



# 777 SOUTH WESTERN HIGHWAY, BYFORD STORMWATER MANAGEMENT PLAN

PREPARED FOR TAL GP PROJECTS



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## HISTORY AND STATUS OF THE DOCUMENT

Revision	Date issued	Author	Issued to	Revision type
Rev A	26/02/2024	Shane Highman	Planning Solutions	Initial Review
Rev B	12/06/2024	Shane Highman	Planning Solutions	Final DA Submission



## 1.0 INTRODUCTION

Porter Consulting Engineers has been engaged by TAL GP Projects to prepare a stormwater management plan for the proposed commercial development on Lot 777 South Western Highway in Byford.

The site is approximately 8,700m<sup>2</sup> in size and is located directly west of the Walters Road-South Western Highway intersection. The site's location is shown in Figure 1.



Figure 1 – Site Layout

## 2.0 DEVELOPMENT LAYOUT

The intent is to develop the site into a storage facility. The current site plan is presented in **Appendix A**.

## 3.0 THE EXISTING SITE

### 3.1 Landform

The site contains a slender building with a large shed behind, historical aerial photography suggests this was built prior to 1974.

The site has a sealed pavement with crossovers along the South Western Highway frontage and what appears to be a laydown area at the rear. The site is vegetation free.

A feature survey is presented in **Appendix B**.

A geotechnical investigation for this site is not available, however based on nearby sites, it is expected the ground consists of a Gravelly Sandy Clay at depth.

George Street is being upgraded by MetroNet. This scope includes a below ground drainage network.

#### **4.0 EARTHWORKS**

Due to the lay of the land and configuration of the development, cutting, filling and retaining is required. Concept building and road levels are documented on the Stormwater Management Plan as presented in **Appendix C**. The exact details and extent of retaining will be resolved at building license stage.

#### **5.0 STORMWATER STRATEGY**

It is anticipated the ground conditions do not permit onsite soakage therefore the development will utilize onsite detention and establish a formal connection to the proposed drainage network on George Street. The size of the detention tanks and post development off-site flow will be to the Shire of Serpentine Jarrahdale's requirements.

- Permissible discharge rate off site is pre-development 1 in 5 ARI
- Detention tanks manage the 1% AEP
- The first 15mm of rainfall will be treated via bioretention zones.
- Drainage system to be emptied in 96 hours
- No runoff into neighboring properties

#### **6.0 PROPOSED STORMWATER SYSTEM**

As typical with any built form development, this project will include down pipe connections that will join into the carpark drainage network. This carpark network will drain into a bioretention zone before flowing into the detention tanks. The tanks will have a low flow outlet that will ultimately discharge into the George Street network.

It is likely that subsoil drainage will be required under the bioretention zones and in areas of cut, and potentially along the backs of any fill retaining walls to manage the perched ground water. The specifics of this will be resolved at detailed design stage.

The above is summarized and presented in the Stormwater Management Plan (**Appendix C**).

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## 7.0 STORMWATER CALCULATIONS

The Stormwater drainage calculations are tabled on the Stormwater Management Plan (**Appendix C**) with the key items summarised below.

- Catchment Area = 8,680m<sup>2</sup>
- Detention Volume = 221m<sup>3</sup>
- Bioretention Volume = 130m<sup>3</sup>
- Post Development Outflow = 39 l/s
- Outlet orifice size = 140mm

The critical duration event is based on the time taken for the whole site to contribute.

The site length and width is 100m x 80m, therefore the travel distance is 180m.

Based on F2.10 [2.3] of the Hydraulics Precast Conduits and using a post-development grade of 1% (will be much steeper) on a paved surface, the expected time of concentration is about 10 minutes. This is too short and the minimum detention volume should be based on 30 minutes.

A time of concentration of 30 minutes has been used.

