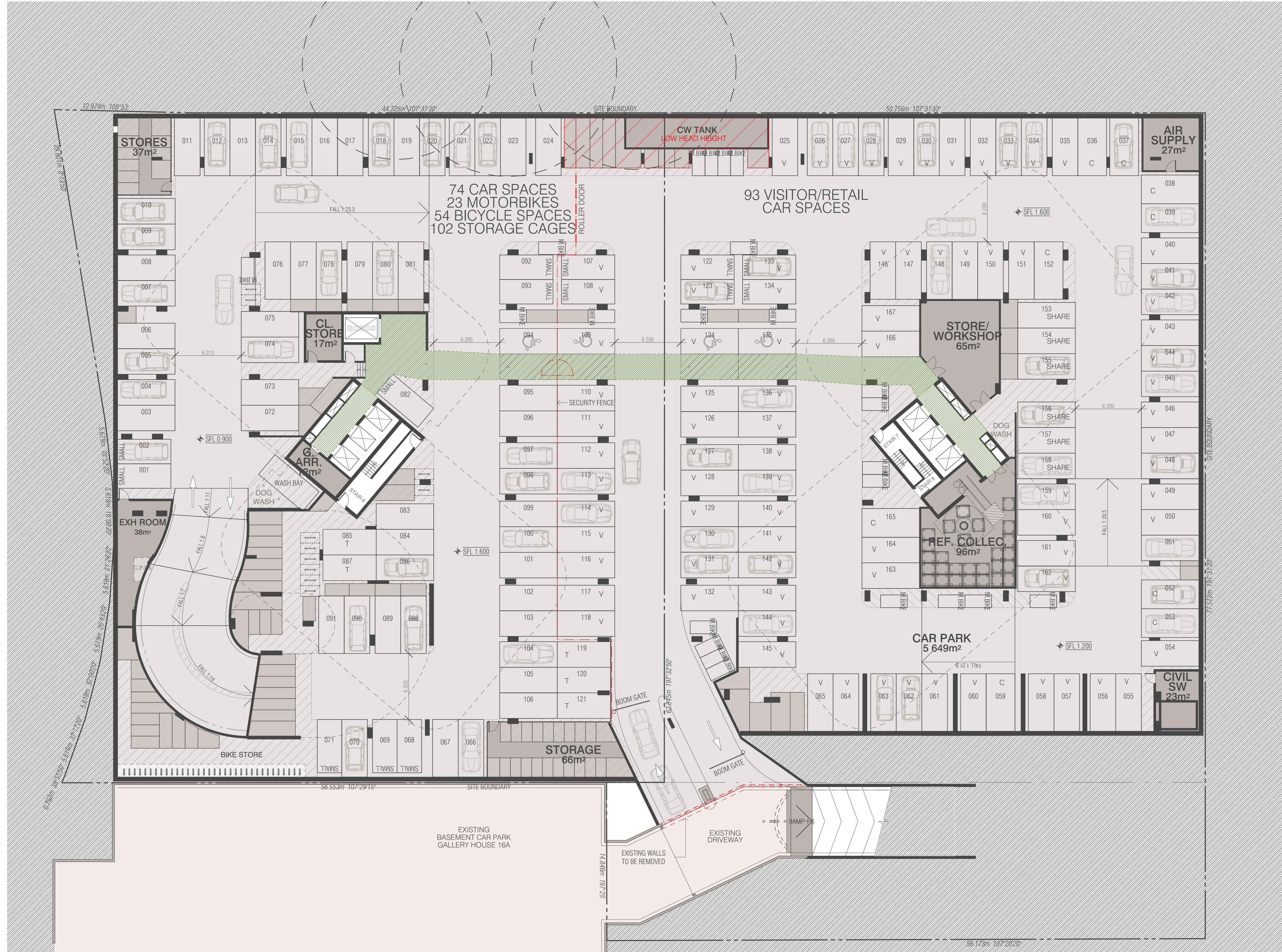
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Format: **VOLUMETRIC**



SP287531

Bennett + Bennett (BRO) 15344-026-VOL-B.DWG D.L. 29/05/2017



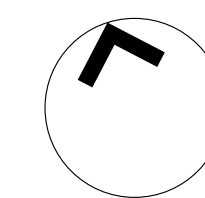
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REVISION	DATE	DESCRIPTION
01	28.04.2023	ISSUE FOR DA

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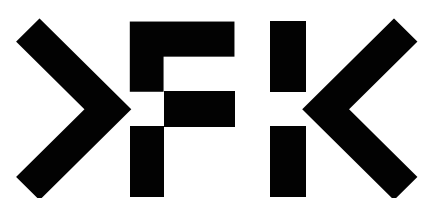


PROJECT
 11-23 MACARTHUR AVENUE HAMILTON
 11-23 MACARTHUR AVENUE
 HAMILTON QUEENSLAND 4007

DRAWING TITLE
 BASEMENT FLOOR PLAN

FENDER KATSALIDIS
 WWW.FKAUSTRALIA.COM
 L34, 123 EASLE STREET, BRISBANE
 QUEENSLAND 4000 AUSTRALIA
 TELEPHONE: +61 7 3668 0681
 FENDER KATSALIDIS (AUST) PTY LTD ACN 092 943 032

ISSUE PURPOSE
 DEVELOPMENT APPLICATION

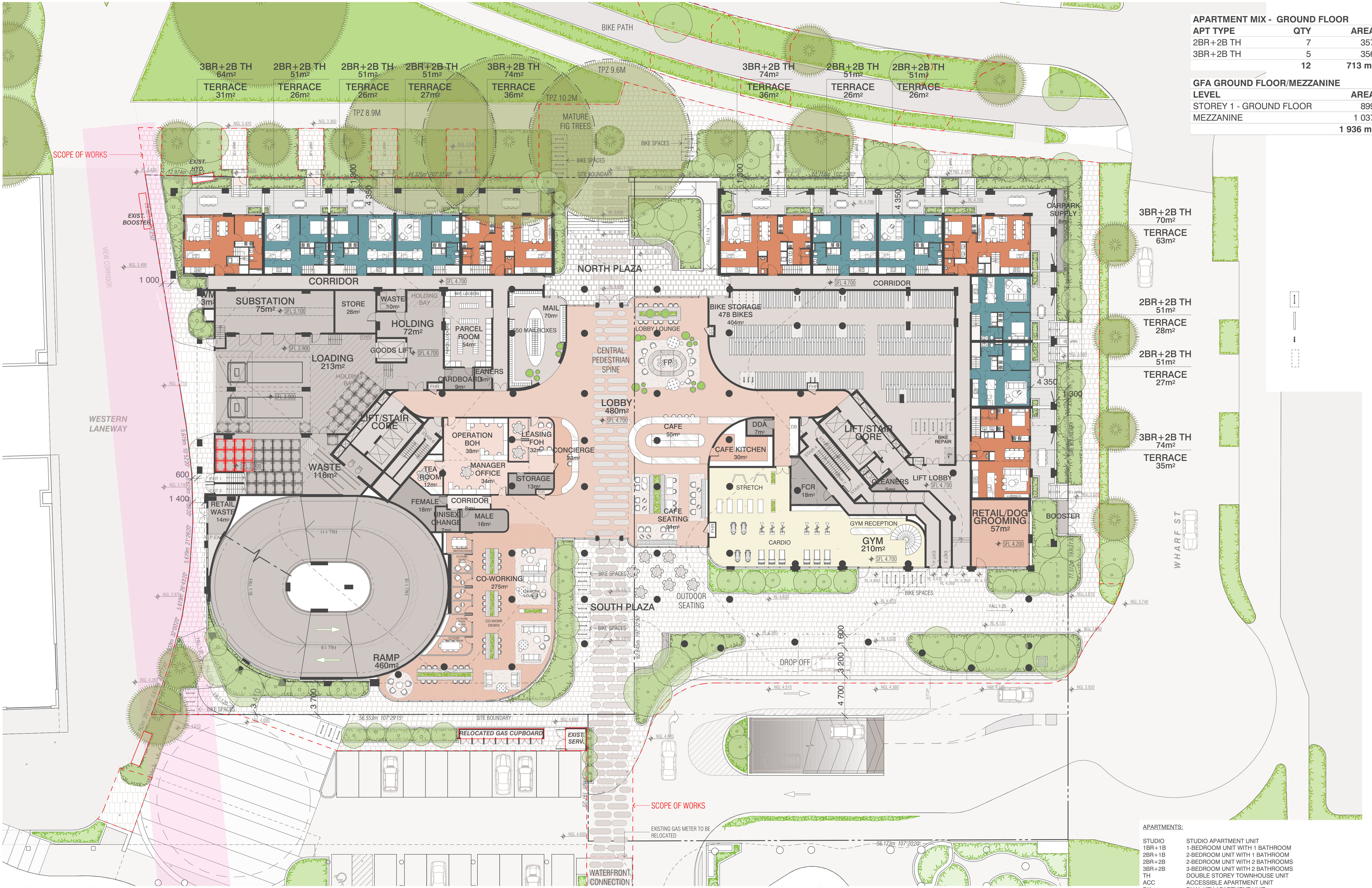


REV. 01
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APARTMENT MIX - GROUND FLOOR		
APT TYPE	QTY	AREA
2BR+2B TH	7	357
3BR+2B TH	5	356
	12	713 m ²

GFA GROUND FLOOR/MEZZANINE	
LEVEL	AREA
STOREY 1 - GROUND FLOOR	899
MEZZANINE	1 037
	1 936 m ²



- 3BR+2B TH
TERRACE
70m²
63m²
- 2BR+2B TH
TERRACE
51m²
28m²
- 2BR+2B TH
TERRACE
51m²
27m²
- 3BR+2B TH
TERRACE
74m²
35m²

- APARTMENTS:
- STUDIO
 - 1BR+1B
 - 2BR+1B
 - 2BR+2B
 - 3BR+2B
 - TH
 - ACC
 - DK
- STUDIO APARTMENT UNIT
 - 1-BEDROOM UNIT WITH 1 BATHROOM
 - 2-BEDROOM UNIT WITH 1 BATHROOM
 - 2-BEDROOM UNIT WITH 2 BATHROOMS
 - 3-BEDROOM UNIT WITH 2 BATHROOMS
 - DOUBLE STOREY TOWNHOUSE UNIT
 - ACCESSIBLE APARTMENT UNIT
 - DUAL KEY APARTMENT UNIT

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PROJECT

11-23 MACARTHUR AVENUE HAMILTON
11-23 MACARTHUR AVENUE
HAMILTON QUEENSLAND 4007

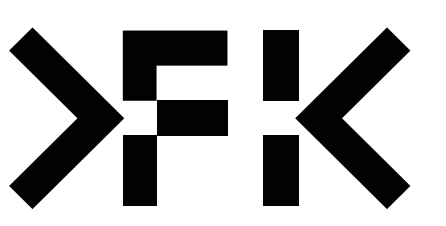
DRAWING TITLE

GROUND FLOOR PLAN

FENDER KATSALIDIS
WWW.FKAUSSTRALIA.COM
L34, 123 EASLE STREET, BRISBANE
QUEENSLAND 4000 AUSTRALIA
TELEPHONE: +61 7 3668 0681
FENDER KATSALIDIS (AUST) PTY LTD ACN 092 943 032

ISSUE PURPOSE

DEVELOPMENT APPLICATION

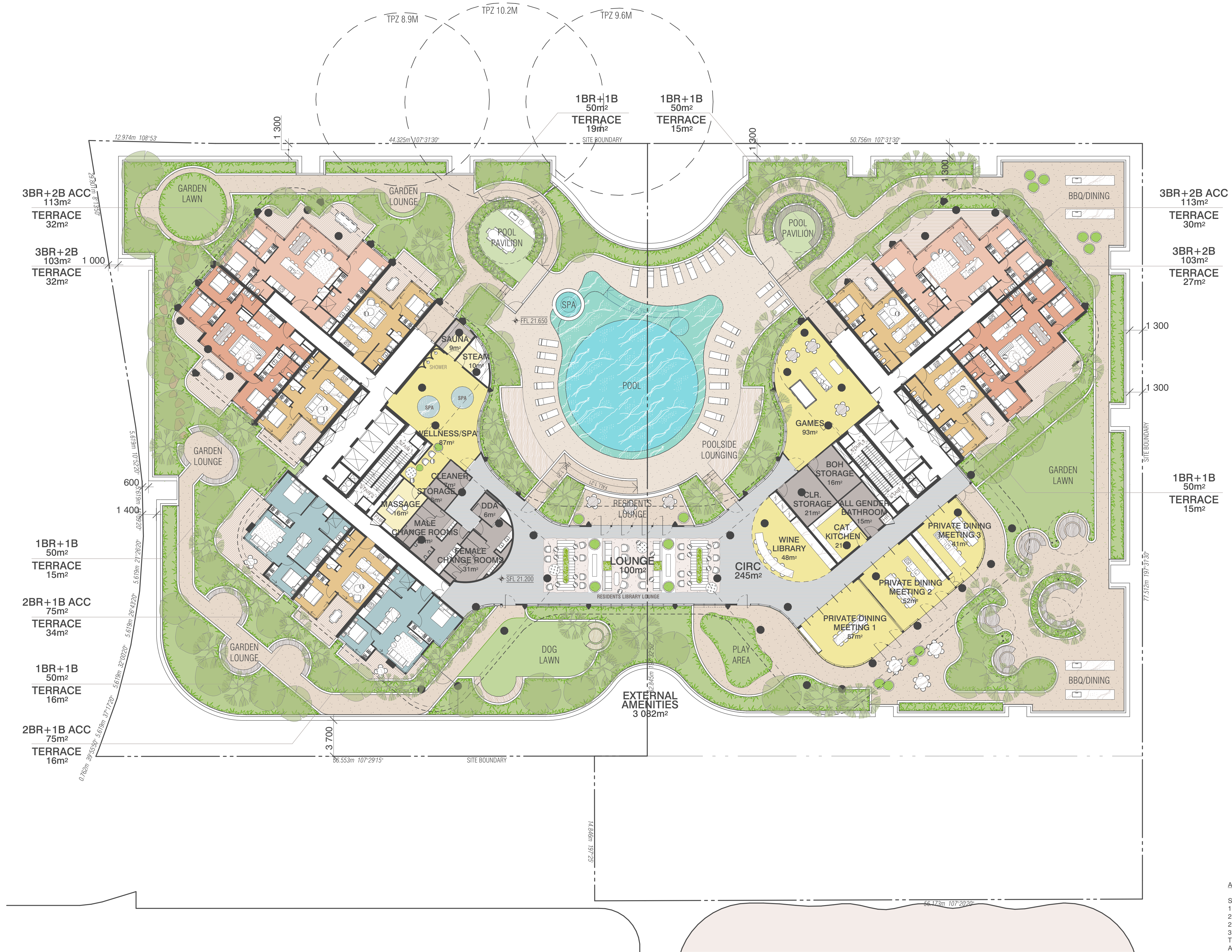


REV. 01
DRAWING NO. DA0100

NOT FOR CONSTRUCTION

APARTMENT MIX - AMENITIES LEVEL		
APT TYPE	QTY	AREA
1BR+1B	5	250
2BR+1B ACC	2	150
3BR+2B	2	206
3BR+2B ACC	2	226
	11	832 m²

