ENGENY

MONARCH GLEN NO 1 PTY LTD

Monarch Glen ROL04

Site Based Stormwater Management Plan

BBNE00356_0016-REP-001-3

3 APRIL 2025

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Rev	Date	Description	Author	Reviewer	Project Mgr.	Approver
0	15/11/2024	Draft Issue for Client Review	Kelsey Mundt	Daniel Niven	Daniel Niven	David Sexton
1	11/12/2024	Client Issue	Kelsey Mundt	Daniel Niven	Daniel Niven RPEQ: 12581	David Sexton
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3	3/05/2025	Client Issue	Kelsey Mundt	Daniel Niven	Daniel Niven RPEQ: 12581	David Sexton
Signatures:						

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1. INTRODUCTION

Engeny Australia Pty Ltd (Engeny) was engaged by Monarch Glen No 1 Pty Ltd to prepare this Site-Based Stormwater Management Plan (SBSMP) for the proposed Reconfiguration of Lot (ROL) 04 Development Application (DA) at the development to be located at Homestead Drive, Monarch Glen, Queensland (the Site).

1.1 Application Context

ROL04 is the ROL application to be lodged for the Monarch Glen No 1 Pty Ltd Monarch Glen development that will create the future freehold dwelling lots and associated infrastructure for the first stages of the development. A context plan and Stormwater Infrastructure Management Plan (IMP) for the Site was endorsed on 12 January 2018 under DEV2017/857. This is documented in Undullah – Rice, Dairy and Wyatt Roads, Undullah Stormwater Infrastructure Master Plan (ADG, 2016). An updated Stormwater IMP is currently being prepared by Engeny for concurrent submission to Economic Development Queensland (EDQ) to meet the approval conditions. However, this SBSMP is considered to meet the performance criteria of the 2016 ADG Stormwater IMP and the revised 2024 Engeny Stormwater IMP.

1.2 Performance Criteria

The performance criteria for stormwater quality and quantity management are determined by the relevant industry, EDQ, and Logan City Council (LCC) guidelines. A summary of the criteria is provided below. This criteria is effectively unchanged from the endorsed Stormwater IMP (ADG, 2016) and reflects the revised Stormwater IMP (Engeny 2024).

- Stormwater Quality
  - Achieve the SPP (July 2017), LCC Stormwater Quality and Flow Management Guidelines (July 2013) and the Logan Planning Scheme (LCC, February 2023) Water Quality Objectives, consisting of:
    - 80% reduction in total suspended solids.
    - 60% reduction in total phosphorus.
    - 45% reduction in total nitrogen.
    - 90% reduction in gross pollutants.
- Stormwater Quantity
  - As per LCC Planning Scheme, no increases to peak flows discharging from the Site are permitted. Mitigation of the Developed Scenario 63.2% Average Exceedance Probability (AEP) or 1 in 1 Average Reoccurrence Interval (ARI) design event to 1% AEP (or 1 in 100 ARI) design event peak flow to not exceed the Existing Scenario peak flow.
  - No development within the 1% AEP flood extent unless peak flows are appropriately mitigated to ensure no increases across the range of design events.
  - Existing watercourses to be maintained for conveyance of stormwater runoff.
- Flood Compliance
  - Development is compatible with the Logan City Council (LCC) Temporary Local Planning Instrument (TLPI) 2023 Flood Hazard Overlay Code.
- Waterway Stability:
  - Mitigation of the Developed Scenario 63.2% AEP design event peak flows below that of the Existing Scenario peak flows, as per the LCC Planning Scheme and the Water Sensitive Urban Design: Developing Design Objectives for Urban Development in South East Queensland (Healthy Waterways, 2007).
  - Minimise impacts to stability of waterways that receive flows from the development.