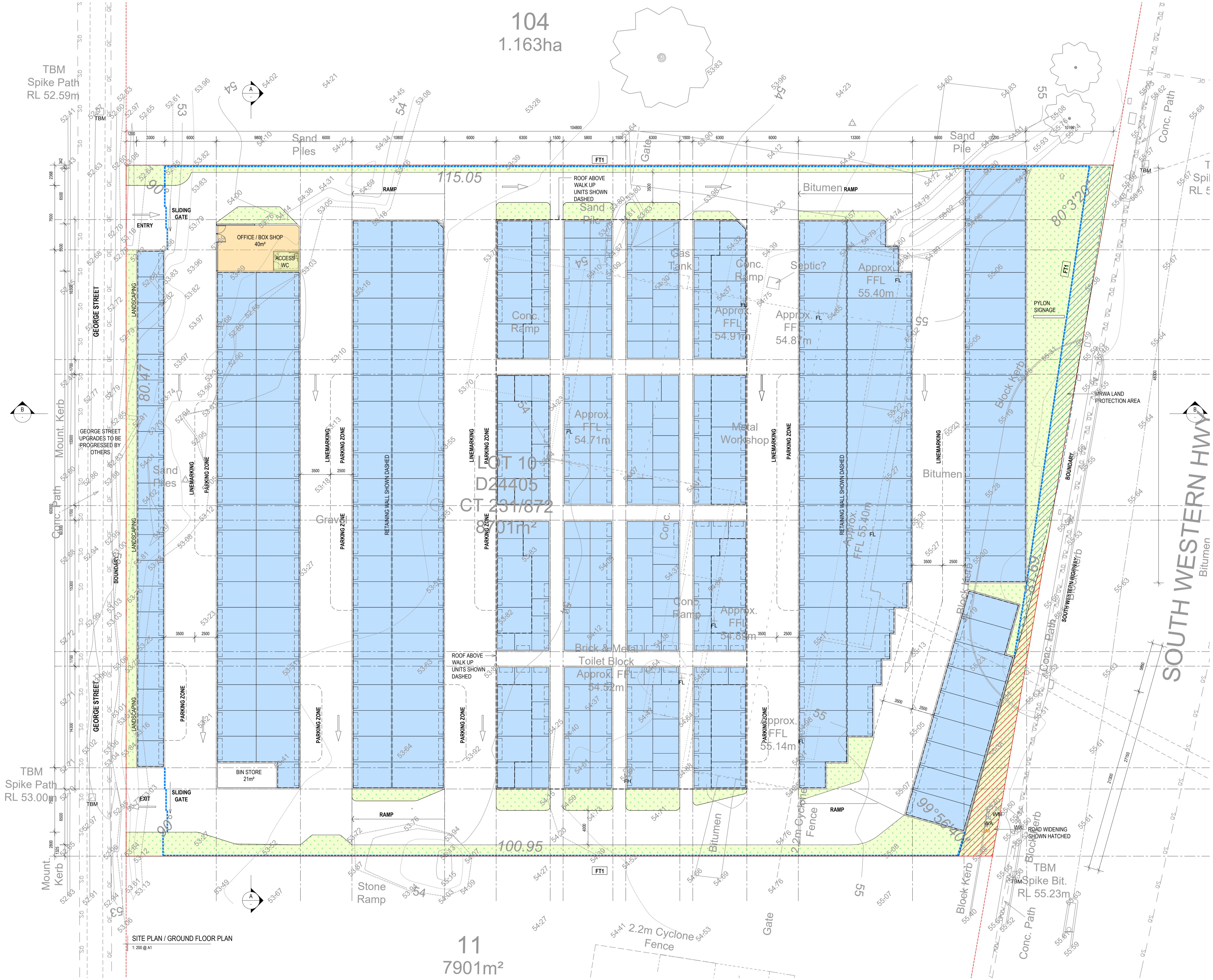
## 8.0 CONCLUSION

The site's drainage arrangements will be designed to comply with the Shire's commercial development requirements and based on the site's constraints. On site drainage facilities will be provided with an oversized detention system to limit post development flows. A connection to the George Street drainage networks will be established.

## **APPENDIX A - Development Layout**

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**FENCE TYPE LEGEND**

- FT1** FENCE TYPE 01  
2.1m HIGH TUBULAR FENCE  
COLOUR: WOODLAND GREY
- FT2** FENCE TYPE 02  
1.5m HIGH TUBULAR FENCE  
COLOUR: WOODLAND GREY

