

Project reference: EP24-013 (01)

Emmerge Associates contact: Dave Coremans

20 June 2024

Attention: Ryan Darby  
Hatch

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## **Point Grey Structure Plan – Local Water Management Strategy Addendum**

### **1. Background**

The Point Grey Structure Plan was initially prepared in 2011 to support the development of the Point Grey development site which is a 270-ha land parcel within the Shire of Murray. The site is located approximately 100 km southwest of Perth in Point Grey Peninsula adjacent to Peel Harvey Estuary. The Point Grey Structure Plan was supported by the Point Grey Local Water Management Strategy (LWMS) (ENV 2011) which was approved by the Department of Water and Environmental Regulation (DWER) in 2011. Since this time the Structure Plan layout has evolved to remove a Marina component that was originally envisaged and to allow greater landform and vegetation retention.

The purpose of this Addendum to the LWMS is to update the spatial water planning that was previously prepared to reflect the current Point Grey Structure Plan. This document therefore presents the necessary technical information on water management to demonstrate that the updated Structure Plan for Point Grey can still meet the water management criteria that were proposed and accepted in the approved LWMS. The updated proposed development designs are shown as **Appendix A**.

### **2. Design criteria and water management approach**

The approved Point Grey LWMS (ENV 2011) provided design objectives/criteria regarding water conservation and efficiency, water quantity management, water quality management and amenity. The design criteria are not proposed to be modified in this LWMS Addendum, and DWER have confirmed that a full review/new LWMS is not required to meet DWER requirements. Therefore, this LWMS addendum presents an assessment of updated spatial requirements for surface water management.

The runoff generated by small/frequent rainfall events (i.e. the first 15 mm/1EY) will be retained and treated as close to source as possible while runoff from major storm events will be directed to infiltration areas located in the POS areas

POS areas are strategically positioned throughout the Structure Plan to allow water management to be integrated and to adopt a water sensitive urban design (WSUD) approach. The contemporary interpretation of key design criteria from the approved LWMS and that are relevant to this LWMS Addendum include:

- Ensure that there is no runoff from the site in a 1% annual exceedance probability (AEP) storm event
- Manage runoff from the first 15 mm (1 exceedance per year) rainfall event at or close to source.

The site is underlain by sandy soils with substantial permeability. This allows for at or close to source stormwater infiltration. In order to meet the water management criteria interpreted from the approved LWMS the following design approaches/assumptions have been made:

- Residential lots to retain the first 15 mm/1EY event within the lot boundary. Nominally this will occur within soakwells, however additional infiltration will likely occur within permeable portions of lots, and this has been accounted for.
- Runoff from road reserves from the first 15mm/1EY to be retained and infiltrated as close to source as possible via roadside swales and bio-retention areas (BRAs).
- Runoff which exceeds the capacity of lot scale storage and other drainage infrastructure will be accommodated within swales or flood storage areas (FSAs)/infiltration basins located within public open space (POS) areas. These will be sized to accommodate runoff up to a 1% AEP storm event.
- Commercial development areas including the tourism center, business activity centers, school, etc. will fully retain up to 1% AEP storm event via sub-surface storage, soakwells, swales, BRAs and FSAs located within private lots.
- Swales will have a maximum depth of 500 mm and 1:3 side slopes
- BRAs will be vegetated structures with a maximum depth of 300 mm and 1:3 side slopes.
- FSAs will have a maximum depth of 1.2 m and 1:6 side slopes.

### 3. Demonstration of compliance

The amended Point Grey Structure Plan has had revised runoff catchments prepared by the project civil design team (Tabec). These catchments and the updated land uses have been modelled using XPSWMM software, using the assumptions described previously. The Point Grey Structure Plan and modelled catchment areas are shown on **Figure 1A**. The results of the modelling of each catchment for the relevant storm events (first 15 mm, 20% AEP and 1% AEP storm event) are summarized in **Table 1**.