1.3 Project Data and Guidelines

The following data has been utilised for this assessment:

- Latest ROL04 layout (11731 P 29 Rev E).
- Undullah – Rice, Dairy and Wyatt Roads, Undullah Stormwater Infrastructure Master Plan (ADG, 2016) (ref. DEV DEV2017/857).
- Monarch Glen Stormwater Infrastructure Management Plan (Engeny, 2024) (ref. BBNE00356_0016-704-0).
- Undullah – Rice, Dairy and Wyatt Roads, Undullah Total Water Cycle Management Overarching Site Strategy (ADG, 2016) (ref. DEV DEV2012/248).
- Monarch Glen Total Water Cycle Management Overarching Site Strategy (Engeny, 2024) (ref. BBNE00356_0016-REP-006-0).
- 2020 & 2021 1m LiDAR.
- Greenbank Thompson Road station (ID 40659) rainfall data.

The stormwater planning and associated modelling was undertaken in accordance with the following guidelines:

- Queensland Urban Drainage Manual (IPWEA, 2017).
- Australian Rainfall and Runoff (ARR) 2019 (Ball, et al, 2019).
- State Planning Policy (DILGP, 2016).
- Logan City Council Planning Scheme (LCC, 2015).
- Logan City Council Temporary Local Planning Instrument 2023 (LCC, 2023).
- MUSIC Modelling Guidelines (Water by Design, 2018).
- Wetland Technical Design Guidelines (Water by Design, 2017).
- Bioretention Technical Design Guidelines (Water by Design, 2014).
- Water Sensitive Urban Design: Developing Design Objectives for Urban Development in South East Queensland (Healthy Waterways, 2007).
- Economic Development Queensland Engineering Standards – PDA Guideline no. 13 (State of Queensland, 2017).
- Economic Development Queensland Protection from Flood and Storm Tide Inundation – PDA Guideline no. 15 (State of Queensland, 2017).
- Economic Development Queensland Development Interfaces – PDA Guideline no. 18 (State of Queensland, 2017).

1.4 Report Contents

The contents of this report are:

- Development of a Model for Urban Stormwater Improvement Conceptualisation (MUSIC) model to estimate pollutant loads generated by the proposed development.
- Development of a stormwater quality treatment train at each catchment outlet of the proposed development sized to achieve the required load-based reduction targets (WQOs).
- Development of a local hydrologic WBNM model for the Existing and Developed Scenarios.
- Simulation of the models for the 63.2% AEP to 1% AEP design storm event for the critical envelope of durations and the full ensemble of temporal patterns.
- Sizing of detention basins at each catchment outlet to mitigate the Developed Scenario peak flow runoff to the Existing Scenario for the full range of flood events, to achieve the stormwater quantity and waterway stability requirements for the Site.
- Discussion of compatibility of the proposed development with the LCC TLPI 2023 Flood Hazard Overlay Code.
- Summary of the proposed design considerations and compliance with waterway stability objectives.
- Provision of concept design plans for the proposed combined bioretention and detention basins.

2. SITE CHARACTERISTICS

For the purpose of this SBSMP report, "the Site" is considered as the ROL04 extents (ROL04 Site), though at times the total Monarch Glen Site (MG Site) is also discussed. The following ROL04 site characteristic definitions apply:

- **Existing Scenario –** current (as of September 2024) catchment conditions.
- **Developed Scenario –** proposed ROL04 residential development, consisting of approximately 575 lots, associated stormwater management infrastructure, and neighbourhood recreation parks.

Further details regarding these scenarios are discussed in the following sections.

2.1 Existing Scenario Site Characteristics

The existing scenario characteristics of both the ROL04 and MG Site consist of hydraulically steep, vegetated, undeveloped catchments. Figure 2.1 shows the MG site existing conditions, catchment extents, and Lawful Points of Discharge (LPDs).

2.2 Developed Scenario Characteristics

The developed scenario characteristics of the ROL04 development consists of approximately 575 residential lots, associated stormwater management infrastructure, and neighbourhood recreation parks. The development layout is provided in Appendix A. The ROL04 development is located off Homestead Drive, in the north-east corner of the broader Monarch Glen context plan.