**REQUIREMENT SUMMARY**

REQUIREMENT	UNIT	AMOUNT
NO. OF UNITS	375	
NO. OF SPILL UNITS	10.9	
NO. OF WALK UP UNITS	100.00%	

**TOTAL GP: BYFORD STORAGE UNIT MIX**

DRIVE UP & WALK UP UNITS	SIZE	No. OF UNITS	TOTAL AREA	CUBIC AREA	ACTUAL RATIO
DRIVE UP & WALK UP UNITS	2 x 2	57	228 m <sup>2</sup>	547.2 m <sup>3</sup>	15.20%
	2.5 x 3	6	72 m <sup>2</sup>	72 m <sup>3</sup>	1.60%
	2.5 x 3	17	127.5 m <sup>2</sup>	306 m <sup>3</sup>	4.53%
	3 x 2	62	372 m <sup>2</sup>	892.8 m <sup>3</sup>	16.53%
	3 x 3	57	513 m <sup>2</sup>	1231.2 m <sup>3</sup>	15.20%
	4 x 3	36	360 m <sup>2</sup>	864 m <sup>3</sup>	8.80%
	4.5 x 3	42	567 m <sup>2</sup>	1360.5 m <sup>3</sup>	11.20%
	5 x 3	20	300 m <sup>2</sup>	720 m <sup>3</sup>	5.33%
	5.5 x 3	32	363 m <sup>2</sup>	871.2 m <sup>3</sup>	5.87%
	6 x 3	25	450 m <sup>2</sup>	1080 m <sup>3</sup>	6.67%
	7 x 3	24	504 m <sup>2</sup>	1209.6 m <sup>3</sup>	6.40%
	7.5 x 3	12	270 m <sup>2</sup>	648 m <sup>3</sup>	3.20%
5.5 m <sup>2</sup>	1	5.5 m <sup>2</sup>	13.2 m <sup>3</sup>	0.27%	
<b>TOTAL No. OF STORAGE UNITS</b>					<b>375</b>
<b>AVERAGE UNIT SIZE (m<sup>2</sup>)</b>					<b>10.9</b>

SITE PLAN / GROUND FLOOR PLAN  
 1:200 @ A1



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DATE: JUNE 2024  
 DRAWING: SITE PLAN / GROUND FLOOR PLAN  
 SCALE: 1:200 @ A1

**DA02**

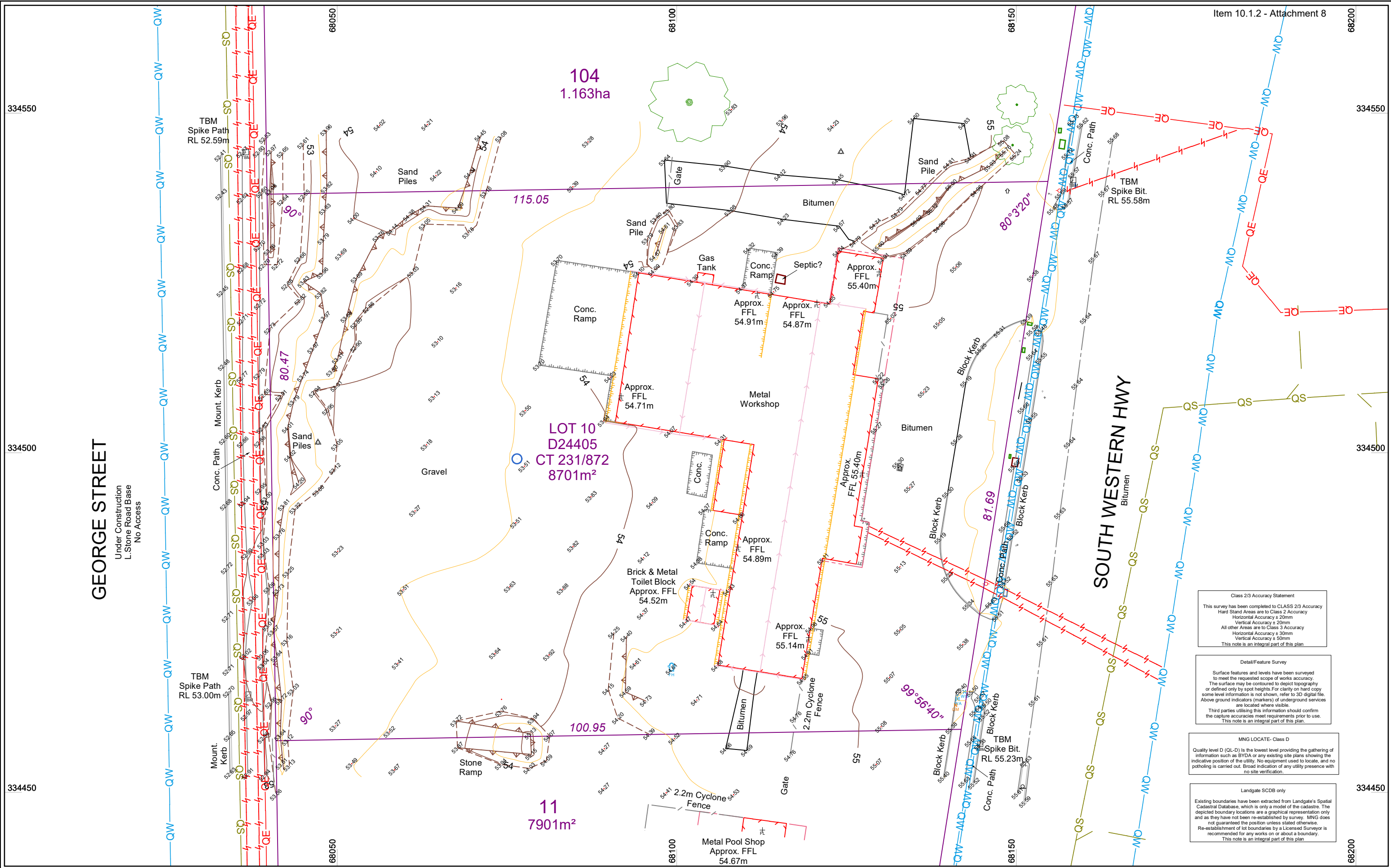
PROJECT NUMBER: 202400032  
 DRAWN BY: S.G.  
 Ordinary Council Meeting - 15 July 2024