Table 1: Top water level (TWL) surface area required for 1EY, 20% AEP and 1 % AEP storm events

Catchments	Sub-Catchments	POS Areas m <sup>2</sup>	Small Event Treatment (First 15mm)	Major events	
			TWL surface area (m <sup>2</sup> )	1% AEP TWL surface area (m <sup>2</sup> )	20% AEP TWL surface area (m <sup>2</sup> )
CT1	CT 1a	-	774	3,491	3,002
	CT 1b	41,678	689	2,118	1,321
	CT 1c	27,534	1,439	4,068	3,624
	CT 1d	16,468	757	2,038	1,386
	CT 1e	7,032	826	4,068	3,537
	CT 1f	-	603	3,043	2,594
CT2	CT 2a	20,857	826	3,879	3362
	CT 2b	40,920	344	1,341	731
CT 3	CT 3	16,140	774	3,375	2,888
CT 4	CT 4	68,404	945	4,102	3,598
CT 5	CT 5	99,851	1,157	3,359	2,297
CT6	CT 6a	17,174	1,150	4,237	3,186
	CT 6b	5,432	808	2,590	1,799
	CT 6c	-	662	2,687	1,871
	CT 6d	14,907	534	1,176	723
CT7	CT 7a	8,574	597	2,072	1,378
	CT 7b	74,510	2,000	6,724	5,213

**Figure 1A** also shows the size of relevant POS areas, demonstrating that the spatial requirements for drainage can easily be accommodated within the open spaces provided

#### **4. Summary**

This LWMS Addendum has demonstrated that the key design criteria to address water quality and quantity objectives can be accommodated within the proposed layout of the amended Point Grey Structure Plan, and therefore from a water planning perspective the development can proceed to the next stage of water planning. Future stages of the development process will require Urban Water Management Plans (UWMPs) based on detailed civil designs which will include areas, volumes, and water depths etc., and these will also be supported by landscape concepts demonstrating the design intent. These will be prepared in accordance with Better Urban Water Management and relevant Shire of Murray policies and guidelines.

Should you have any queries or concerns regarding any of the content of this LWMS Addendum please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Coremans', written in a cursive style.

**David Coremans**

PRINCIPAL ENVIRONMENTAL CONSULTANT - HYDROLOGY

cc: Proponent

Encl: **Figure 1A:** Point Grey Water Management Plan:

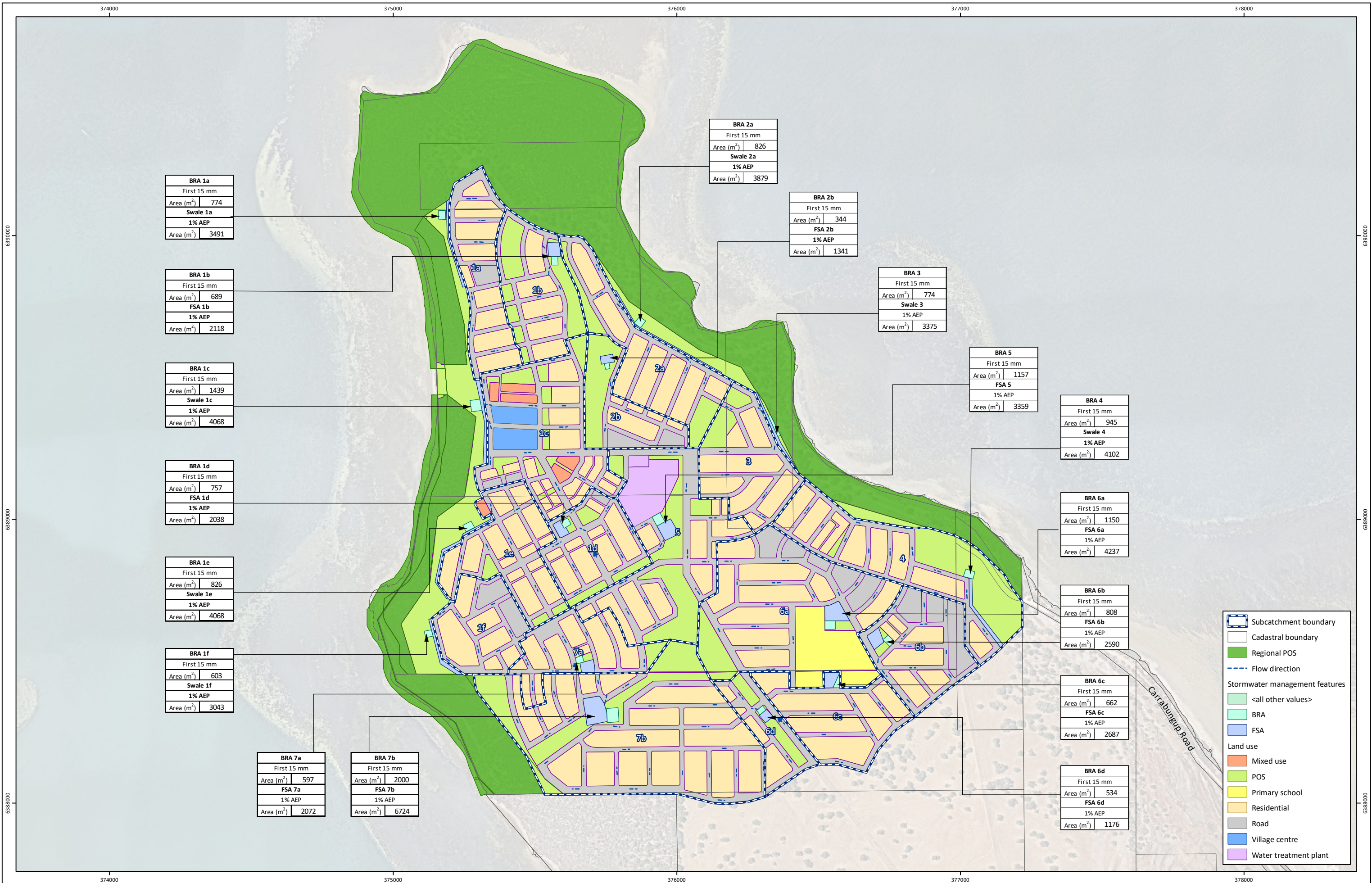
#### **References:**

E. A. P. Ltd (ENV) 2011, *POINT GREY DEVELOPMENT LOCAL WATER MANAGEMENT STRATEGY*. 10/148.

# Figures



*Figure 1A: Point Grey Water Management Plan*



BRA 1a	
First 15 mm	
Area (m <sup>2</sup> )	774
Swale 1a	
1% AEP	
Area (m <sup>2</sup> )	3491

BRA 1b	
First 15 mm	
Area (m <sup>2</sup> )	689
FSA 1b	
1% AEP	
Area (m <sup>2</sup> )	2118

BRA 1c	
First 15 mm	
Area (m <sup>2</sup> )	1439
Swale 1c	
1% AEP	
Area (m <sup>2</sup> )	4068

BRA 1d	
First 15 mm	
Area (m <sup>2</sup> )	757
FSA 1d	
1% AEP	
Area (m <sup>2</sup> )	2038

BRA 1e	
First 15 mm	
Area (m <sup>2</sup> )	826
Swale 1e	
1% AEP	
Area (m <sup>2</sup> )	4068

BRA 1f	
First 15 mm	
Area (m <sup>2</sup> )	603
Swale 1f	
1% AEP	
Area (m <sup>2</sup> )	3043

BRA 7a	
First 15 mm	
Area (m <sup>2</sup> )	597
FSA 7a	
1% AEP	
Area (m <sup>2</sup> )	2072

BRA 7b	
First 15 mm	
Area (m <sup>2</sup> )	2000
FSA 7b	
1% AEP	
Area (m <sup>2</sup> )	6724

BRA 2a	
First 15 mm	
Area (m <sup>2</sup> )	826
Swale 2a	
1% AEP	
Area (m <sup>2</sup> )	3879

BRA 2b	
First 15 mm	
Area (m <sup>2</sup> )	344
FSA 2b	
1% AEP	
Area (m <sup>2</sup> )	1341

BRA 3	
First 15 mm	
Area (m <sup>2</sup> )	774
Swale 3	
1% AEP	
Area (m <sup>2</sup> )	3375

BRA 5	
First 15 mm	
Area (m <sup>2</sup> )	1157
FSA 5	
1% AEP	
Area (m <sup>2</sup> )	3359

BRA 4	
First 15 mm	
Area (m <sup>2</sup> )	945
Swale 4	
1% AEP	
Area (m <sup>2</sup> )	4102

BRA 6a	
First 15 mm	
Area (m <sup>2</sup> )	1150
FSA 6a	
1% AEP	
Area (m <sup>2</sup> )	4237

BRA 6b	
First 15 mm	
Area (m <sup>2</sup> )	808
FSA 6b	
1% AEP	
Area (m <sup>2</sup> )	2590

BRA 6c	
First 15 mm	
Area (m <sup>2</sup> )	662
FSA 6c	
1% AEP	
Area (m <sup>2</sup> )	2687

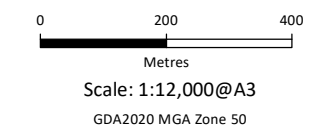
BRA 6d	
First 15 mm	
Area (m <sup>2</sup> )	534
FSA 6d	
1% AEP	
Area (m <sup>2</sup> )	1176