GFA PODIUM ROOFTOP	
LEVEL	AREA
STOREY 5 - PODIUM ROOFTOP	955
	955 m²



APARTMENTS:

STUDIO	STUDIO APARTMENT UNIT
1BR+1B	1-BEDROOM UNIT WITH 1 BATHROOM
2BR+1B	2-BEDROOM UNIT WITH 1 BATHROOM
2BR+2B	2-BEDROOM UNIT WITH 2 BATHROOMS
3BR+2B	3-BEDROOM UNIT WITH 2 BATHROOMS
TH	DOUBLE STOREY TOWNHOUSE UNIT
ACC	ACCESSIBLE APARTMENT UNIT
DK	DUAL KEY APARTMENT UNIT

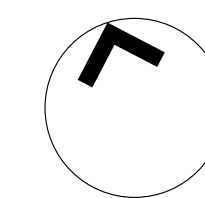
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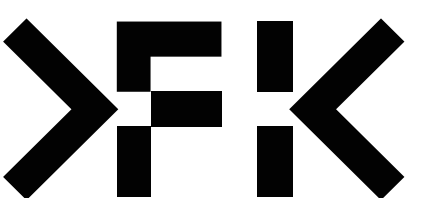


PROJECT
 11-23 MACARTHUR AVENUE HAMILTON
 11-23 MACARTHUR AVENUE
 HAMILTON QUEENSLAND 4007

DRAWING TITLE
 PODIUM ROOF FLOOR PLAN

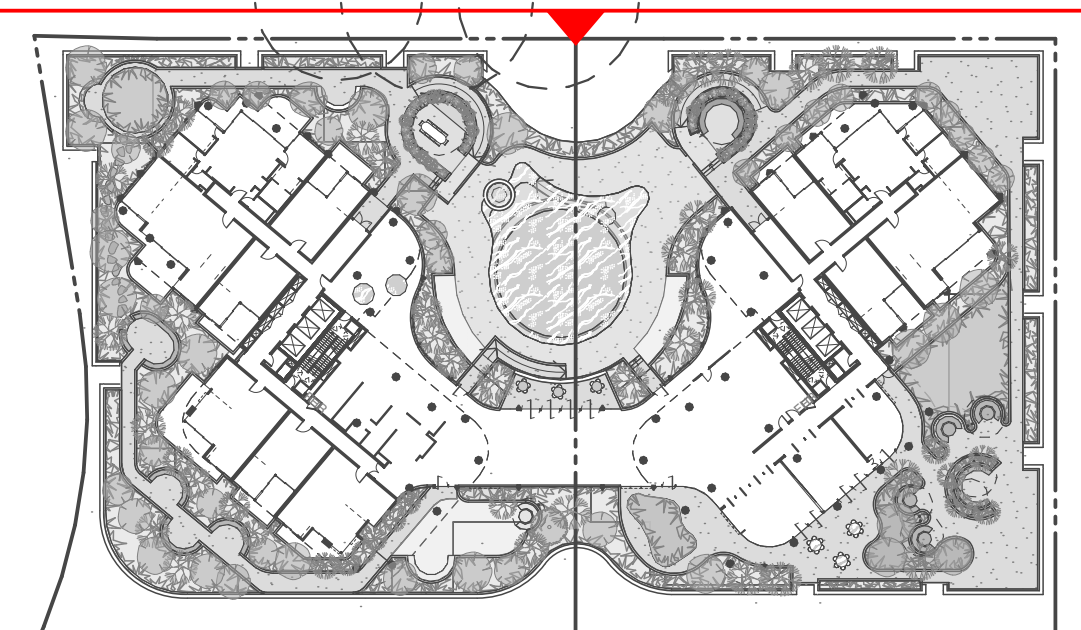
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 TELEPHONE: +61 7 3668 0681
 FENDER KATSALIDIS (AUST) PTY LTD ACN 092 943 032

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REV. 01
DRAWING NO. DA0105

NOT FOR CONSTRUCTION



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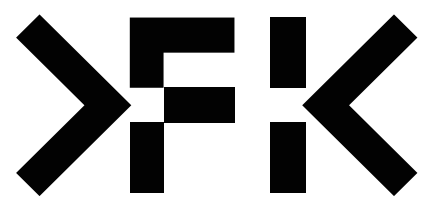
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PROJECT
 11-23 MACARTHUR AVENUE HAMILTON
 11-23 MACARTHUR AVENUE
 HAMILTON QUEENSLAND 4007

DRAWING TITLE
 NORTH - ELEVATION

FENDER KATSAIDIS
 WWW.FKAUSTRALIA.COM
 L34, 123 EAGLE STREET, BRISBANE
 QUEENSLAND 4000 AUSTRALIA
 TELEPHONE: +61 7 3668 0681
 FENDER KATSAIDIS (AUST) PTY LTD ACN 092 943 032

ISSUE PURPOSE
 DEVELOPMENT APPLICATION



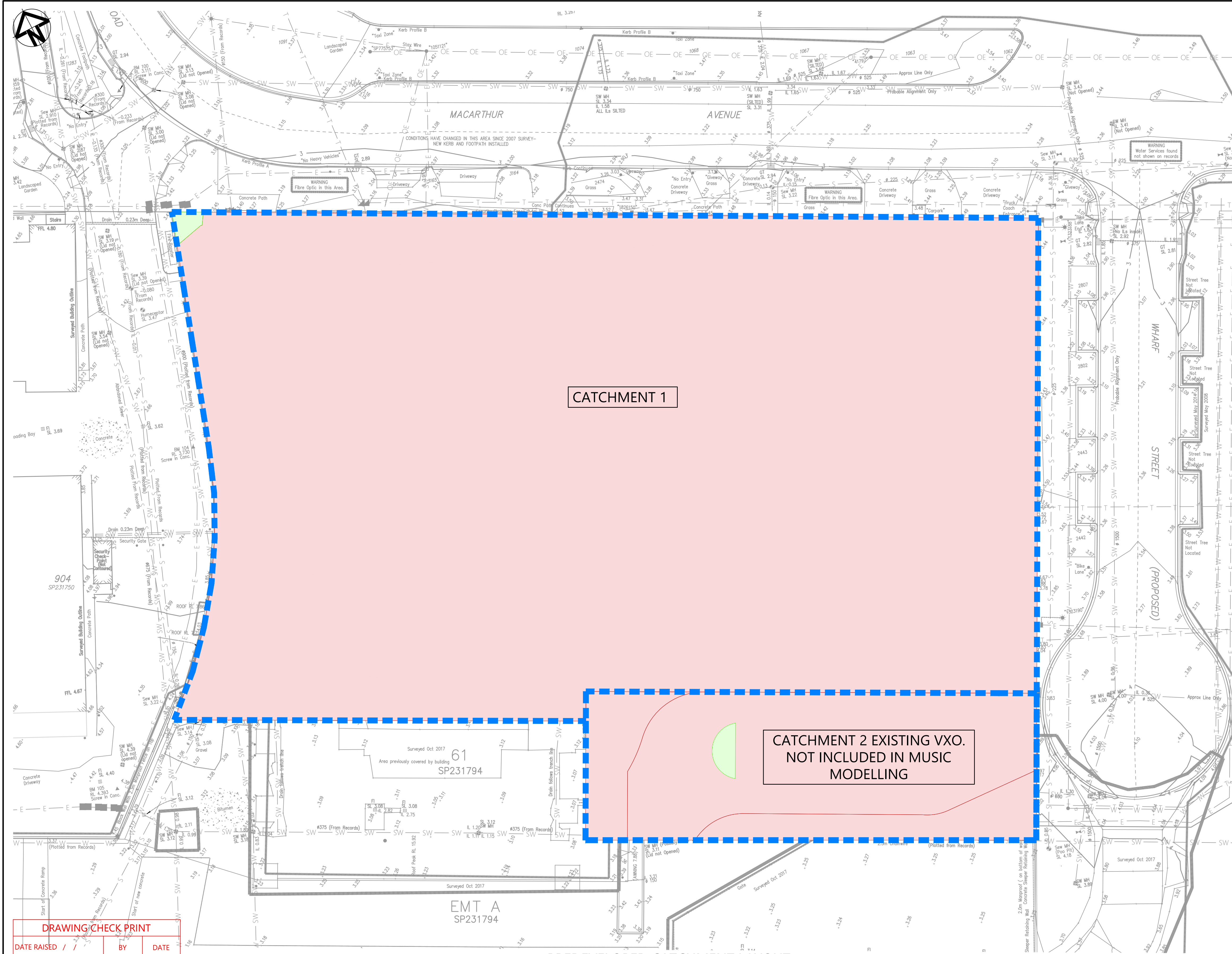
REV. 01
DRAWING NO. DA2001

NOT FOR CONSTRUCTION



Appendix B

Engineering Drawings



CATCHMENT 1

CATCHMENT 2 EXISTING VXO.
NOT INCLUDED IN MUSIC
MODELLING

PREDEVELOPED CATCHMENT LAYOUT
SCALE 1:250

- LEGEND**
- — — — — CATCHMENT BOUNDARY
- NOTES / WARNINGS**
- THESE DRAWINGS ARE FOR DA PURPOSES ONLY AND NOT TO BE USED FOR CONSTRUCTION

DRAWING CHECK PRINT

DATE RAISED	BY	DATE

PREDEVELOPED CATCHMENT AREAS

LEGEND	NAME	AREA (m ²)	DESCRIPTION	TOTAL AREA (m ²)	PERCENT IMPERVIOUS
1	6375	6375	CATCHMENT 1 - IMPERVIOUS	6385	99%
	10	10	CATCHMENT 1 - PERVIOUS		
2	1001	1001	CATCHMENT 2 - IMPERVIOUS	1016	99%
	15	15	CATCHMENT 2 - PERVIOUS		

ISSUE	DESCRIPTION	AUTHOR	DATE
01	ORIGINAL ISSUE	CZ	28.04.23

STATUS

**FOR APPROVAL
NOT FOR CONSTRUCTION**

R.P.E.Q No:	CERTIFIED
HEIGHT DATUM	AHD DESIGNER CZ
GRID	LOCAL CHECKER CH
ORIGINAL SIZE	A1 APPROVER MB

SURVEYOR

SCALE
SCALE 5 0 5 10 1:250

CLIENT

Brookfield Residential Properties

ARCHITECT

XFK

MICHAEL BALE & ASSOCIATES

Structural and Civil Engineering Consultancy

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Surfers Paradise,
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Ph: 07 5538 0431
mail@michaelbale.com.au

PROJECT TITLE:

**PORTSIDE DEVELOPMENT
11-23 MACARTHUR AVENUE, HAMILTON**

DRAWING TITLE:

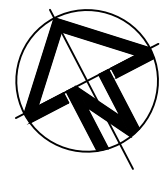
**PREDEVELOPED
CATCHMENT
LAYOUT PLAN**

NOTES:

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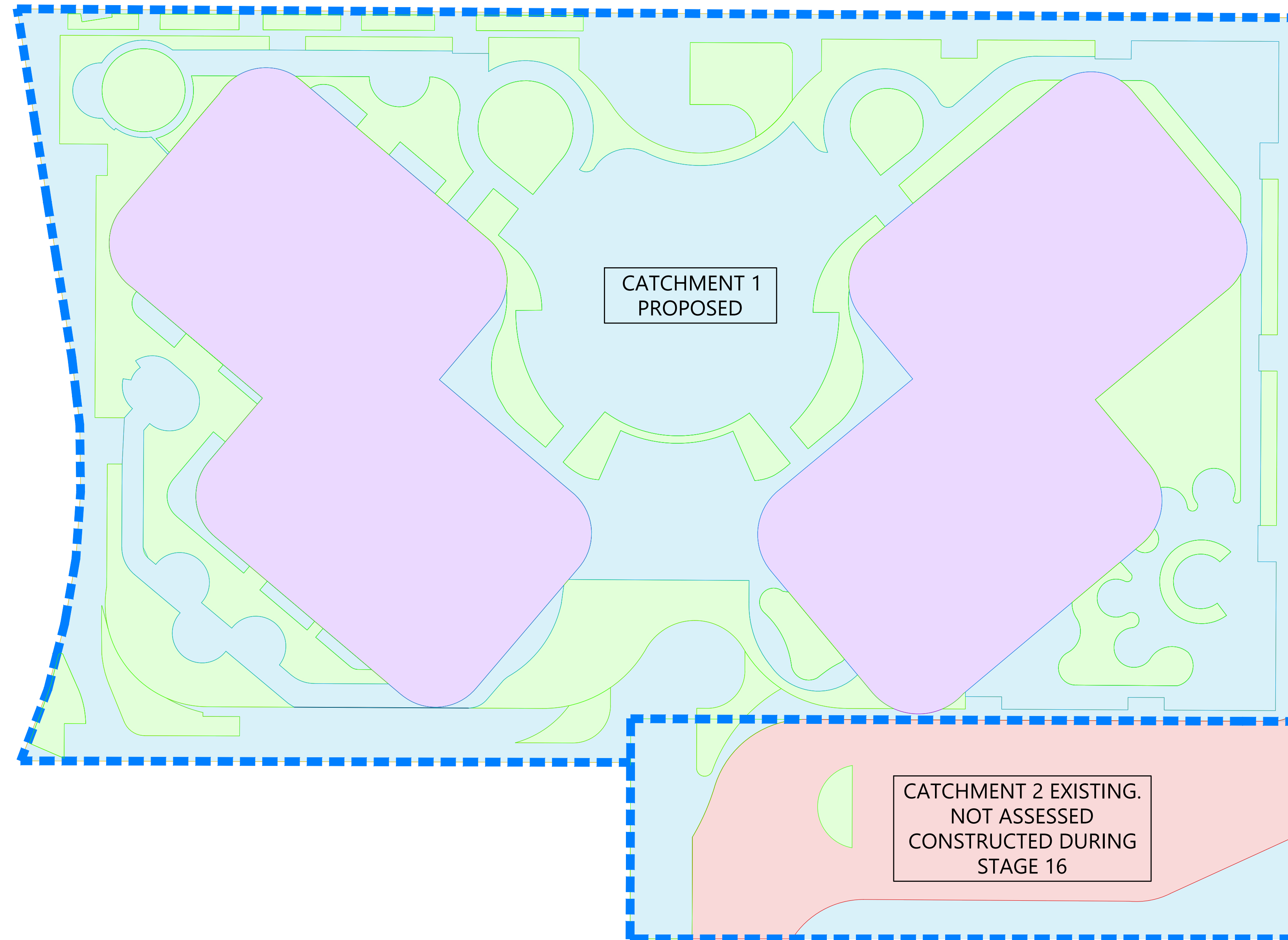
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DRAWING No.	PROJECT No.	REVISION
DA01	G23018	[01]



LEGEND	
	CATCHMENT BOUNDARY

NOTES / WARNINGS	
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POST-DEVELOPED CATCHMENT LAYOUT
SCALE 1:250

POST-DEVELOPED CATCHMENT AREAS					
LEGEND	NAME	AREA (m ²)	DESCRIPTION	TOTAL AREA (m ²)	PERCENT IMPERVIOUS
	1	1412	CATCHMENT 1 - LANDSCAPING	6385	78%
	2	2570	CATCHMENT 1 - HARDSTAND		
	3	2403	CATCHMENT 1 - ROOF		
	4	26	CATCHMENT 2 - LANDSCAPE	1016	97%
	5	270	CATCHMENT 2 - HARDSTAND		
	6	720	CATCHMENT 2 - DRIVEWAY		

DRAWING CHECK PRINT			
DATE RAISED / /	BY	DATE	
DRAFTING CHECK			
ENGINEERING CHECK			
BACK DRAFTING CHECK			
NEXT ACTION			

STATUS			
FOR APPROVAL NOT FOR CONSTRUCTION			
R.P.E.Q No:	CERTIFIED		
HEIGHT DATUM	AHD	DESIGNER	CZ
GRID	LOCAL	CHECKER	CH
ORIGINAL SIZE	A1	APPROVER	MB

SURVEYOR	
SCALE	
SCALE 1:250	

CLIENT

Brookfield
Residential Properties

ARCHITECT

FK

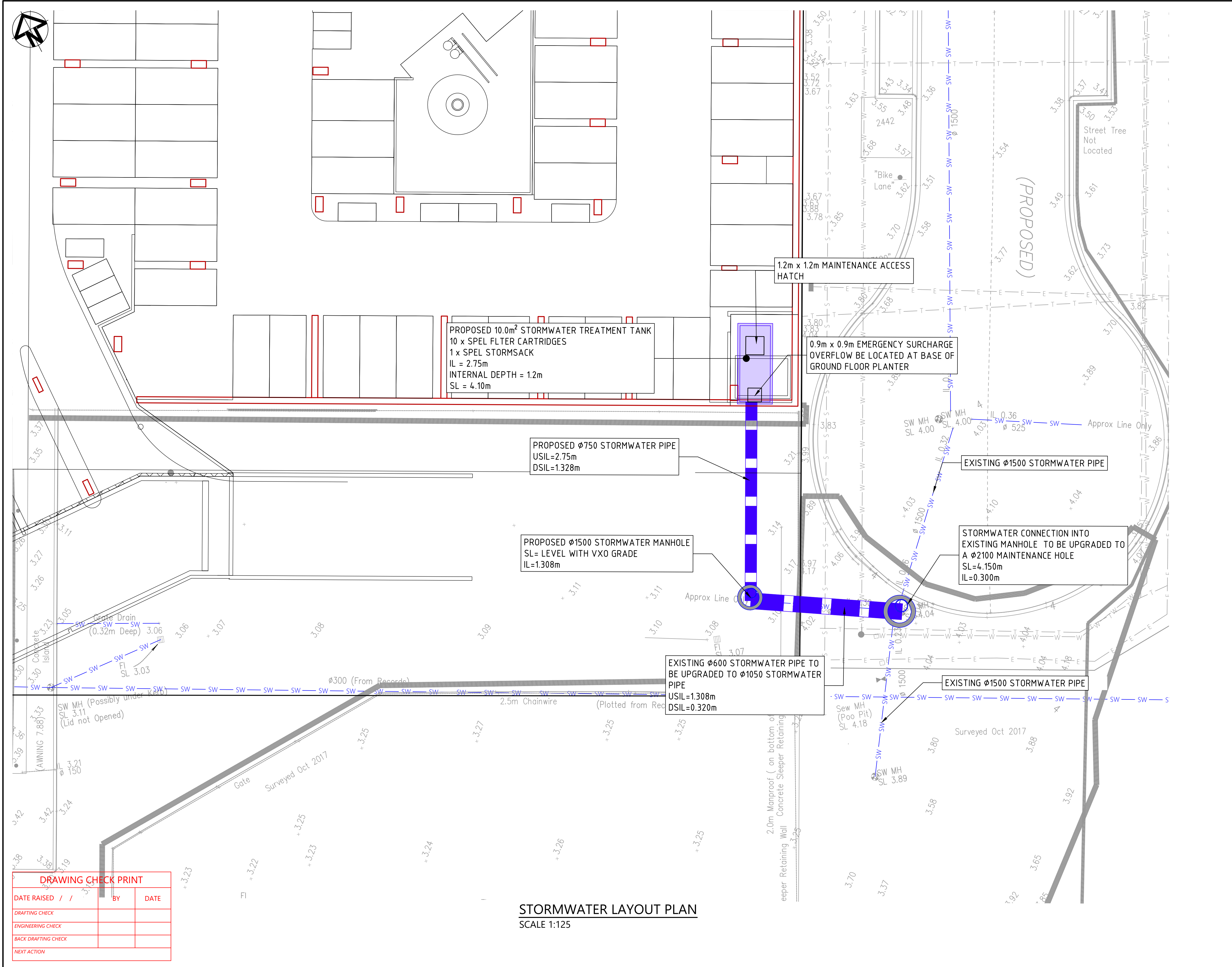
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PROJECT TITLE:	
PORTSIDE DEVELOPMENT 11-23 MACARTHUR AVENUE, HAMILTON	
DRAWING TITLE:	
POSTDEVELOPED CATCHMENT LAYOUT PLAN	

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DRAWING No.	PROJECT No.	REVISION
DA02	G23018	- [01]

10/May/2023 5:35 PM



LEGEND	
	SITE BOUNDARY
	PROPOSED STORMWATER LINE
	PROPOSED STORMWATER MANHOLE
	PROPOSED STORMWATER TANK
	EXISTING SEWER
	EXISTING WATER
	EXISTING STORMWATER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING OVERHEAD ELECTRICAL
	EXISTING TELSTRA
	EXISTING GAS

NOTES / WARNINGS
1. THESE DRAWINGS ARE FOR DA PURPOSES ONLY AND NOT TO BE USED FOR CONSTRUCTION

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STORMWATER LAYOUT PLAN
SCALE 1:125

ISSUE	DESCRIPTION	AUTHOR	DATE
01	ORIGINAL ISSUE	CZ	28.04.23

STATUS			
FOR APPROVAL NOT FOR CONSTRUCTION			
R.P.E.Q No:	CERTIFIED	DESIGNER	CZ
HEIGHT DATUM	AHD	CHECKER	CH
GRID	LOCAL	APPROVER	MB

SURVEYOR	
SCALE	SCALE 2.5 0 2.5 5 1:125

CLIENT
Brookfield
Residential Properties

ARCHITECT
FK

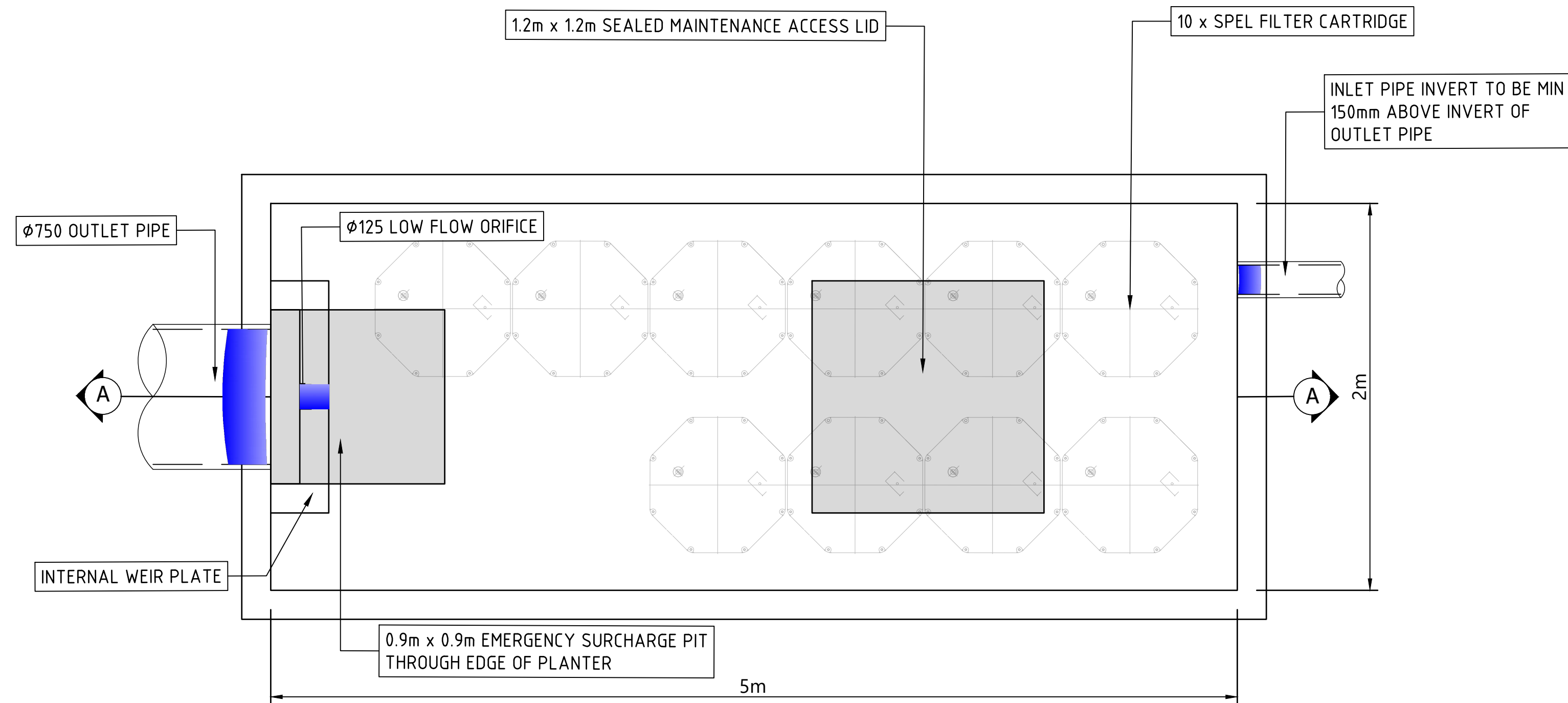
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PROJECT TITLE:
PORTSIDE DEVELOPMENT 11-23 MACARTHUR AVENUE, HAMILTON
DRAWING TITLE:
STORMWATER LAYOUT PLAN