## **APPENDIX B - Feature Survey**

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**Class 2/3 Accuracy Statement**  
 This survey has been completed to CLASS 2/3 Accuracy  
 Hard Stand Areas are to Class 2 Accuracy  
 Horizontal Accuracy ± 20mm  
 Vertical Accuracy ± 20mm  
 All other Areas are to Class 3 Accuracy  
 Horizontal Accuracy ± 30mm  
 Vertical Accuracy ± 50mm  
 This note is an integral part of this plan

**Detail/Feature Survey**  
 Surface features and levels have been surveyed to meet the requested scope of works accuracy. The surface may be contoured to depict topography or defined only by spot heights. For clarity on hard copy some level information is not shown, refer to 3D digital file. Above ground indicators (markers) of underground services are located where visible. Third parties utilising this information should confirm the capture accuracies meet requirements prior to use. This note is an integral part of this plan.

**MNG LOCATE- Class D**  
 Quality level D (QL-D) is the lowest level providing the gathering of information such as BYDA or any existing site plans showing the indicative position of the utility. No equipment used to locate, and no potholing is carried out. Broad indication of any utility presence with no site verification.

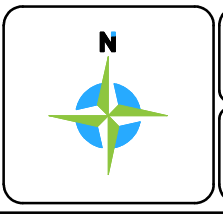
**Landgate SCDB only**  
 Existing boundaries have been extracted from Landgate's Spatial Cadastral Database, which is only a model of the cadastre. The depicted boundary locations are a graphical representation only and as they have not been re-established by survey, MNG does not guarantee the position unless stated otherwise. Re-establishment of lot boundaries by a Licensed Surveyor is recommended for any works on or about a boundary. This note is an integral part of this plan

Rev.	Description	Drawn	Date	Checked
A	Initial Issue	MGH	14/02/2024	LC

SCALE 1:500 @ A3  
 0 5 1 0 3  
 ALL DISTANCES ARE IN METRES  
 For a true to scale reproduction of this plan, plot it to A3 with the Pacing Scaling set to None.

The contents of this plan are current and correct as of the date stated within the revision panel. All consultants and persons wishing to utilize this data should verify themselves of this plan's currency by contacting the McMullen Nolan Group.

Surveyor:- MGH  
 Survey Date:- 12/02/2024  
 Precal/Cad:- 12/02/2024



The boundaries shown on this plan were not re-established as part of this survey, therefore this plan does not guarantee their accuracy. Existing easements, encumbrance or interest are not depicted and a title search is recommended to obtain this information. Re-establishment of the cadastral boundaries is recommended for any proposed works on or near existing boundaries.