- Subcatchment boundary
- Cadastral boundary
- Regional POS
- Flow direction
- Stormwater management features**
- <all other values>
- BRA
- FSA
- Land use**
- Mixed use
- POS
- Primary school
- Residential
- Road
- Village centre
- Water treatment plant

Figure 1A: Point Grey Stormwater Management Plan

**Project:** Hydrological Modelling Point Grey Subdivision Support  
**Client:** Point Grey Development Company Pty Ltd

**Plan Number:** EP24-013(01)-F03  
**Drawn:** GAR  
**Date:** 14/06/2024  
**Checked:** UH  
**Approved:** DPC  
**Date:** 17/06/2024

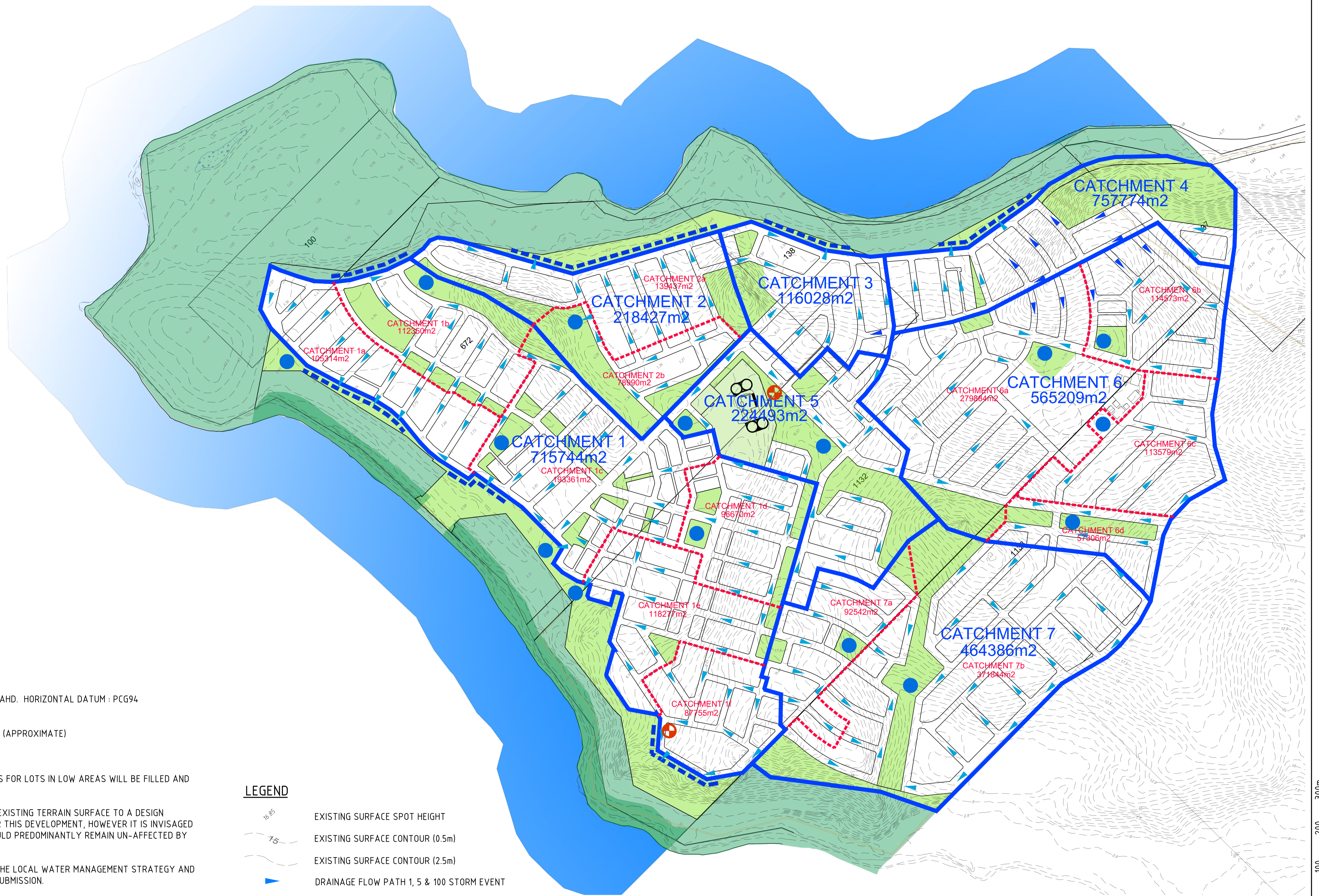
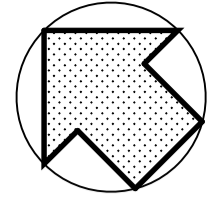