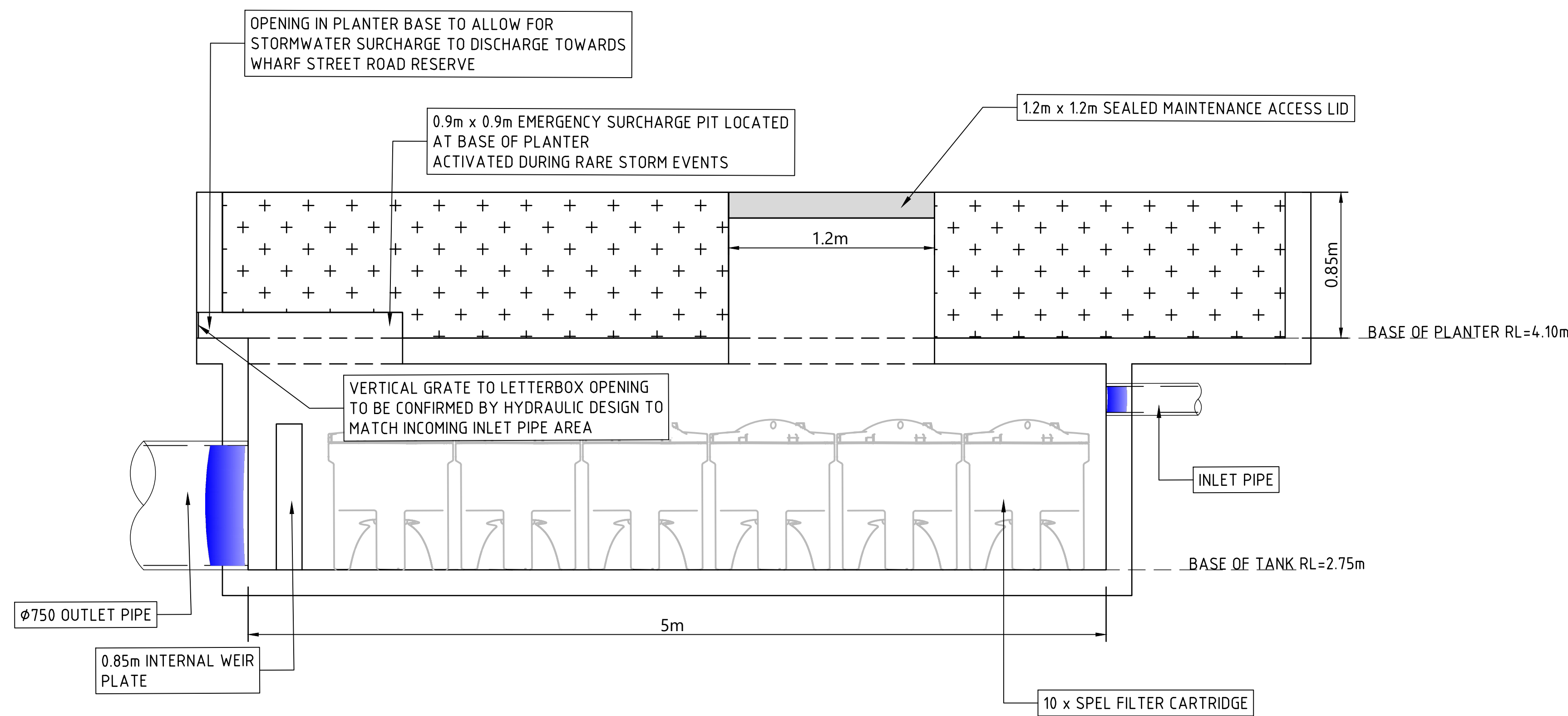
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DRAWING No.	PROJECT No.	REVISION
DA03	G23018	[01]

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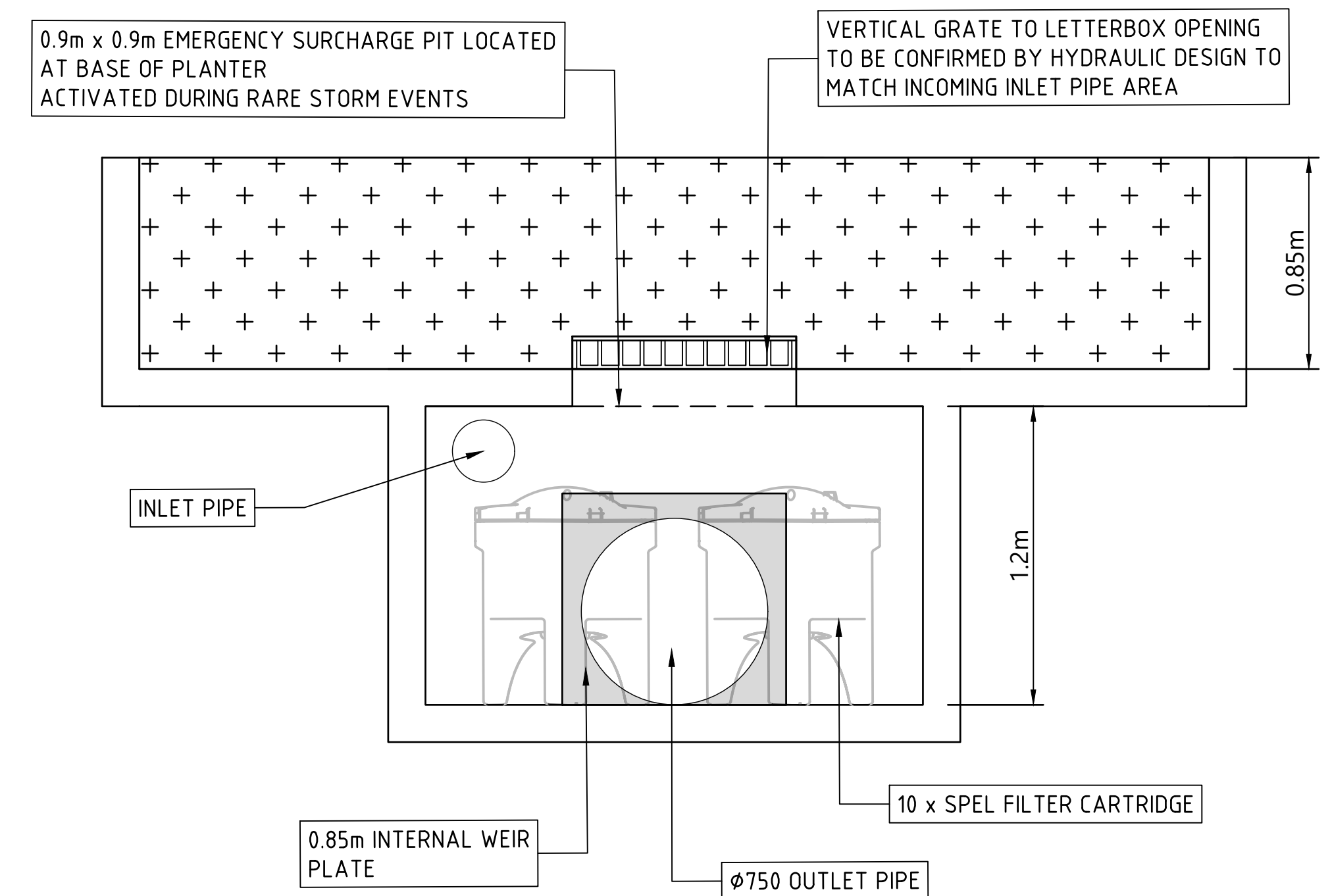
NOTES / WARNINGS
 1. THESE DRAWINGS ARE FOR DA PURPOSES ONLY AND NOT TO BE USED FOR CONSTRUCTION



PROPOSED STORMWATER TREATMENT TANK
 SCALE 1:25



SECTION A-A
 SCALE 1:25



SECTION DETAIL
 SCALE 1:25

DRAWING CHECK PRINT		
DATE RAISED / /	BY	DATE
DRAFTING CHECK		
ENGINEERING CHECK		
BACK DRAFTING CHECK		
NEXT ACTION		

STORMWATER TANK DETAIL
 SCALE 1:125

10/May/2023 5:26 PM

ISSUE	DESCRIPTION	AUTHOR	DATE
01	ORIGINAL ISSUE	CZ	10.05.23

STATUS			
FOR APPROVAL NOT FOR CONSTRUCTION			
R.P.E.Q No:	CERTIFIED	DESIGNER	CZ
HEIGHT DATUM	AHD	CH	MB
GRID	LOCAL	CHECKER	CH
ORIGINAL SIZE	A1	APPROVER	MB

SURVEYOR		SCALE	
		SCALE	1:125

CLIENT

ARCHITECT

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PROJECT TITLE:	
PORTSIDE DEVELOPMENT 11-23 MACARTHUR AVENUE, HAMILTON	
DRAWING TITLE:	
STORMWATER TANK DETAIL	

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DRAWING No.	PROJECT No.	REVISION
DA05	G23018	[01]



Appendix C

Erosion Hazard Assessment Form



Erosion Hazard Assessment - June 2014

Brisbane City Council (BCC), *Erosion Hazard Assessment* form must be read in conjunction with the *Erosion Hazard Assessment- Supporting Technical Notes* (June 2014 or later version) for explanatory terms and Certification information.

What is an Erosion Hazard Assessment?

Soil erosion and sediment from urban development, particularly during construction activities, is a significant source of sediment pollution in Brisbane's waterways. The Erosion Hazard Assessment determines whether the risk of soil erosion and sediment pollution to the environment is 'low', 'medium' or 'high'.

When is the EHA required?

An *Erosion Hazard Assessment* form must be completed and lodged with BCC for any Development Application (ie MCU or ROL) that will result in soil disturbance OR Operational Works or Compliance Assessment Application for 'Filling' or Excavation.

Failure to submit this form during lodgement of an application may result in assessment delays or refusal of the application.

Privacy Statement

The personal information collected on this form will be used by Brisbane City Council for the purposes of fulfilling your request and undertaking associated Council functions and services. Your personal information will not be disclosed to any third party without your consent, unless this is required or permitted by law.

Assessment Details

1 Please turn over and complete the erosion hazard assessment.

2 Based on the erosion hazard assessment overleaf, is the site:

A 'low' risk site

Best practice erosion and sediment control (ESC) must be implemented but no erosion and sediment control plans need to be submitted with the development application. Factsheets outlining best practice ESC can be found at <http://www.waterbydesign.com.au/factsheets>

A 'medium' risk site

If the development is approved, the applicant will need to engage a Registered Professional Engineer (RPEQ) or Certified Professional in Erosion and Sediment Control (CPESC) to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy.

A 'high' risk site

If the development is approved, the applicant will need to engage a RPEQ and CPESC to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy. The plans and program will need to be certified by a CPESC.

3 Site Information and Certification

Application number (if known)

Site address

Lot 703 and 705 on SP287529

Postcode 4007

I certify that:

- I have made all relevant enquiries and am satisfied no matters of significance have been withheld from the assessment manager.
- I am a person with suitable qualifications and/or experience in erosion and sediment control.
- The Erosion Hazard Assessment was completed in accordance with the Erosion Hazard Assessment Supporting Technical Notes and the BCC Infrastructure Design Planning Scheme Policy.
- The Erosion Hazard Assessment accurately reflects the site's overall risk of soil erosion and sediment pollution to the environment.
- I acknowledge and accept that the BCC, as assessment manager, relies, in good faith, on this certification as part of its development assessment process and the provision of false or misleading information to the BCC constitutes an offence for which BCC may take punitive steps/ action against me/ enforcement action against me.

Certified by *Print name*

Chanel Handel

Certifier's signature

Date

26 / 04 / 2023

Table 1: Low Risk Test

		Yes	No
1.1	is the area of land disturbance > 1000 m ²	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1.2	does any land disturbance occur in a BCC mapped waterway corridor	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.3	is there any slope on site (longer than three metres in length) before, during or after construction that is steeper than 5%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.4	does any land disturbance occur below 5 m AHD	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1.5	does development involve endorsement of a staging plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1.6	is there an upstream catchment passing through the site > 1 hectare	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Have you answered 'yes' to any of the questions in Table 1?

Yes	No
<input checked="" type="checkbox"/>	<input type="checkbox"/>

If 'No' then site is **low risk** with respect to erosion and sediment control

If 'Yes' then proceed to Table 2

Table 2: Medium Risk Test

		Yes	No
2.1	is the area of land disturbance > 1 hectare	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If 'No' then site is **medium risk** with respect to erosion and sediment control

If 'Yes' then proceed to Table 3

Table 3: High Risk Test

3.1	is there an upstream catchment passing through the site > 1 hectare	<input type="checkbox"/>	<input type="checkbox"/>
3.2	does any land disturbance occurs in a BCC mapped waterway corridor	<input type="checkbox"/>	<input type="checkbox"/>
3.3	is there any slope on site (longer than three metres in length) before, during or after construction that is steeper than 15%	<input type="checkbox"/>	<input type="checkbox"/>

Have you answered 'yes' to any of the questions in Table 3?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

If 'No' then site is **medium risk** with respect to erosion and sediment control

If 'Yes' then site is **high risk** with respect to erosion and sediment control



Appendix D

BCC & SPP Codes

9.4.3 Filling and excavation code

9.4.3.1 Application

1. This code applies to assessing:
 - a. accepted development subject to compliance with identified requirements, where acceptable outcomes of this code are identified requirements in a table of assessment for an overlay (section 5.10); or
 - b. operational work for filling or excavation which is assessable development if this code is an applicable code identified in the assessment benchmarks column of a table of assessment for operational work (section 5.8) or an overlay (section 5.10); or
 - c. a material change of use or reconfiguring a lot if:
 - i. assessable development where this code is identified as a prescribed secondary code in the assessment benchmarks column of a table of assessment for material change of use (section 5.5) or reconfiguring a lot (section 5.6); or
 - ii. impact assessable development, to the extent relevant.

Note—The following purpose, overall outcomes, performance outcomes and acceptable outcomes comprise the assessment benchmarks of this code.

Note—This code does not apply to building work as defined in the Act.

Note—A development application involving a rock anchor within an adjoining site is submitted with proof of consent from an adjoining land and building owner.

Editor's note—Guidance on managing the spread of invasive species in filling or excavation activities is provided in Minimising Pest Spread Advisory Guidelines prepared for the Petroleum industry.

Editor's note—Where filling or excavation is conducted on land previously occupied by a notifiable activity or on land listed on the Environmental Management Register or the Contaminated Land Register, the relevant Queensland Government department should be contacted for advice and guidelines.