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**FEATURE & CONTOUR SURVEY**  
**LOT 10 - DIAGRAM 24405**  
**777 SOUTH WESTERN HIGHWAY, BYFORD**

CLIENT: **TAL GP PROJECTS PTY LTD**  
 Ordinary Council Meeting - 15 July 2024

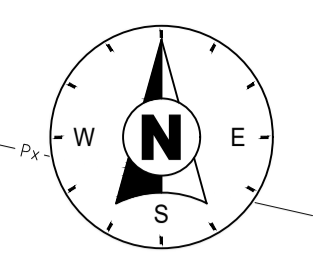
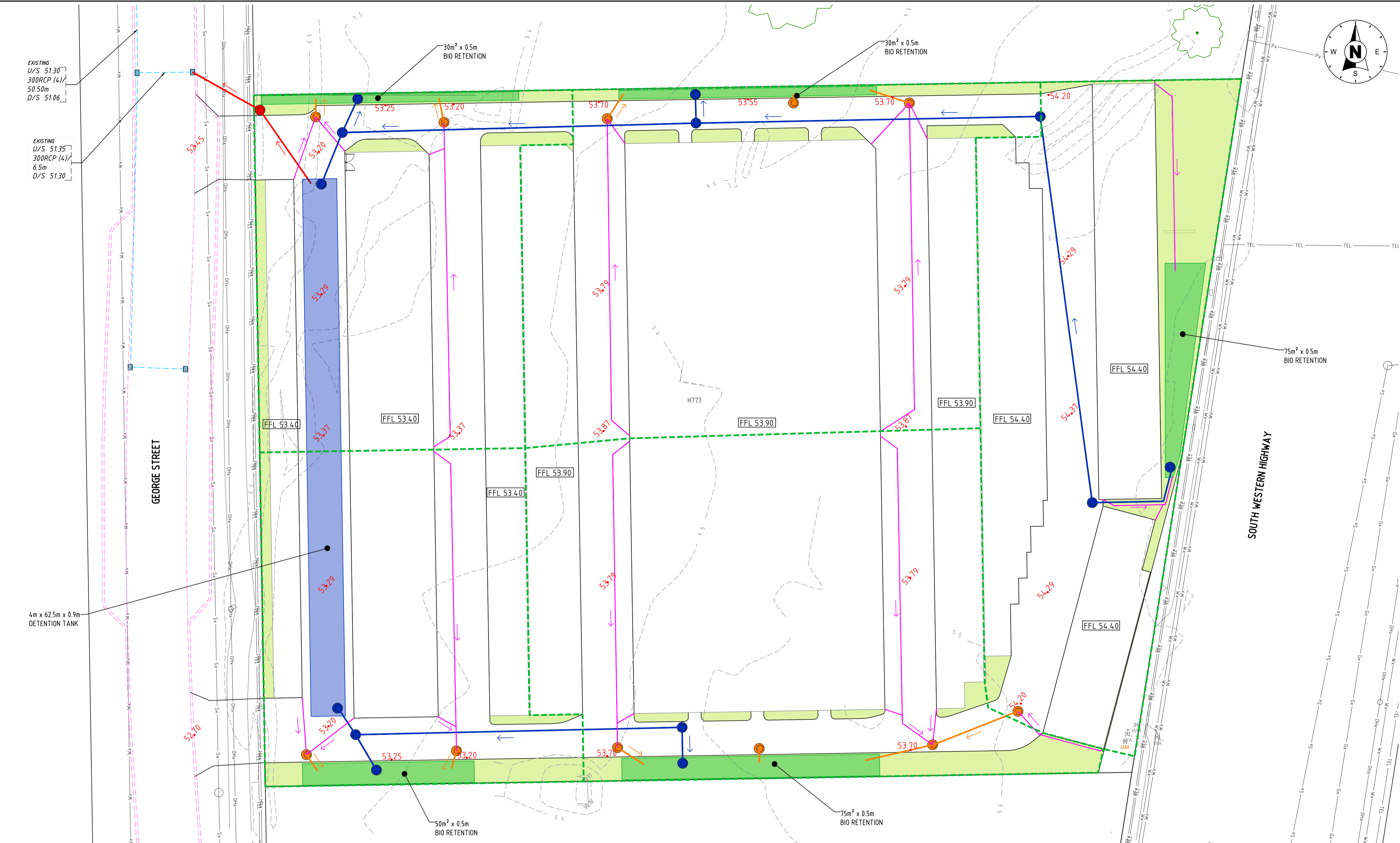
Project Mgr: LISA CAMPBELL  
 Datum: PEG2020 / AHD