While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used ©Landgate (2024). Nearmap Imagery date: 31/01/2024

# Appendix A

Catchment design (TABEC)





**GENERAL NOTES**

- ALL FINISHED LEVELS ARE IN METRES TO AHD. HORIZONTAL DATUM : PCG94 (APPROXIMATE).
- ALL DESIGN CO-ORDINATES ARE IN PCG94 (APPROXIMATE)
- ALL DIMENSIONS ARE IN METRES.
- MINIMUM FINISHED SURFACE / PAD LEVELS FOR LOTS IN LOW AREAS WILL BE FILLED AND COMPACTED TO RL 2.80m AHD.
- DETAILED DESIGN & REMODELING OF THE EXISTING TERRAIN SURFACE TO A DESIGN SURFACE, HAS NOT BEEN COMPLETED FOR THIS DEVELOPMENT, HOWEVER IT IS INVISED THAT THE MAIN CATCHMENT AREAS SHOULD PREDOMINANTLY REMAIN UN-AFFECTED BY EARTHWORKS.
- THIS INFORMATION IS PROVIDED TO FOR THE LOCAL WATER MANAGEMENT STRATEGY AND IS NOT INTENDED FOR DETAILED DESIGN SUBMISSION.
- W.S.U.D. PRINCIPLES WILL BE USED IN ALL DRAINAGE CONSTRUCTION, INCLUDING INFILTRATION AT SOURCE IN PITS AND INFILTRATION AT RETENTION LOCATIONS.
- GROSS POLLUTANT TRAPS WILL BE EMPLOYED AT PIPE DRAINAGE OUTFALL LOCATIONS, PRIOR TO DISCHARGE INTO INFILTRATION SWALES AND TO THE COUNCIL REQUIREMENTS.
- DESIGN LEVELS AND ROAD GRADES ARE GENERALLY PLANNED TO BE CONSISTENT WITH THE NATURAL TERRAIN, TO ASSIST IN THE RETENTION OF NATIVE FLORA WHEREVER POSSIBLE, AND TO ALSO MINIMISE EARTHWORKS OVER THE SITE.

**LEGEND**

- EXISTING SURFACE SPOT HEIGHT
- EXISTING SURFACE CONTOUR (0.5m)
- EXISTING SURFACE CONTOUR (2.5m)
- DRAINAGE FLOW PATH 1, 5 & 100 STORM EVENT
- GEOGRAPHICAL CATCHMENT AREAS
- DESIGN SUB-CATCHMENT AREAS
- DRAINAGE INFILTRATION SWALE
- POSSIBLE DRAINAGE INFILTRATION BASIN
- UPPER LEEDERVILLE AQUIFER GROUNDWATER PRODUCTION BORES

Printed By: ppenman File Date: 14/05/24 - 10:48 Cef File: C:\GIS\DATA\115-120\222 - Point Grey - DWG\CAD\CAD\2222-00-SK02-00-5002.dwg

No.	DATE	DRAWN	APPROVED	AMENDMENT
K	09.05.24	PK	CCB	LAYOUT REVISED
J	22.03.24	PK	CCB	LAYOUT REVISED

This plan shall not to be used for construction unless issued as rev 0 and signed as approved.

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CLIENT			POINT GREY PENINSULA		
DESIGNED	PK	CHECKED	CCB	APPROVED	
DRAWN	PK	CHECKED	CCB	DATE	

**TABEC**  
Civil Engineering Consultants

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08 9425 5900 info@tabec.com.au www.tabec.com.au