2. When using this code, reference should be made to section 1.5 and section 5.3.3.

Note—Where this code includes performance outcomes or acceptable outcomes that relate to:

- air quality assessment, guidance is provided in the Air quality planning scheme policy;
- ecological assessment, koala habitat or development design, guidance is provided in the Biodiversity areas planning scheme policy;
- retaining wall construction, guidance is provided in the Infrastructure design planning scheme policy;
- landscape design, guidance is provided in the Landscape design planning scheme policy;
- noise and dust impacts during construction and/or demolition, guidance is provided in the Management plans planning scheme policy;
- noise impact assessment, guidance is provided in the Noise impact assessment planning scheme policy;
- the selection of planting species, guidance is provided in the Planting species planning scheme policy;
- significant vegetation, guidance is provided in the Vegetation planning scheme policy.

Editor's note—For a proposal to be accepted development, subject to compliance with identified requirements, it must meet all the identified acceptable outcomes of this code and any other applicable code. Where it does not meet all identified acceptable outcomes, the proposal becomes assessable development and a development application is required. Where a development application is triggered, only the specific acceptable outcome that the proposal fails to meet needs to be assessed against the corresponding acceptable outcome or performance outcome and relevant overall outcomes. Other identified acceptable outcomes that are met are not assessed as part of the development application.

9.4.3.2 Purpose

1. The purpose of the Filling and excavation code is to assess the suitability of development for filling or excavation.
2. The purpose of the code will be achieved through the following overall outcomes:
 - a. filling or excavation does not adversely affect the visual character and amenity of the site or the surrounding area and provides access for maintenance to any structure as a result of filling or excavation.
 - b. filling or excavation does not adversely impact significant vegetation, water quality or drainage of upstream, downstream and adjoining land.
 - c. filling or excavation effectively manages the impacts associated with the activity.
 - d. filling or excavation and any retaining structure is designed and constructed to be fit for purpose and to protect services and utilities.

9.4.3.3 Performance outcomes and acceptable outcomes

Table 9.4.3.3.A—Performance outcomes and acceptable outcomes

Performance outcomes	Acceptable outcomes	Comments
<p>PO1 Development for filling or excavation minimises visual impacts from retaining walls and earthworks.</p>	<p>AO1 Development ensures that the total height of any cut and fill, whether or not retained, does not exceed:</p> <ol style="list-style-type: none"> a. 2.5m in a zone in the Industry zones category; b. 1m in all other zones, or if adjoining a sensitive zone. 	<p>N/A Retaining structures are limited to basement shoring walls. All landscaping walls are below 1.0m in height.</p>
<p>PO2 Development of a retaining wall proposed as a result of filling or excavation:</p> <ol style="list-style-type: none"> a. is designed and constructed to be fit for purpose; b. does not impact adversely on significant vegetation; c. is capable of easy maintenance. <p>Editor's note—A retaining wall also needs to comply with the Building Regulation and embankment gradients will need to comply with the Building Regulation. Note—Guidance on the protection of native vegetation is included in the Biodiversity areas planning scheme policy.</p>	<p>AO2.1 Development of a retaining structure, including footings, surface drainage and subsoil drainage:</p> <ol style="list-style-type: none"> a. is wholly contained within the site; b. if the total height to be retained is greater than 1m, then: <ol style="list-style-type: none"> i. the retaining wall at the property boundary is no greater than 1m above the ground level; ii. all further terracing from the 1m high boundary retaining wall is 1 vertical unit:1 horizontal unit; iii. the distance between each successive retaining wall (back of lower wall to face of 	<p>N/A Retaining structures are limited to basement shoring walls. All landscaping walls are below 1.0m in height. If retaining walls are required, walls are to be confirmed and designed at the operations works phase and certified by a RPEQ.</p>

	<p>higher wall) is no less than 1m horizontally to incorporate planting areas.</p> <p>AO2.2 Development of a retaining wall over 1m in height protects significant vegetation on the site and on adjoining land and is designed and constructed in accordance with the structures standards in the Infrastructure design planning scheme policy and certified by a Registered Professional Engineer Queensland.</p> <p>AO2.3 Development provides a retaining wall finish that presents to adjoining land that is maintenance free if the setback is less than 750mm from the boundary.</p> <p>AO2.4 Development for filling only uses clean fill that does not include any construction rubble, debris, weed seed or viable parts of plant species listed as an undesirable plant species in the Planting species planning scheme policy.</p>	
<p>PO3 Development ensures that a rock anchor is designed and constructed to be fit for purpose.</p>	<p>AO3 Development ensures that a rock anchor:</p> <ol style="list-style-type: none"> a. is constructed in accordance with the standards in the Infrastructure design planning scheme policy; b. where it extends beyond the property boundary, is supported by a letter of consent from the adjoining land and building owners. 	<p>Complies – The use of rock anchors is to be confirmed as the development progresses towards the detailed design stage. If implemented, rock anchors will be adequately designed in accordance with all relevant standards.</p>

<p>PO4 Development protects all services and public utilities.</p>	<p>AO4 Development protects services and public utilities and ensures that any alteration or relocation of services or public utilities meets the standard design specifications of the responsible service authorities.</p>	<p>Complies – To be further demonstrated as the development progresses towards the detailed design stage. All works within the verge to ensure all services and public utilities are protected.</p>
<p>PO5 Development provides surface and sub-surface drainage to prevent water seepage, concentration of run-off or ponding of stormwater on adjacent land.</p>	<p>AO5 Development ensures all flows and subsoil drainage are directed to a lawful point of discharge of a surface water diversion drain, including to the top or toe of a retaining wall in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.</p>	<p>Complies – To be further demonstrated as the development progresses towards the detailed design stage.</p>
<p>PO6 Development ensures that the design and construction of all open drainage works is undertaken in accordance with natural channel design principles, being the development of a stormwater conveyance system for major flows, by using a vegetated open channel or drain that approximates the features and functions of a natural waterway to enhance or improve riparian values of those stormwater conveyance systems. Editor's note—Guidance on natural channel design principles can be found in the Council's publication Natural channel design guidelines.</p>	<p>AO6 Filling or excavation does not involve the construction of open drainage.</p>	<p>N/A</p>
<p>PO7 Development for filling or excavation:</p> <ol style="list-style-type: none"> a. does not degrade water quality or adversely affect environmental values in receiving waters; b. ensures site sediment and erosion control standards are best practice. 	<p>AO7.1 Development for filling or excavation provides water quality treatment that complies with the stormwater drainage section of the Infrastructure design planning scheme policy.</p> <p>AO7.2 Development provides erosion and sediment control standards that are in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.</p>	<p>Complies – Construction phase erosion and sediment control plans are to be prepared at the operational works phase. Plans are to ensure water quality objectives are met for the entire duration of construction. Refer to the Civil Engineering Report [Ref: R001-G23018] for details.</p>

<p>PO8 Development for filling or excavation is conducted such that adverse impacts at a sensitive use due to noise and dust are prevented or minimised. Note—A noise and dust impact management plan prepared in accordance with the Management plans planning scheme policy can assist in demonstrating achievement of this performance outcome.</p>	<p>AO8.1 Development ensures that no dust emissions extend beyond the boundary of the site, including dust from construction vehicles entering and leaving the site.</p> <p>AO8.2 Development for filling or excavation activity only occurs between the hours of 6:30am and 6:30pm Monday to Saturday, excluding public holidays.</p>	<p>Complies – To be further demonstrated as the development progresses towards the detailed design phase of the project. A dust control management plan is to form part of the construction methodology and erosion control plans.</p>
<p>PO9 Development ensures that vibration generated by the filling or excavation operation does not exceed the vibration criteria in Table 9.4.3.3.B, Table 9.4.3.3.C, Table 9.4.3.3.D and Table 9.4.3.3.E. Note—A noise management report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.</p>	<p>AO9 Development involving filling or excavation does not cause a ground-borne vibration beyond the boundary of the site.</p>	<p>Complies – To be further demonstrated as the development progresses towards the detailed design phase of the project. A vibration management plan is to form part of the construction methodology.</p>
<p>PO10 Development ensures that heavy trucks hauling material to and from the site do not affect the amenity of established areas and limits environmental nuisance impact on adjacent land.</p>	<p>AO10 Development ensures that heavy trucks hauling material to and from the site:</p> <ol style="list-style-type: none"> a. occur for a maximum of 3 weeks; b. use a major road to access the site; c. only use a minor road for the shortest-most-direct route that has the least amount of environmental nuisance if there is no major road alternative. 	<p>Complies – To be further demonstrated as the development progresses towards the detailed design phase of the project. Information to form part of the construction methodology.</p>
<p>PO11 Development for filling or excavation protects the environment and community health and wellbeing from exposure to contaminated land and contaminated material.</p>	<p>AO11 Development does not involve:</p> <ol style="list-style-type: none"> a. excavation on land previously occupied by a notifiable activity or on land listed on the Environmental Management Register or the Contaminated Land Register; b. filling with material containing a contaminant. 	<p>Complies – To be further demonstrated as the development progresses towards the detailed design phase of the project.</p>
<p>PO12</p>	<p>AO12.1</p>	<p>Complies –</p>

<p>Development provides for:</p> <ul style="list-style-type: none"> a. landscaping for water conservation purposes; b. water sensitive urban design measures which are employed within the landscape design to maximise stormwater use; c. drainage and stormwater measures to reduce any adverse impacts on the landscape; d. stormwater harvesting to be maximised and any adverse impacts of stormwater minimised; e. reticulated irrigation to all artificial growing environments. <p>Note—The Landscape design planning scheme policy provides guidance on information to be provided to demonstrate compliance with the performance outcome and acceptable outcomes.</p>	<p>Development provides drainage for artificial growing environments which is connected to the stormwater drain.</p> <p>AO12.2 Development ensures that the maximum site stormwater harvest capacity is utilised to meet the irrigation demand of the development before alternative irrigation sources are utilised and is in compliance with the standards in the Landscape design planning scheme policy.</p>	<p>Refer to landscape plans provided within this development application for details. To be further progressed as the development progresses towards the detailed design phase of the project, with the Landscape OPW application.</p>
<p>AO12.3 Development provides areas of pavement, turf, landscaping and mulched garden beds which are drained.</p> <p>Note—This may be achieved through the provision and/or treatment of swales, spoon drains, field gullies, sub-surface drainage and stormwater connections.</p>		
<p>AO12.4 Development provides a reticulated irrigation system to all landscaping areas in accordance with the Landscape design planning scheme policy.</p>		
<p>PO13 Development ensures cutting and filling for the development of canals or artificial waterways avoids adverse impacts on coastal resources and processes.</p>	<p>AO13 Development does not involve the creation of canals or artificial waterways.</p>	<p>N/A</p>

Table 9.4.3.3.B— Recommended intermittent vibration levels for cosmetic damage

Type of building	Peak particle velocity (mm/s)		
Reinforced or framed structures; industrial and heavy commercial buildings	50mm/s at 4Hz and above		
Unreinforced or light-framed structures; residential or light-	Below 4Hz	4Hz to 15Hz	15Hz and

commercial type buildings			above
	0.6mm/s	15mm/s at 4Hz increasing to 20mm/s at 15Hz	20mm/s at 15Hz increasing to 50mm/s at 40Hz and above

Table 9.4.3.3.C— Recommended blasting vibration levels for human comfort

Type of building	Type of blasting operations	Peak component particle velocity (mm/s)
Residences, educational establishments and places of worship	Operation blasting longer than 12 months or more than 20 blasts	5mm/s for 95% blasts per year 10mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Residences, educational establishments and places of worship	Operations lasting for less than 12 months or less than 20 blasts	10mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Industry or commercial premises	All blasting	25 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that do not adversely affect the equipment operation.

Table 9.4.3.3.D— Recommended levels for continuous and impulsive vibration acceleration (m/s²) 1–80Hz for human comfort

Location	Assessment period ⁽¹⁾	Preferred values ⁽³⁾		Maximum values ⁽³⁾	
		z-axis	x and y axes	z-axis	x and y axes
Continuous vibration					
Critical areas ⁽²⁾	Day or night	0.005 m/s ²	0.0036 m/s ²	0.01 m/s ²	0.0072 m/s ²

Residences	Day	0.01 m/s ²	0.0071 m/s ²	0.02 m/s ²	0.014 m/s ²
-	Night	0.007 m/s ²	0.005 m/s ²	0.014 m/s ²	0.01 m/s ²
Offices, educational establishments and places of worship	Day or night	0.02 m/s ²	0.014 m/s ²	0.04 m/s ²	0.028 m/s ²
Workshops	Day or night	0.04 m/s ²	0.029 m/s ²	0.08 m/s ²	0.058 m/s ²
Impulsive vibration					
Critical areas	Day or night	0.005 m/s ²	0.0036 m/s ²	0.01 m/s ²	0.0072 m/s ²
Residences	Day	0.3 m/s ²	0.21 m/s ²	0.6 m/s ²	0.42 m/s ²
-	Night	0.1 m/s ²	0.071 m/s ²	0.2 m/s ²	0.14 m/s ²
Offices, educational establishments and places of worship	Day or night	0.64 m/s ²	0.46 m/s ²	1.28 m/s ²	0.92 m/s ²
Workshops	Day or night	0.64 m/s ²	0.46 m/s ²	1.28 m/s ²	0.92 m/s ²

Note—

(1) Day is 7am to 10pm and night is 10pm to 7am.

(2) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

(3) Situations exist where vibration above the preferred values can be acceptable, particularly for temporary or short-term events. Further guidance is given in the Noise impact assessment planning scheme policy.