106210\_DE\_001 - A  
 Number Type Number Revision

## **APPENDIX C - Stormwater Management Plan**

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**LEGEND**

- EXISTING GROUND CONTOUR
- EXISTING GROUND SPOT LEVEL
- PROPOSED PAVEMENT LEVELS
- FINISHED FLOOR LEVELS
- CONCEPTUAL GEORGE ST DRAINAGE
- CONCEPTUAL METRONET GEORGE ST DESIGN
- EXISTING PATH
- EXISTING SEWER PIPE
- EXISTING GAS
- EXISTING HIGH PRESSURE GAS
- EXISTING WATER MAIN
- EXISTING POWER LINE
- EXISTING HIGH VOLTAGE POWER LINE
- EXISTING OVERHEAD POWER LINE
- EXISTING TELECOMMUNICATIONS
- INVERT LEVEL UP STREAM  
U/S 42.95  
450/140.0  
PIPE DIAMETER / GRADE  
LENGTH  
D/S 42.96
- IL 12.55m
- PROPOSED DRAINAGE OUTLET SYSTEM PIPE INVERT
- PROPOSED LANDSCAPE AREA
- BELOW GROUND DETENTION TANK
- BIO RETENTION AREA
- APPROXIMATE BIO RETENTION AREA CATCHMENT BOUNDARY
- PROPOSED LOT CONNECTION PIT AND OUTLET TO STREET DRAINAGE NETWORK
- CONCEPTUAL LOT DETENTION DRAINAGE
- CONCEPTUAL BIO RETENTION DRAINAGE
- CONCEPTUAL DOWN PIPE CONNECTION
- DRAINAGE FLOW DIRECTION

**DRAINAGE CALCULATIONS**

**DESIGN SUMMARY**

PRE DEVELOPMENT	
EY	0.2
DESIGN STORM DURATION	30 minutes
RAINFALL INTENSITY	39.0 mm/hr
AREA	8680 m <sup>2</sup>
COEFFICIENT - PRE DEVELOPMENT	0.40
FLOW - PRE DEVELOPMENT	39 l/s
POST DEVELOPMENT	
AEP	1%
DESIGN STORM DURATION	30 minutes
RAINFALL INTENSITY	70.7 mm/hr
AREA	8680 m <sup>2</sup>
COEFFICIENT - POST DEVELOPMENT	0.95
FLOW - POST DEVELOPMENT	162 l/s
STORAGE	
DETENTION FLOW	123 l/s
DURATION	30 minutes
DETENTION VOLUME	221 m <sup>3</sup>
OUTFLOW	39 l/s
BIO RETENTION	
SITE AREA	8680 m <sup>2</sup>
RAINFALL	15 mm
VOLUME	130 m <sup>3</sup>
STORAGE DEPTH	0.5 m
STORAGE AREA	260 m <sup>2</sup>