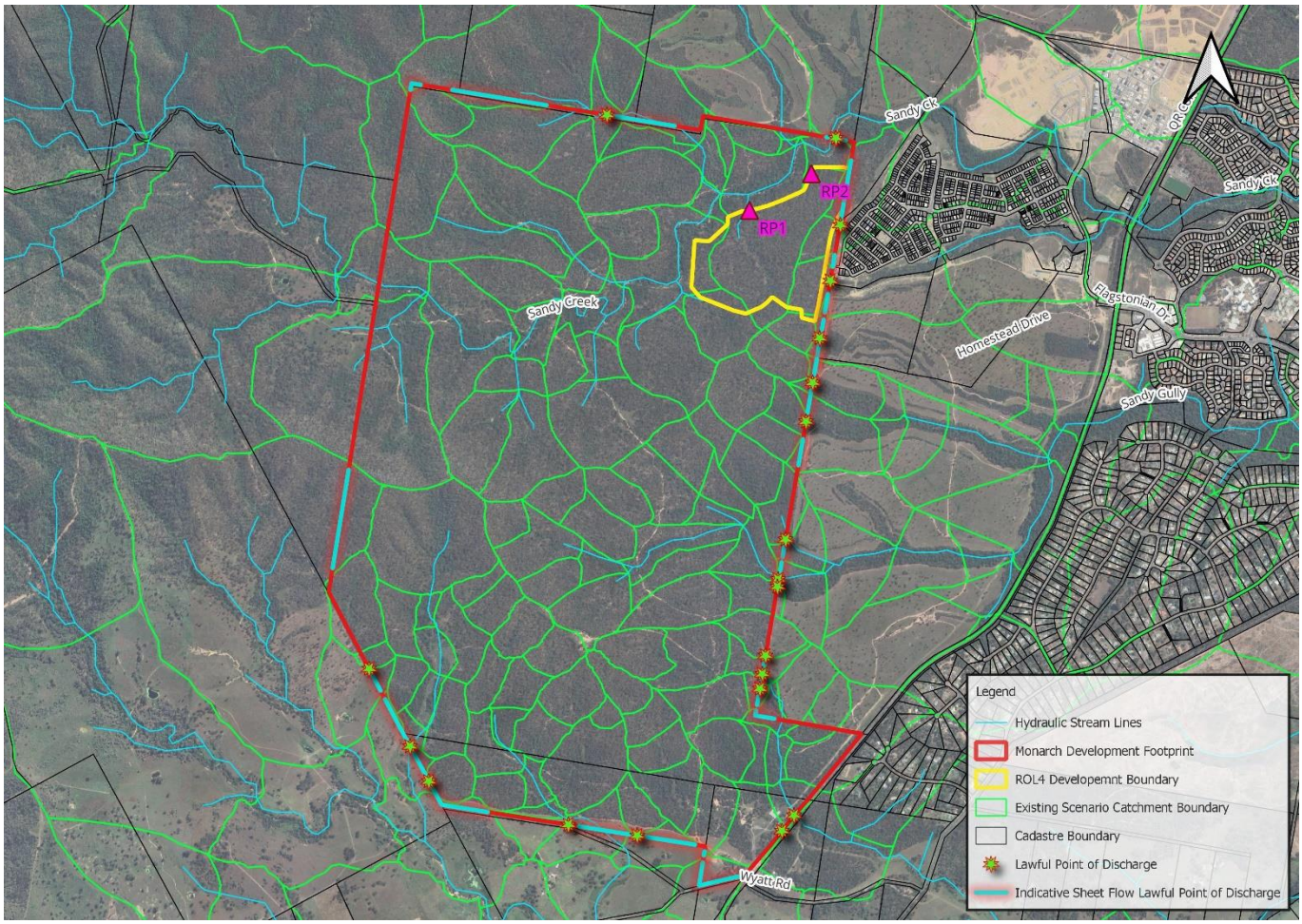

Figure 2.1: ROL04 Development Extents and Lawful Point of Discharge

3. STORMWATER QUALITY

3.1 Construction Phase

An Erosion and Sediment Control program and plan has been prepared for the construction phase of the development to support the ROL submission. The detail of this strategy is detailed in Colliers' '*Monarch Glen Precincts 101 and 102 Engineering Services Report*' dated 04/04/2025 (ref 22-0408). It is anticipated additional refinement will be completed for the Site as part of the site contractor's management of the Site and is to be kept on Site and implemented for the duration of the construction phase.