Table 9.4.3.3.E— Recommended vibration dose values for intermittent vibration (m/s^{1.75}) for human comfort

Location	Daytime ⁽¹⁾		Night time ⁽¹⁾	
	Preferred value	Maximum value	Preferred value ⁽³⁾	Maximum value ⁽³⁾
Critical areas ⁽²⁾	0.1 m/s ^{1.75}	0.2 m/s ^{1.75}	0.1 m/s ^{1.75}	0.2 m/s ^{1.75}

Residences	0.2 m/s ^{1.75}	0.4 m/s ^{1.75}	0.13 m/s ^{1.75}	0.26 m/s ^{1.75}
Offices, educational establishments and places of worship	0.4 m/s ^{1.75}	0.8 m/s ^{1.75}	0.4 m/s ^{1.75}	0.8 m/s ^{1.75}
Workshops	0.8 m/s ^{1.75}	1.6 m/s ^{1.75}	0.8 m/s ^{1.75}	1.6 m/s ^{1.75}

Note—

- (1) Day is 7am to 10pm and night is 10pm to 7am.
- (2) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.
- (3) Situations exist where vibration above the preferred values can be acceptable, particularly for temporary or short-term events. Further guidance is given in the Noise impact assessment planning scheme policy.

9.4.4 Infrastructure design code

9.4.4.1 Application

1. This code applies to assessing a material change of use, reconfiguring a lot or building work if:
 - a. assessable development where this code is identified as a prescribed secondary code in the assessment benchmarks column of a table of assessment for a material change of use (section 5.5), reconfiguring a lot (section 5.6), operational work (section 5.8), or an overlay (section 5.10); or
 - b. impact assessable development, to the extent relevant.
2. When using this code, reference should be made to section 1.5 and section 5.3.3.

Note—The following purpose, overall outcomes, performance outcomes and acceptable outcomes comprise the assessment benchmarks of this code.

Note—Where this code includes performance outcomes or acceptable outcomes that relate to:

- ecological assessment, koala habitat or development design, guidance is provided in the Biodiversity areas planning scheme policy;
- infrastructure design and construction works, guidance is provided in the Infrastructure design planning scheme policy;
- noise and dust impacts during construction and/or demolition, guidance is provided in the Management plans planning scheme policy;
- noise impact assessment, guidance is provided in the Noise impact assessment planning scheme policy;
- refuse and recycling, guidance is provided in the Refuse planning scheme policy;
- parking or servicing management during construction, guidance is provided in the Transport, access, parking and servicing planning scheme policy.

9.4.4.2 Purpose

1. The purpose of the Infrastructure design code is to assess the suitability of infrastructure for development.
2. The purpose of the code will be achieved through the following overall outcomes:
 - a. Development is provided with a safe, connected and efficient transport network for all modes that has a minimal whole-of-life cost.
 - b. Development provides for public utilities and services to the standards acceptable to the Council and the reasonable expectations of service providers.
 - c. Development involving infrastructure which is intended to become a Council asset is safe, aesthetically pleasing, functional, fit for purpose, durable, minimises environmental impacts and has minimal whole-of-life cost.
 - d. Development provides for a public space to be safe and inviting, allowing high levels of pedestrian activity.
 - e. Development ensures that the community and environment are not unreasonably disrupted or impacted by construction or demolition for the development.
 - f. Development involving infrastructure is designed with consideration of, and to integrate with, other related and interfacing infrastructure components.
 - g. Development accessed by common private title is provided with appropriate fire hydrant infrastructure and has unimpeded access for refuse vehicles and for emergency service vehicles to protect people, property and the environment.
 - h. Development ensures major electricity infrastructure and bulk water supply infrastructure identified on the State Planning Policy Interactive Mapping System is not compromised.
 - i. Development for major electricity infrastructure and bulk water supply infrastructure identified on the State Planning Policy Interactive Mapping System avoids or otherwise minimises adverse impacts on surrounding land uses.

9.4.4.3 Performance outcomes and acceptable outcomes

Table 9.4.4.3.A—Performance outcomes and acceptable outcomes

Performance outcomes	Acceptable outcomes	Comments
<p>PO1 Development provides roads, pavement, edging and landscaping which:</p> <ul style="list-style-type: none"> a. are designed and constructed in accordance with the road hierarchy; b. provide for safe travel for pedestrians, cyclists and vehicles; c. provide access to properties for all modes; d. provide utilities; e. provide high levels of aesthetics and amenity, improved liveability and future growth; f. provide for the amelioration of noise and other pollution; g. provide a high-quality streetscape; h. provide a low-maintenance asset with a minimal whole-of-life cost. <p>Note—This can be demonstrated in an engineering report prepared and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.</p>	<p>AO1 Development provides roads and associated pavement, edging and landscaping which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy.</p>	<p>Complies – Refer to the architectural plans and engineering documents for further details. Compliance with this outcome to be further demonstrated through landscape and engineering design as the project progressed through the detailed design phase.</p>
<p>PO2 Development provides road pavement surfaces which:</p> <ul style="list-style-type: none"> a. are well designed and constructed; b. durable enough to carry the wheel loads of the intended types and numbers of travelling and parked vehicles; c. ensures the safe passage of vehicles, pedestrians and cyclists, the discharge of stormwater run-off and the preservation of all-weather access; 	<p>AO2 Development provides road pavement surfaces which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy.</p>	<p>N/A – no works to be conducted on any public roadways.</p>

d. allows for reasonable travel comfort.		
<p>PO3 Development provides a pavement edge which is designed and constructed to:</p> <ul style="list-style-type: none"> a. control vehicle movements by delineating the carriageway for all users; b. provide for people with disabilities by allowing safe passage of wheelchairs and other mobility aids. 	<p>A03 Development provides pavement edges which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy.</p>	<p>Complies – Refer to the architectural plans and engineering documents for further details. Compliance with this outcome to be further demonstrated through landscape and engineering design as the project progressed through the detailed design phase.</p>
<p>PO4 Development provides verges which are designed and constructed to:</p> <ul style="list-style-type: none"> a. provide safe access for pedestrians clear of obstructions and access areas for vehicles onto properties; b. provide a sufficient area for public utility services; c. be maintainable by the Council. 	<p>A04 Development provides verges which are designed and constructed in compliance with the road corridor design and streetscape locality advice standards in the Infrastructure design planning scheme policy.</p>	<p>Complies – Refer to the architectural plans and engineering documents for further details. Compliance with this outcome to be further demonstrated through landscape and engineering design as the project progressed through the detailed design phase.</p>
<p>PO5 Development provides a lane or laneway identified on the Streetscape hierarchy overlay map or in a neighbourhood plan which:</p> <ul style="list-style-type: none"> a. allows equitable access for all modes; b. is safe and secure; c. has 24-hour access; d. is a low-speed shared zone environment; e. has a high-quality streetscape. 	<p>A05 Development provides a lane or laneway identified on the Streetscape hierarchy overlay map or in a neighbourhood plan which is embellished in compliance with the streetscape locality advice standards in the Infrastructure design planning scheme policy.</p>	N/A
<p>PO6 Development of an existing premises provides at the frontage to the site, if not already provided, the following infrastructure to an appropriate urban standard:</p> <ul style="list-style-type: none"> a. an effective, high-quality paved roadway; b. an effective, high-quality roadway kerb and channel; 	<p>A06 Development of an existing premises provides at the frontage of the site, if not already existing, the following infrastructure to the standard that would have applied if the development involved new premises as stated in the road corridor design standards in the Infrastructure design planning scheme policy:</p>	N/A

<ul style="list-style-type: none"> c. safe, high-quality vehicle crossings over channels and verges; d. safe, accessible, high-quality verges compatible and integrated with the surrounding environment; e. safe vehicle access to the site that enables ingress and egress in a forward gear; f. provision of and required alterations to public utilities; g. effective drainage; h. appropriate conduits to facilitate the provision of required street-lighting systems and traffic signals. 	<ul style="list-style-type: none"> a. concrete kerb and channel; b. forming and grading to verges; c. crossings over channels and verges; d. a constructed bikeway; e. a constructed verge or reconstruction of any damaged verge; f. construction of the carriageway; g. payment of costs for required alterations to public utility mains, services or installations; h. construction of and required alterations to public utility mains, services or installations; i. drainage works; j. installation of electrical conduits. 	
<p>PO7 Development provides both cycle and walking routes which:</p> <ul style="list-style-type: none"> a. are located, designed and constructed to their network classification (where applicable); b. provide safe and attractive travel routes for pedestrians and cyclists for commuter and recreational purposes; c. provide safe and comfortable access to properties for pedestrians and cyclists; d. incorporate water sensitive urban design into stormwater drainage; e. provide for utilities; f. provide for a high level of aesthetics and amenity, improved liveability and future growth; g. are a low-maintenance asset with a minimal whole-of-life cost; h. minimise the clearing of significant native vegetation. <p>Note—This can be demonstrated in an engineering report prepared and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.</p>	<p>A07 Development provides cycle and walking routes which are located, designed and constructed in compliance with the road corridor design and off-road pathway design standards in the Infrastructure design planning scheme policy.</p>	<p>N/A</p>

<p>PO8 Development provides refuse and recycling collection, separation and storage facilities that are located and managed so that adverse impacts on building occupants, neighbouring properties and the public realm are minimised.</p>	<p>AO8.1 Development provides refuse and recycling collection and storage facilities in accordance with the Refuse planning scheme policy.</p> <p>AO8.2 Development ensures that refuse and recycling collection and storage location and design do not have any adverse impact including odour, noise or visual impacts on the amenity of land uses within or adjoining the development. Note—Refer to the Refuse planning scheme policy for further guidance.</p>	<p>Complies – A waste management plan is to be prepared for the site and submitted to Council.</p>
<p>PO9 Development ensures that:</p> <ul style="list-style-type: none"> a. land used for an urban purpose is serviced adequately with regard to water supply and waste disposal; b. the water supply meets the stated standard of service for the intended use and fire-fighting purposes. 	<p>AO9.1 Development ensures that the reticulated water and sewerage distribution system for all services is in place before the first use is commenced.</p> <p>AO9.2 Development provides the lot with reticulated water supply and sewerage to a standard acceptable to the distributor–retailer.</p>	<p>Complies – A SAN has been lodged to UU. Refer to the Civil Engineering Report [Ref: R001-G23018] for details. Compliance with this outcome is to be further demonstrated through the detail design of the water and sewer connections to be completed at the detailed design phase of the project.</p>
<p>PO10 Development provides public utilities and street lighting which are the best current or alternative technology and facilitate accessibility, easy maintenance, minimal whole-of-life costs, and minimal adverse environmental impacts.</p>	<p>AO10.1 Development provides public utilities and street lighting which are located and aligned to:</p> <ul style="list-style-type: none"> a. avoid significant native vegetation and areas identified within the Biodiversity areas overlay map; b. minimise earthworks; c. avoid crossing waterways, waterway corridors and wetlands or if a crossing is unavoidable, tunnel-boring techniques are used to minimise disturbance, and a disturbed area is reinstated and restored on completion of the work. <p>Note—Guidance on the restoration of habitat is included in the Biodiversity areas planning scheme policy.</p> <p>AO10.2</p>	<p>N/A</p>

	<p>Development provides compatible public utility services and street-lighting services which are co-located in common trenching for underground services.</p>	
	<p>AO10.3 Development provides public utilities and street lighting which are designed and constructed in compliance with the public utilities standards in the Infrastructure design planning scheme policy.</p>	
<p>PO11 Development ensures that land used for urban purposes is serviced adequately with telecommunications and energy supply.</p>	<p>AO11 Development provides land with the following services to the standards of the approved supplier: a. electricity; b. telecommunications services; c. gas service where practicable.</p>	<p>Complies – To be further demonstrated as the development progresses to OPW stage. To be demonstrated via applications to the respective service providers.</p>
<p>PO12 Development ensures that major public projects promote the provision of affordable, high-bandwidth telecommunications services throughout the city.</p>	<p>AO12 Development provides conduits which are provided in all major Council and government works projects to enable the future provision of fibre optic cabling, if: a. the additional expense is unlikely to be prohibitive; or b. further major work is unlikely or disruption would be a major concern, such as where there is a limited capacity road; or c. there is a clear gap in the telecommunications network; or d. there is a clear gap in the bandwidth available to the area. Editor's note—An accurate, digital 'as built' three-dimensional location plan is to be supplied for all infrastructure provided in a road.</p>	<p>N/A</p>
<p>PO13 Development provides public art identified in a neighbourhood plan or park concept plan which:</p>	<p>AO13 Development provides public art identified in a neighbourhood plan or park concept plan which is sited</p>	<p>N/A</p>

<p>a. is provided commensurate with the status and scale of the proposed development;</p> <p>b. is sited and designed:</p> <ul style="list-style-type: none"> i. as an integrated part of the project design; ii. as conceptually relevant to the context of the location; iii. to reflect and respond to the cultural values of the community; iv. to promote local character in a planned and informed manner. 	<p>and designed in compliance with the public art standards in the Infrastructure design planning scheme policy.</p>	
<p>PO14 Development provides signage of buildings and spaces which promote legibility to help users find their way.</p>	<p>AO14 Development provides public signage:</p> <ul style="list-style-type: none"> a. at public transport interchanges and stops, key destinations, public spaces, pedestrian linkages and at entries to centre developments; b. which details the location of the key destinations, public spaces and pedestrian linkages in the vicinity, the services available within the development and where they are located. <p>Editor's note—Signage is to be in accordance with Local Law Number 1 (Control of Advertisements Local Law).</p>	<p>N/A</p>
<p>PO15 Development that provides community facilities which form part of the development is functional, safe, low maintenance, and fit for purpose.</p>	<p>AO15 Development that provides community facilities which form part of the development is designed in compliance with the community facilities standards in the Infrastructure design planning scheme policy.</p>	<p>N/A</p>
<p>PO16 Development provides public toilets which:</p> <ul style="list-style-type: none"> a. are required as part of a community facility or park; b. are located, designed and constructed to be: <ul style="list-style-type: none"> i. safe; ii. durable; iii. resistant to vandalism; 	<p>AO16 Development that provides public toilets is designed and constructed in compliance with the public toilets standards in the Infrastructure design planning scheme policy.</p>	<p>N/A</p>