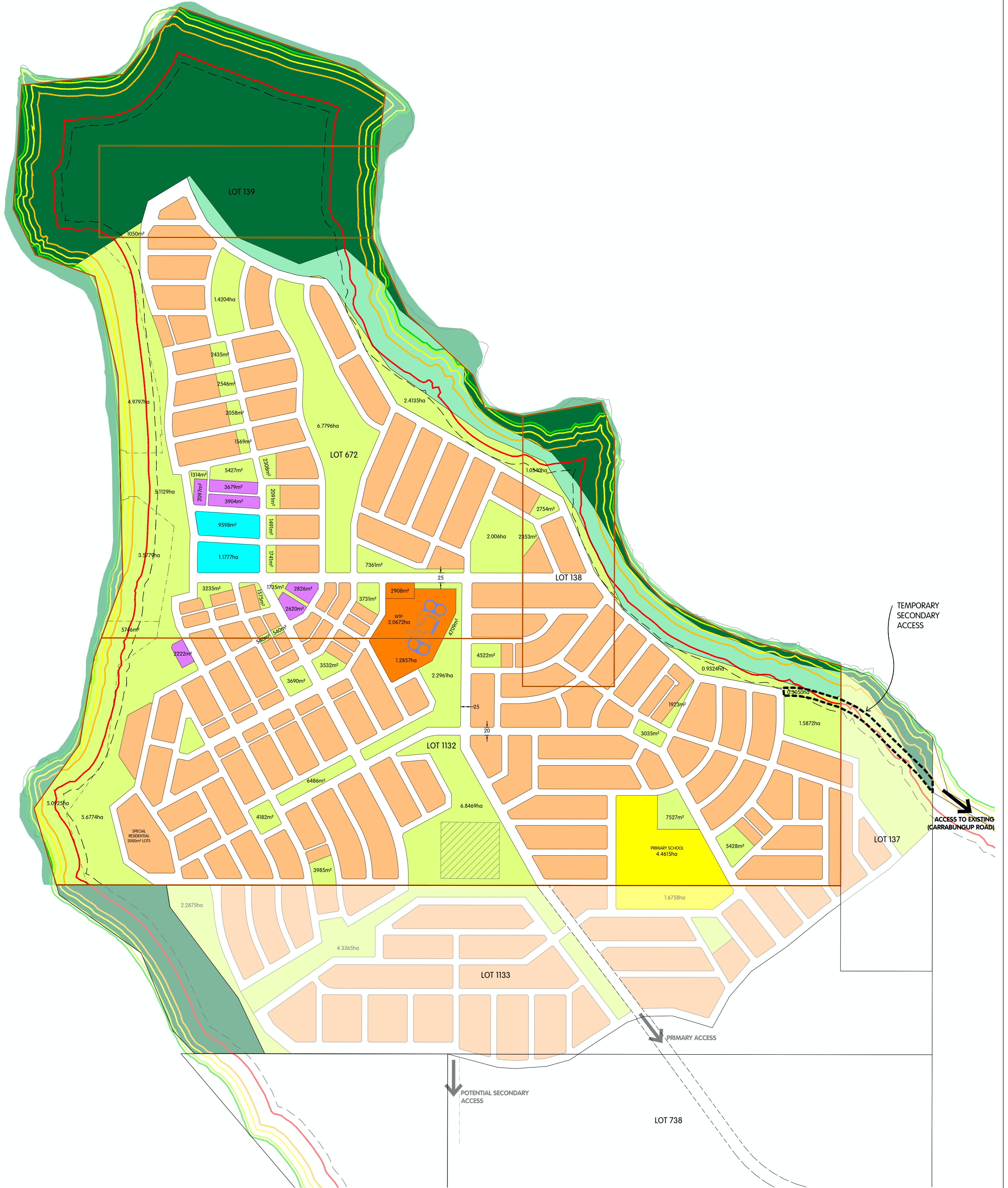
PROJECT	POINT GREY
TITLE	LOCAL WATER MANAGEMENT STRATEGY DESIGN DRAINAGE CATCHMENTS
DRAWING NUMBER	2222-00-SK02
ISSUE	K

SCALE 1:5000 AT A1, 1:10,000 AT A3

# Appendix B

Point Grey Structure Plan (HATCH)





- LEGEND**
- Regional Open Space
  - Foreshore Reserve
  - Public Open Space
  - Conservation POS rehabilitation (2.1ha)
  - Subject Lot Boundary
  - (20m offset)
  - Village Centre
  - Mixed Use
  - Residential
  - Primary School
  - Community/ Servicing (Water Treatment Facility)
  - 2020 Setback
  - 2030 Setback
  - 2050 Setback
  - 2070 Setback
  - 2120 Setback

# DRAFT

CADASTRAL INFORMATION  
SOURCE AND  
YIMWOD 200603  
DATE REF. 95499-200  
PROJECTION: PCGAF

**HATCH**

SIZE A1 1:5000

B DESIGN M005 240501 SB DRAFT  
A BASE PLAN POT R51 044W 240428 SB DRAFT  
REV DESCRIPTION YIMWOD DRAWN APPROV

MASTERPLAN - CONCEPT  
**Point Grey**  
Shire of Murray  
REF NO. H369508  
DRAW NO. 001  
REV. B