3.2 Operational Phase

The SPP (July 2017), LCC Stormwater Quality and Flow Management Guidelines (July 2013) and the Logan Planning Scheme (LCC, February 2023) provide the criteria intended to ensure development at the Site for the operational phase is carried out in a way that will achieve the relevant WQOs. This is consistent with the criteria detailed in the Stormwater IMPs (ADG, 2016) (Engeny, 2024).

The load-based reduction targets required at the Site are outlined below in Table 3.1.

TABLE 3.1: ADOPTED WATER QUALITY OBJECTIVES

Pollutant	Minimum Load-Based Reduction Target (%)
Total Suspended Solids (TSS)	80
Total Phosphorus (TP)	60
Total Nitrogen (TN)	45
Gross Pollutants (GP)	90

3.2.1 Climate Data

Climate data for the catchment was sourced from the Bureau of Meteorology (BOM). Rainfall data was obtained from the Greenbank Thompson Road station (ID 40659) for the 10 years between 1980 and 1989 at six (6) minute intervals, resulting in a mean annual rainfall of 784 mm.

3.2.2 Catchment Properties

The proposed bioretention basin locations and associated contributing catchment areas for water quality treatment are outlined in Figure 3.1. It is noted that a small external catchment to the south of the Catchment 1 and the entrance road drains towards catchment 1. This catchment is captured and diverted directly to Sandy Creek downstream of the bio-retention basin. Refer to the Colliers Roadworks and Drainage Engineering Drawings 24-0750-DA-0201 to 0212.

A lumped catchment approach was adopted for this study and is considered appropriate based on inspection of aerial imagery and the intended use of the Site. The land use of the proposed development area was assumed to be residential. Rainfall-runoff and pollutant-export parameters were adopted from the recommended values identified in MUSIC Modelling Guidelines (Water by Design, 2018).

Table 3.2 provides a summary of the MUSIC model parameters implemented for each catchment. Fraction impervious values were adopted based on the recommended values provided in the MUSIC Modelling Guidelines (Water by Design, 2018).

TABLE 3.2: MUSIC MODEL CATCHMENT DETAILS

Catchment	Area (ha)	Fraction Impervious (%)
1	15.72	60
2a	3.13	60
2b	18.02	60
3	4.50	60