<p>iv. able to service expected demand; v. fit for purpose.</p>		
<p>PO17 Development provides bridges, tunnels, elevated structures and water access structures that are designed and constructed using proven methods, materials and technology to provide for:</p> <ul style="list-style-type: none"> a. safe movement of intended users; b. an attractive appearance appropriate to the general surroundings and any adjacent structures; c. functionality and easy maintenance; d. minimal whole-of-life cost; e. longevity; f. current and future services. <p>Note—All bridges and elevated and associated elements must be designed and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.</p>	<p>AO17 Development that provides bridges, tunnels, elevated structures and water access structures is designed and constructed in compliance with the standards in the Infrastructure design planning scheme policy.</p>	<p>N/A</p>
<p>PO18 Development provides culverts which are designed and constructed using proven methods, materials and technology to provide for:</p> <ul style="list-style-type: none"> a. safety; b. an attractive appearance appropriate to the general surroundings; c. functionality and easy maintenance; d. minimal whole-of-life cost; e. longevity; f. future widening; g. current and future services; h. minimal adverse impacts, such as increase in water levels or flow velocities, and significant change of flood patterns. <p>Note—All culverts and associated elements are to be designed and certified by a Registered Professional Engineer Queensland in</p>	<p>AO18 Development that provides culverts is designed and constructed in compliance with the structures standards in the Infrastructure design planning scheme policy.</p>	<p>N/A</p>

accordance with the applicable design standards.		
<p>PO19 Development provides batters, retaining walls, and seawalls and river walls which are designed and constructed using proven methods, materials and technology to provide for:</p> <ul style="list-style-type: none"> a. safety; b. an attractive appearance appropriate to the surrounding area; c. easy maintenance; d. minimal whole-of-life cost; e. longevity; f. minimal water seepage. <p>Note—All retaining walls and associated elements are to be designed and certified by a Registered Professional Engineer Queensland in accordance with the applicable design standards.</p>	<p>AO19 Development that provides batters, retaining walls, seawalls and river walls is designed and constructed in compliance with the structures standards in the Infrastructure design planning scheme policy.</p>	N/A
If for development with a gross floor area greater than 1,000m²		
<p>PO20 Development ensures that construction is managed so that use of public spaces and movement on pedestrian, cyclist and other traffic routes is not unreasonably disrupted and existing landscaping is adequately protected from short- and long-term impacts.</p> <p>Note—The preparation of a construction management plan can assist in demonstrating achievement of this performance outcome. Note—The Transport, access, parking and servicing planning scheme policy provides advice on the management of vehicle parking and deliveries during construction.</p>	<p>AO20 Development ensures that during construction:</p> <ul style="list-style-type: none"> a. the ongoing use of adjoining and surrounding parks and public spaces, such as malls and outdoor dining, is not compromised; b. adjoining and surrounding landscaping is protected from damage; c. safe, legible, efficient and sufficient pedestrian, cyclist and vehicular accessibility and connectivity to the wider network are maintained. 	Complies – To be further demonstrated as the development progresses to the Operational Works phase, as construction methodologies are finalized.
<p>PO21 Development ensures that construction and demolition activities are guided by measures that prevent or minimise adverse impacts including sleep disturbance at a sensitive use, due to noise and dust, including dust</p>	<p>AO21.1 Development ensures that demolition and construction:</p> <ul style="list-style-type: none"> a. only occur between 6:30am and 6:30pm Monday to Saturday, excluding public holidays; b. do not occur over periods greater than 6 months. 	Complies – To be further demonstrated as the development progresses to the Operational Works phase, as construction methodologies are finalized.

<p>from construction vehicles entering and leaving the site. Note—A noise and dust impact management plan prepared in accordance with the Management plans planning scheme policy can assist in demonstrating achievement of this performance outcome.</p>	<p>AO21.2 Development including construction and demolition does not release dust emissions beyond the boundary of the site.</p>	
<p>PO22 Development ensures that: a. construction and demolition do not result in damage to surrounding property as a result of vibration; b. vibration levels achieve the vibration criteria in Table 9.4.4.3.B, Table 9.4.4.3.C, Table 9.4.4.3.D and Table 9.4.4.3.E. Note—A vibration impact assessment report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.</p>	<p>AO22 Development ensures that the nature and scale of construction and demolition do not generate noticeable levels of vibration.</p>	<p>Complies – To be further demonstrated as the development progresses to the Operational Works phase, as construction methodologies are finalized.</p>
<p>If for a material change of use or reconfiguring a lot in an urban area (as defined in the Regulation) involving premises that is, or will be, accessed by common private title, where involving buildings, either attached or detached, that are not covered by other legislation mandating fire hydrants</p>		
<p>PO23 Development ensures that fire hydrants are: a. installed and located to enable fire services to access water safely, effectively and efficiently; b. suitably identified so that fire services can locate them at all hours.</p>	<p>AO23.1 Above or below ground fire hydrants are provided on residential, commercial and industrial streets and private roads, at not more than 90m intervals, and at each street intersection. Note—On residential streets, above ground fire hydrants may be single outlet. On commercial and industrial streets above ground fire hydrants should have dual valved outlets. AO23.2 Fire hydrants are identified by: a. raised reflectorised pavement markers (RRPM) on sealed roads; b. marker posts at the fence line where on an</p>	<p>Complies – To be further demonstrated as the development progresses to the Operational Works phase.</p>

	unsealed road, as road (HR) or path (HP) hydrants.	
PO24 Development ensures road widths and construction within the development, are adequate for refuse vehicles and for fire emergency vehicles to gain access to a safe working area close to buildings and near water supplies whether or not on-street parking spaces are occupied.	AO24 Internal private roads have a minimum roadway clearance between obstructions of 3.5m wide and 4.8m high in addition to any width required for on-street parking.	Complies – Refer to architectural plans for details.
Development for major electricity infrastructure and bulk water supply infrastructure identified on the State Planning Policy Interactive Mapping System where not in the Utility services zone precinct of the Special purpose zone		
PO25 Development avoids or otherwise minimises adverse impacts on surrounding land uses through the use of buffers and setbacks and the appropriate design and location of plant and operational areas within the site.	AO25 No acceptable outcome is prescribed.	N/A
Development potentially impacting on major electricity infrastructure and bulk water supply infrastructure identified on the State Planning Policy Interactive Mapping System where the infrastructure is not in the Utility services zone precinct of the Special purpose zone		
PO26 Development is sited and designed to: a. avoid safety risks to people or property; b. minimise noise and visual impacts to people and property; c. ensure the physical integrity and operation, maintenance and expansion of the infrastructure is not compromised.	AO26 No acceptable outcome is prescribed.	N/A

Table 9.4.4.3.B—Recommended intermittent vibration levels for cosmetic damage

Type of building	Peak particle velocity (mm/s)
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Reinforced or framed structures; industrial and heavy commercial buildings	50mm/s at 4Hz and above		
Unreinforced or light-framed structures; residential or light commercial type buildings	Below 4Hz	4Hz to 15Hz	15Hz and above
	0.6mm/s	15mm/s at 4Hz increasing to 20mm/s at 15Hz	20mm/s at 15Hz increasing to 50mm/s at 40Hz and above

Table 9.4.4.3.C—Recommended blasting vibration levels for human comfort

Type of building	Type of blasting operations	Peak component particle velocity (mm/s)
Residences, educational establishments and places of worship	Operation blasting longer than 12 months or more than 20 blasts	5mm/s for 95% blasts per year 10mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Residences, educational establishments and places of worship	Operation blasting longer than 12 months or more than 20 blasts	10mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Industry or commercial premises	All blasting	25mm/s maximum unless agreement is reached with the occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that do not adversely affect the equipment operation.

Table 9.4.4.3.D—Recommended levels for continuous and impulsive vibration acceleration (m/s²) 1–80Hz for human comfort

Location	Assessment period ⁽¹⁾	Preferred values ⁽³⁾		Maximum values ⁽³⁾	
		z-axis	x and y axes	z-axis	x and y axes
Continuous vibration					
Critical areas ⁽²⁾	Day or night	0.005 m/s ²	0.0036 m/s ²	0.01 m/s ²	0.0072 m/s ²
Residences	Day	0.01 m/s ²	0.0071 m/s ²	0.02 m/s ²	0.014 m/s ²
-	Night	0.007 m/s ²	0.005 m/s ²	0.014 m/s ²	0.01 m/s ²
Offices, educational establishments and places of worship	Day or night	0.02 m/s ²	0.014 m/s ²	0.04 m/s ²	0.028 m/s ²
Workshops	Day or night	0.04 m/s ²	0.029 m/s ²	0.08 m/s ²	0.058 m/s ²
Impulsive vibration					
Critical areas	Day or night	0.005 m/s ²	0.0036 m/s ²	0.01 m/s ²	0.0072 m/s ²
Residences	Day	0.3 m/s ²	0.21 m/s ²	0.6 m/s ²	0.42 m/s ²
-	Night	0.1 m/s ²	0.071 m/s ²	0.2 m/s ²	0.14 m/s ²
Offices, educational establishments and places of worship	Day or night	0.64 m/s ²	0.46 m/s ²	1.28 m/s ²	0.92 m/s ²
Workshops	Day or night	0.64 m/s ²	0.46 m/s ²	1.28 m/s ²	0.92 m/s ²

Note—

(1) Day is 7am to 10pm and night is 10pm to 7am.

(2) Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

(3) Situations exist where vibration above the preferred values can be acceptable, particularly for temporary or short-term events. Further guidance is given in the Noise impact assessment planning scheme policy.

Table 9.4.4.3.E—Recommended vibration dose values for intermittent vibration ($\text{m/s}^{1.75}$) for human comfort

Location	Daytime ⁽¹⁾		Night time ⁽¹⁾	
	Preferred value	Maximum value	Preferred value ⁽³⁾	Maximum value ⁽³⁾
Critical areas ⁽²⁾	0.1 $\text{m/s}^{1.75}$	0.2 $\text{m/s}^{1.75}$	0.1 $\text{m/s}^{1.75}$	0.2 $\text{m/s}^{1.75}$
Residences	0.2 $\text{m/s}^{1.75}$	0.4 $\text{m/s}^{1.75}$	0.13 $\text{m/s}^{1.75}$	0.26 $\text{m/s}^{1.75}$
Offices, educational establishments and places of worship	0.4 $\text{m/s}^{1.75}$	0.8 $\text{m/s}^{1.75}$	0.4 $\text{m/s}^{1.75}$	0.8 $\text{m/s}^{1.75}$
Workshops	0.8 $\text{m/s}^{1.75}$	1.6 $\text{m/s}^{1.75}$	0.8 $\text{m/s}^{1.75}$	1.6 $\text{m/s}^{1.75}$

Note—

⁽¹⁾ Day is 7am to 10pm and night is 10pm to 7am.

⁽²⁾ Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

⁽³⁾ Situations exist where vibration above the preferred values can be acceptable, particularly for temporary or short-term events. Further guidance is given in the Noise impact assessment planning scheme policy.



Appendix E

Urban Utilities (SAN)

29 June 2023

Ms Chanel Handel
Michael Bale & Associates Pty Ltd
PO Box 1715
Surfers Paradise, QLD 4217

Urban Utilities
GPO Box 2765
BRISBANE QLD 4001
Phone: 07 3432 2200
www.urbanutilities.com.au/development

Via Email: chanelh@michaelbale.com.au

Dear Ms Chandel,

Urban Utilities Services Advice Notice

Urban Utilities application number:	23-SAN-65864
Applicant name:	Ms Chanel Handel Michael Bale & Associates Pty Ltd
Street address:	11 Macarthur Avenue, Hamilton
Real Property Description:	Lot 705 SP28729; Lot 703 SP28731

Proposed service connection/alteration/disconnection type:

Drinking water	<input checked="" type="checkbox"/>
Non-drinking water/recycled water	<input type="checkbox"/>
Wastewater	<input checked="" type="checkbox"/>

Urban Utilities provides this Services Advice Notice in response to the request received on 16.05.2023. In accordance with section 99BRAC(3) of the *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009*, this Services Advice Notice provides advice about the proposed connection having regard to the connections policy in the Urban Utilities Water Netserv Plan, the charges and conditions that may apply to the connection and other relevant matters about the connection. All terms used in this Services Advice Notice are defined by reference to the Urban Utilities Water Netserv Plan.

Further, infrastructure information may not be verified, and Urban Utilities provides no warranty or assurance that this information is correct. Independent on-location site inspections are recommended to verify the location, condition and size of any infrastructure.

This Services Advice Notice does not constitute an application for connection, is not an approval to connect to the Urban Utilities network(s) and does not bind any future Urban Utilities' decision if the applicant applies for a connection.

Urban Utilities understands that the proposed development will consist of 560 residential units, 142 m² of commercial space. As per the request for a Service Advice Notice submitted, a material change of use will be applied for as part of this development. Based on your proposal and discussion with Urban Utilities officers, the following advice is provided:

Urban Utilities Services Advice

Infrastructure and Design

The project site is within the Northshore Hamilton Priority Development Area (PDA). Development applications for priority development areas are assessed by Economic Development Queensland (EDQ).

The infrastructure funding framework within each PDA is also prescribed and managed by EDQ under an Infrastructure Charges Offset Plan (ICOP). The developer should review the current ICOP and development scheme to understand the broader infrastructure obligations specific to this site.

Water

Urban Utilities GIS mapping suggests that the existing properties are serviced via 100mm connection into 150mm cast iron water main in the adjacent verge at the north-western corner of the subject site.

Figure 1 below provides a spatial presentation of the existing water supply and wastewater network within the immediate proximity of the subject site.