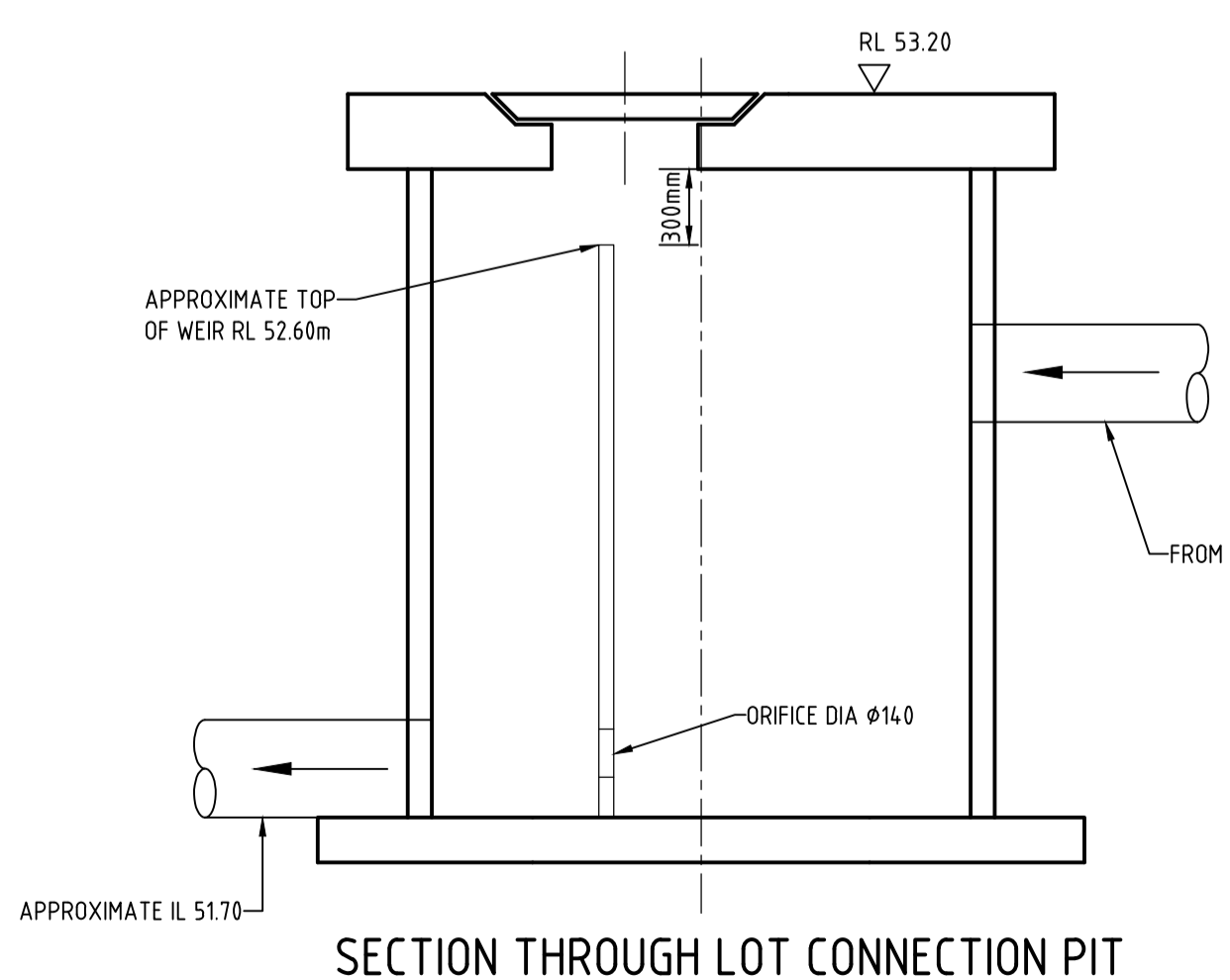
**ORIFICE CALCULATION**

$$Q = CA\sqrt{2 \times g \times H}$$

$$\therefore 0.039 = 0.6 \times A \times \sqrt{2 \times 9.81 \times 1.7}$$

$$\therefore A = 0.0155 \text{ m}^2$$

$$\therefore D = 140 \text{ mm}$$



PROJECT: **LOT 10 (777) SOUTH WESTERN HWY BYFORD**

B	12-6-2024	DRAINAGE AND CALCULATIONS UPDATED, INTERNAL LAYOUT UPDATED	MEG
A	26-3-2024	ISSUED FOR APPROVAL	MEG
No.	DATE	REVISION	BY

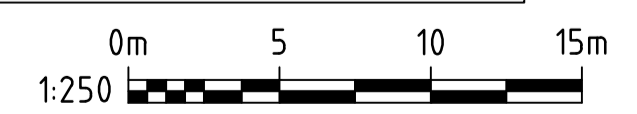
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DRAWING: **STORMWATER MANAGEMENT PLAN**

SCALE: 1:250	DRAWING No:	REV No:	ORIGINAL DRAWING SIZE:
DATE: JUN-24	<b>23-11-135/400</b>	<b>B</b>	<b>A1</b>
DESIGN: S.C.H	FILE NAME: \23-11-135\ACAD\2311135-400.dwg		
DRAWN: MEG	STATUS: <b>FOR APPROVAL</b>		
CHECK: APPD			







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