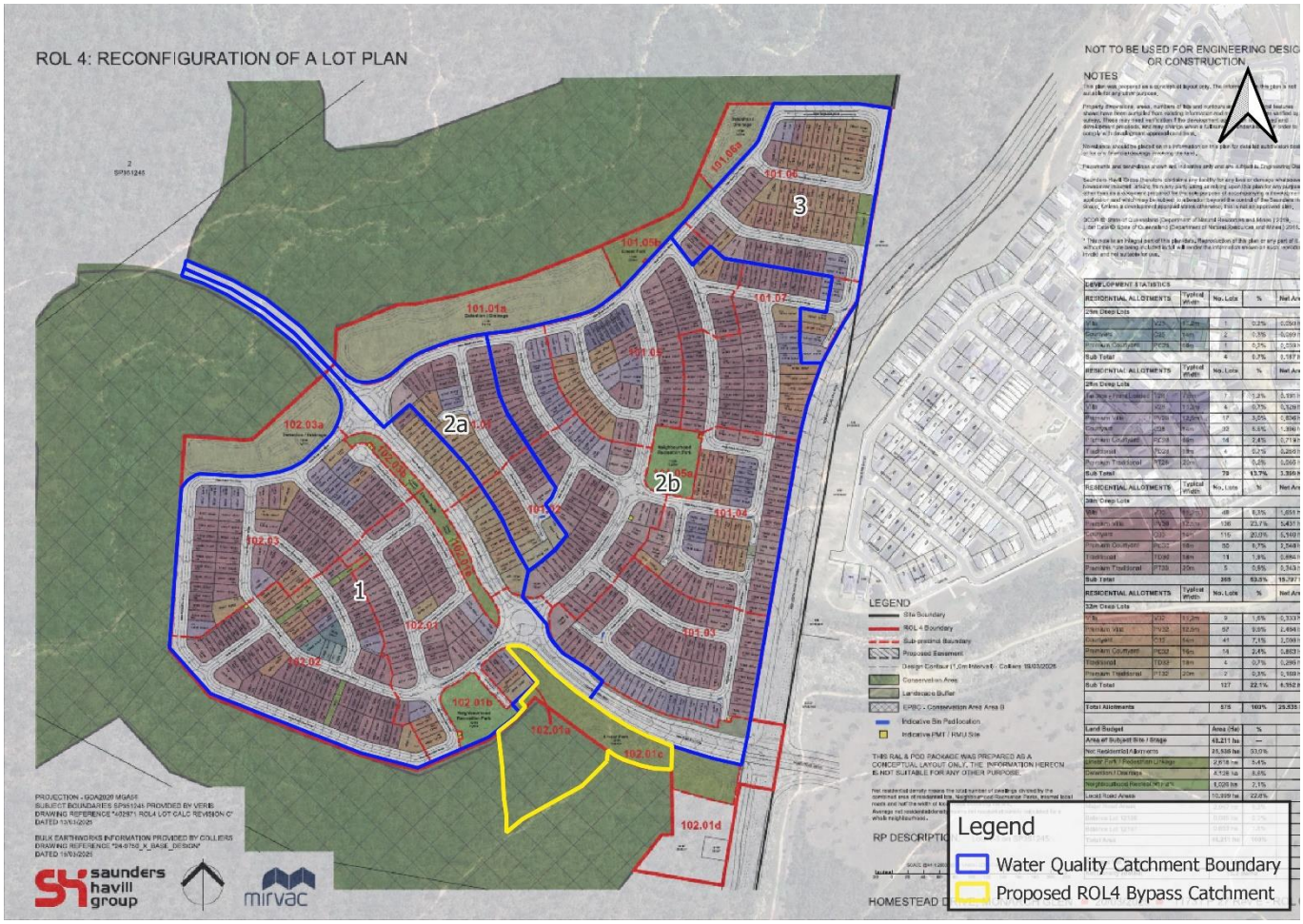

Figure 3.1: MUSIC Modelling Catchments

3.2.3 Treatment System

Stormwater runoff from each catchment will be discharged into a bioretention basin at the catchment outlet upstream of the receiving waterway. Catchments with bioretention systems and catchment areas above 5 ha have been modelled to include a sediment basin. This is in accordance with the *Bioretention Technical Design Guidelines (Water by Design, 2014).*

3.2.4 Treatment Train and Sizing

The bioretention system has been modelled in MUSIC in accordance with the MUSIC Modelling Guidelines (Water by Design, 2018). The treatment train produced in MUSIC is outlined in Figure 3.2. Sizing of the sediment basins were undertaken in accordance with the equations presented in the *Wetland Technical Design Guidelines (Water by Design, 2017)* for a design removal efficiency of 80%.