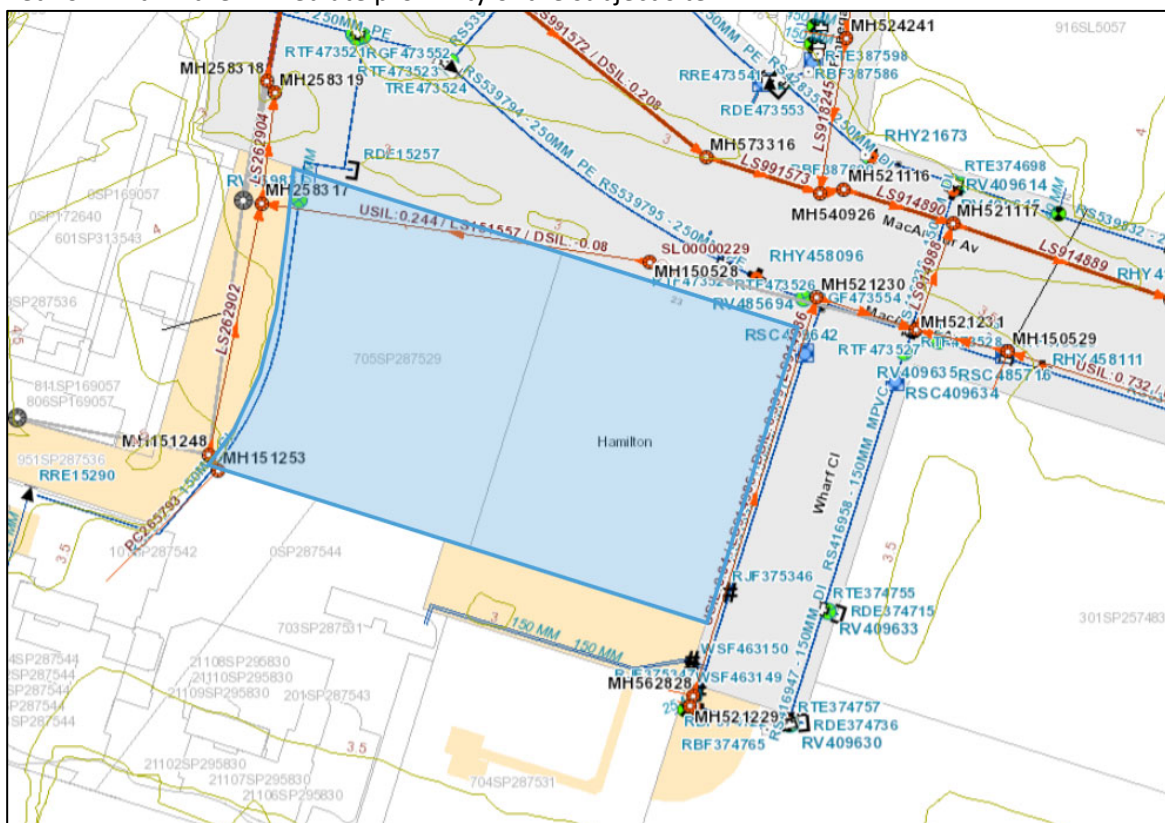


Figure 1: Existing infrastructure within the vicinity of the subject site

The applicant has not advised the location of the future water service for the proposed development. Urban Utilities can advise the water service (i.e the pipework up to the boundary) must be located within public road reserve.

In relation to the proposal to relocate the existing 150mm CI running along the site's western boundary into the adjacent lane/car parking area:

- Urban Utilities GIS mapping provides indication of assets' location, not their exact location. The exact location needs to be verified onsite via potholing

- The adjacent lane/car parking area is a private property encumbered with an easement. Negotiations with the property's and the easement's owners will have to be held to allow for the relocation works
- Comprehensive information about the current and proposed alignments needs to be provided in order to determine whether the proposal is acceptable

The water meter design and arrangement must meet URBAN UTILITIES's contemporary requirements, and all redundant water services must be sealed at the main.

Please refer to ***Urban Utilities Metering Guidelines*** and ***Standard Water Meter Arrangement Drawings*** for detailed guidance.

Wastewater

Urban Utilities GIS mapping suggests that the existing facility is serviced via:

- 150mm property connection into 225mm unreinforced concrete sewer main traversing the subject site through its north-western corner
- DN160mm PE property connection into DN250 PE sewer main in Wharf Close

It has been proposed to remove the said 225mm sewer main within the site and convert the section immediately upstream of the manhole MH258317 into the property connection for the proposed development.

Urban Utilities does not object to the proposed wastewater service arrangement, provided an investigation is undertaken to confirm absence of any upstream connections.

Note that the water/wastewater infrastructure required for the proposed development is to be provided in accordance with URBAN UTILITIES requirements, including but not limited to the *SEQ Water Supply and Sewerage Design and Construction Code (SEQ WS&S D&C Code, 2013)*, or current equivalent.

Network Demand and Capacity

Water

An assessment of the water supply available at the site, including computational hydraulic modelling of the network under peak demand and fire flow conditions, has been completed.

The analysis assumes a Peak Hour Demand of 8.31 L/s (corresponding to 1065 EP of the proposed development).

The assessment indicates that the existing water supply has sufficient capacity to service the proposed development in accordance with the *SEQ Water Supply and Sewerage Design and Construction Code, 2013 (SEQ WS&S D&C Code)*.

Indicative flow and pressure advice for the existing mains in Macarthur Ave is provided in Table 1, below.

Table 1: Indicative Flow and Pressure Advice

Assumed Connection Main	Estimated RL Connection (m AHD)	Hydraulic Grade Line (m AHD)			Pressure (kPa) ¹		
		0 L/s	10 L/s	20 L/s	0 L/s	10 L/s	20 L/s
150mm (cast iron) constructed in 1970	3.2	72.2	71.2	70.2	677	667	657

250mm PE constructed in 2020	3.3	71.3	71.3	70.3	667	667	657
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Notes:

- ¹ Modelled pressure in supply main, relative to the estimated connection RL (m AHD).
- ² Designers are required to adjust the Hydraulic Grade Line/Pressure model results for site/building RL differences and calculate the extra hydraulic losses from point of connection with the main.
- ³ Field performance of cast iron spun (or cement) lined mains can be variable. Field testing to ascertain actual pressure drops may be advisable.
- ⁴ Indicative flow and pressure results assume a background demand of 2/3 Peak Hour has been applied throughout the network.

Disclaimer

Information provided by Urban Utilities is based on hydraulic modelling ("Hydraulic Modelling Information"). Model results are for the anticipated performance. **The Hydraulic Modelling Information has not been verified by field measurements and may be inaccurate due to field conditions.**

As such, users relying on Hydraulic Modelling Information do so at their own risk and should make their own independent investigations to verify model outputs.

The Hydraulic Modelling Information does not state nor imply a guaranteed level of service. Designers are referred to Urban Utilities' Customer Charter and Customer Service Standards for facility hydraulic service considerations. **Urban Utilities does not provide a service of minimum flows and pressures to private fire-fighting systems.**

Due to changing operational circumstances, pressure and flows delivered to a service may vary. Designers are advised to make adequate provisions within the fire system installation for the pressure, flow and reliability requirements, for the life of the system.

Designs incorporating flows above the maximum rates specified will have a detrimental impact on other properties in the area and are not supported by Urban Utilities.

Wastewater

A hydraulic assessment of the sewerage network servicing the site under peak wet weather flow conditions has been completed.

The analysis assumes a Peak Wet Weather Flow from the development of 12.94 L/s (corresponding to 1065 EP of the proposed development).

The assessment indicates that the existing wastewater network downstream of the subject site has sufficient capacity to service the proposed development.

As per standard advice, Urban Utilities recommends that the minimum fitting levels within the development be 500mm above the surface level of the downstream manholes.

Land and Easements

Sewer Main in Private Properties

Please refer to following link for easement requirements at:
<https://urbanutilities.com.au/development/our-services/easements>

Water Main in Private Properties

Please refer to table 5.2 and clause 5.4.4 of *SEQ WS&S D&C Code* for easement requirements.

Infrastructure Charges (as at 1 July 2022)

Infrastructure Charges will be levied in accordance with the Urban Utilities' Water Netserv Plan (Part A) Charges Schedule applicable at the time the water approval application is lodged.

Further information is available at:

www.urbanutilities.com.au/development/help-and-advice/water-netserv-plan

Trade Waste

The **proposed development** (the subject of this Services Advice Notice) has been identified as a potential generator of Trade Waste. Trade Waste is water-borne waste from business, trade or manufacturing premises excluding domestic sewerage, stormwater, and prohibited substances. It is an offence under section 193(1) of the **Water Supply (Safety and Reliability) Act 2008** to discharge trade waste into Urban Utilities' infrastructure without a Trade Waste Approval.

To obtain a Trade Waste Approval, the proponent for the proposed development must apply to Urban Utilities, who will assess and decide the application. Any Trade Waste Approval granted by Urban Utilities will be subject to Trade Waste Approval conditions and the Urban Utilities Trade Waste Environmental Management Plan (**TWEMP**).

The TWEMP and an online application form are available on the Urban Utilities website:

www.urbanutilities.com.au/business/business-services/trade-waste

For advice on the suitability of waste for discharge to sewer, and likely Trade Waste Approval conditions, you may contact Urban Utilities on **13 26 57**.

Proposed trade waste drainage solutions will be assessed for compliance with plumbing and drainage regulations and the requirements of the TWEMP at the time of plumbing compliance assessment. Proposed trade waste solutions that do not meet the requirements in the TWEMP and plumbing and drainage regulations may result in delays to the plumbing compliance process and the issue of a Trade Waste Approval.

Further information is available at the following website:

www.urbanutilities.com.au/business/business-services/trade-waste

Connection Application Process

A formal assessment as to whether your application qualifies as a Standard Connection, Minor Works Approval, or Major Works Approval will be resolved on application for a Water Approval. For the purposes of preliminary advice, and based on the information provided, it is expected that the following applications will be required to assess the ability to connect to Urban Utilities networks:

Minor Works (Wastewater)

1. Network and/or Property Service Connection – Non-Standard Connection (Minor Works)

The Water Approval will require connection works to be undertaken. These works are expected to be available under the Endorsed Consultant Certification Scheme for Non-Standard Connection (Minor Works). You will be able to choose a Urban Utilities Endorsed Consultant and a contractor to appoint to design and construct the works, including live works in most cases (Network Access Permit -NAP required)) and then maintain the works for a specified period (usually 12 months) in accordance with the conditions stated in your Water Approval (including compliance with the *SEQ WS&S D&C Code*). Further information regarding the Endorsed Consultant Certification Scheme for Minor Works is available at: **www.urbanutilities.com.au/development**

Major Works (Water)

1. Network and/or Property Service Connection – Non-Standard Connection (Major Works)

The Water Approval will require connection works to be undertaken. You will be able to choose which consultants and contractors to appoint to design and construct the works, including live works (in most cases) and then maintain the works for a specified period (usually 12 months) in accordance with the conditions stated in your Water Approval.

Please note that the information provided within this section is subject to the specific aspects of the development and water application.

Fees and Charges

Urban Utilities fees and charges are stated in the Urban Utilities' Water Netserv Plan (Part A) Charges Schedule. The fees and charges that are likely to be associated with these applications are outlined below:

1. Application Phase – per service

Base Application Fee – Network (1 to 10 lots)

2. Design, Construction and Maintenance Phases

Non Standard Connection (Minor Works) – per service

Audit and Compliance Fee – Minor Works

Non Standard Connection (Major Works)- per service

Audit and Compliance Fee – Major Works

Non Standard Connection (Design Approval Fee) – Reticulation per service

Property Service Connection

Network Connection (1 to 10 lots)

Re-checking Amended Plans Fee

Re-checking Amended Plans Fee (per plan page, technical report or other document)

Non Standard Connection (Inspection)

Works Inspection Fee – Reticulation per inspection

Works Inspection Fee - Reticulation

Works Re-inspection Fee - Reticulation

Notes:

1. The customer may incur additional fees and charges during the approval and works phase, including but not limited to, fees levied by the RPEQ and construction contractor, fees associated with the provision of maintenance/uncompleted works bond(s), re-checking amended plans fees, re-inspection of works fees and infrastructure agreement preparation fees;
2. Reticulation comprises infrastructure with a diameter of 300mm and below and complex assets comprise treatment, storage, pump facilities and infrastructure with a diameter greater than 300mm.
3. The above estimates are indicative only and are subject to review of the detailed application upon lodgement; and
4. Please refer to the Urban Utilities Water Netserv Plan and Developer Customer Price List at www.urbanutilities.com.au/development

Time Frames for Assessment

Non-Standard Connection Assessments (for applications other than Standard Connection)

To be completed within 20 business days of receipt of a properly made application (including payment of the relevant assessment fee), or within a further 20 business days of receipt of requested information (unless extended by agreement).

Design Phase

For Minor Works (Sewer)

Typically, for an application which is classified as **minor works**, no assessment of the design phase is expected to be required from Urban Utilities.

However, Urban Utilities may audit a selection of certified designs based on its assessment of the risk of non-compliance

For Major Works (Water)

Typically for an application classified as **major works**, the assessment of the design phase is to be completed within 20 business days of receipt of all designs.

Other Guidance

Urban Utilities network is protected by the Development Code MP1.4 Building Over or Near Infrastructure (QDC MP1.4). Please confirm with your Building Certifier/RPEQ Engineer whether a Build Over Asset application (BOA) is required.

Further information regarding the BOA/COA requirements is available at:

<https://urbanutilities.com.au/development/our-services/build-or-construction-over-or-nearpipes-or-easements>

This Services Advice Notice is current for a period of twelve (12) months from the date of issue. Should you wish to proceed with applying for a service connection please lodge your application via Urban Utilities Developer Applications Portal at **www.urbanutilities.com.au/development**. Please include your Services Advice Notice reference number in your application.

If you have any questions in relation to this Services Advice Notice, please do not hesitate to contact your account manager, Gleb Spivak on 07 3855 6211 or gleb.spivak@urbanutilities.com.au.

Alternatively, please email DevelopmentEnquiries@urbanutilities.com.au.

Yours sincerely,



Nghiep Nguyen
Senior Engineer
Urban Utilities