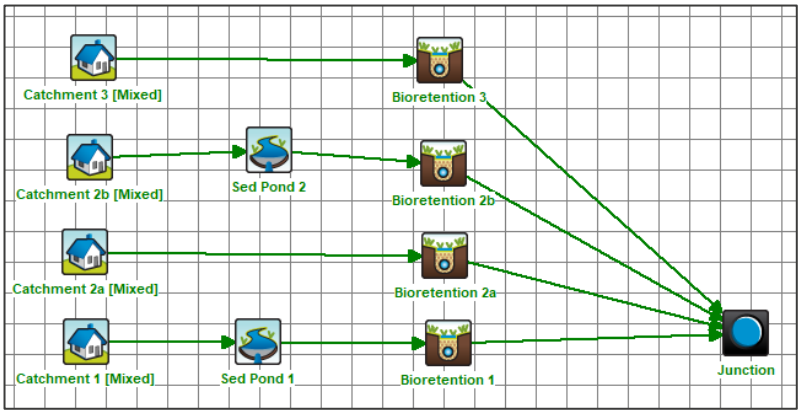

Figure 3.2: MUSIC Model Layout

The modelled bioretention parameters are summarised in Table 3.3. The details of the proposed treatment train are included in Table 3.4. Concept plans for the bioretention basins are provided in Appendix B.

TABLE 3.3: MODELLED BIORETENTION PARAMETERS

Parameter	Value
Extended Detention Depth	300 mm
Filter Depth	700 mm to accommodate tree planting
Batter Slope to Natural Surface	1 in 4 (V:H)
TN Content of Filter Media (mg/kg)	400 mg/kg
Orthophosphate Content of Filter Media	30 mg/kg

TABLE 3.4: TREATMENT TRAIN PARAMETERS

Catchment	Filter Media Surface Area (m^2)	Sediment Basin Surface Area (m^2)
1	800	300
2a	300	Sediment Forebay used
2b	1,200	350
3	300	Sediment Forebay used

3.3 MUSIC Modelling Results

Results of the MUSIC model is presented in Table 3.5. The results of the MUSIC modelling indicate that the load-based reduction targets have been achieved with the proposed treatment train, this indicates the Stormwater IMPs (ADG, 2016) (Engeny, 2024) requirements have been achieved. As such, the proposed treatment measures will be adopted for the development Site.

TABLE 3.5: MUSIC MODEL RESULTS

Pollutant	Minimum Load-Based Reduction Target (%)	Modelled Load-Based Reduction Target (%)
Total Suspended Solids (TSS)	80	81
Total Phosphorus (TP)	60	63
Total Nitrogen (TN)	45	51
Gross Pollutants (GP)	90	100

4. STORMWATER QUANTITY MANAGEMENT

A local WBNM hydrologic model was utilised to size the stormwater quantity management measures for the ROL04 Site. The model assessed the change in peak flows at each of the catchment outlets in the Existing and Developed Scenarios for the full range of design events. Ensuring that the detention basins mitigate the 63.2% AEP event peak flows also ensures that waterway stability requirements are met. Detention basins were sized such that the Developed Scenario peak flows were mitigated to Existing Scenario flows, at the point of discharge to Sandy Creek. This mitigation approach meets the requirements of the Stormwater IMPs (ADG, 2016) (Engeny, 2024) The following sections summarise the hydrologic model build and results.

4.1 Catchment Delineation

Catchment delineation to each discharge location into Sandy Creek was undertaken using the 2020 and 2021 1 m LiDAR for the existing scenario, and the post-development catchment boundaries provided by Colliers Engineering & Design. Catchment mapping for the Existing and Developed Scenarios is provided in Figure 4.1 and Figure 4.2, parameters are summarised in Table 4.1. The eastern catchments have not been mapped or considered in the existing scenario as it is proposed in the post developed scenario to re-direct these to drain to the west.

TABLE 4.1: CATCHMENT DETAILS

	Existing Scenario		Developed Scenario	
Catchment	Catchment Area (ha)	Fraction Impervious (%)	Catchment Area (ha)	Fraction Impervious (%)
SO26_A	27.78	0	40.51	65.8
S023_A1	4.87	0	5.13	62.5

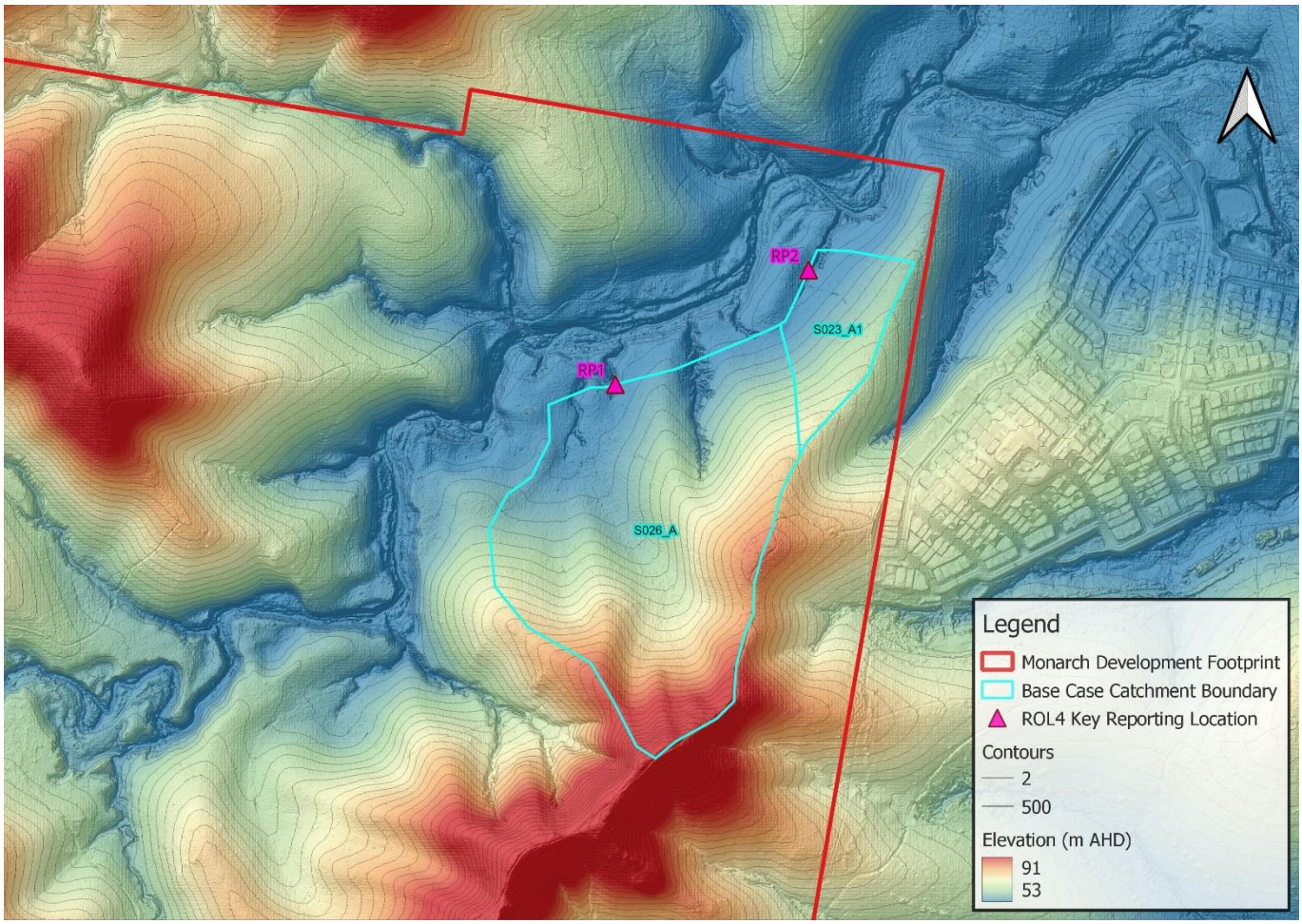

Figure 4.1: Existing Scenario Catchments

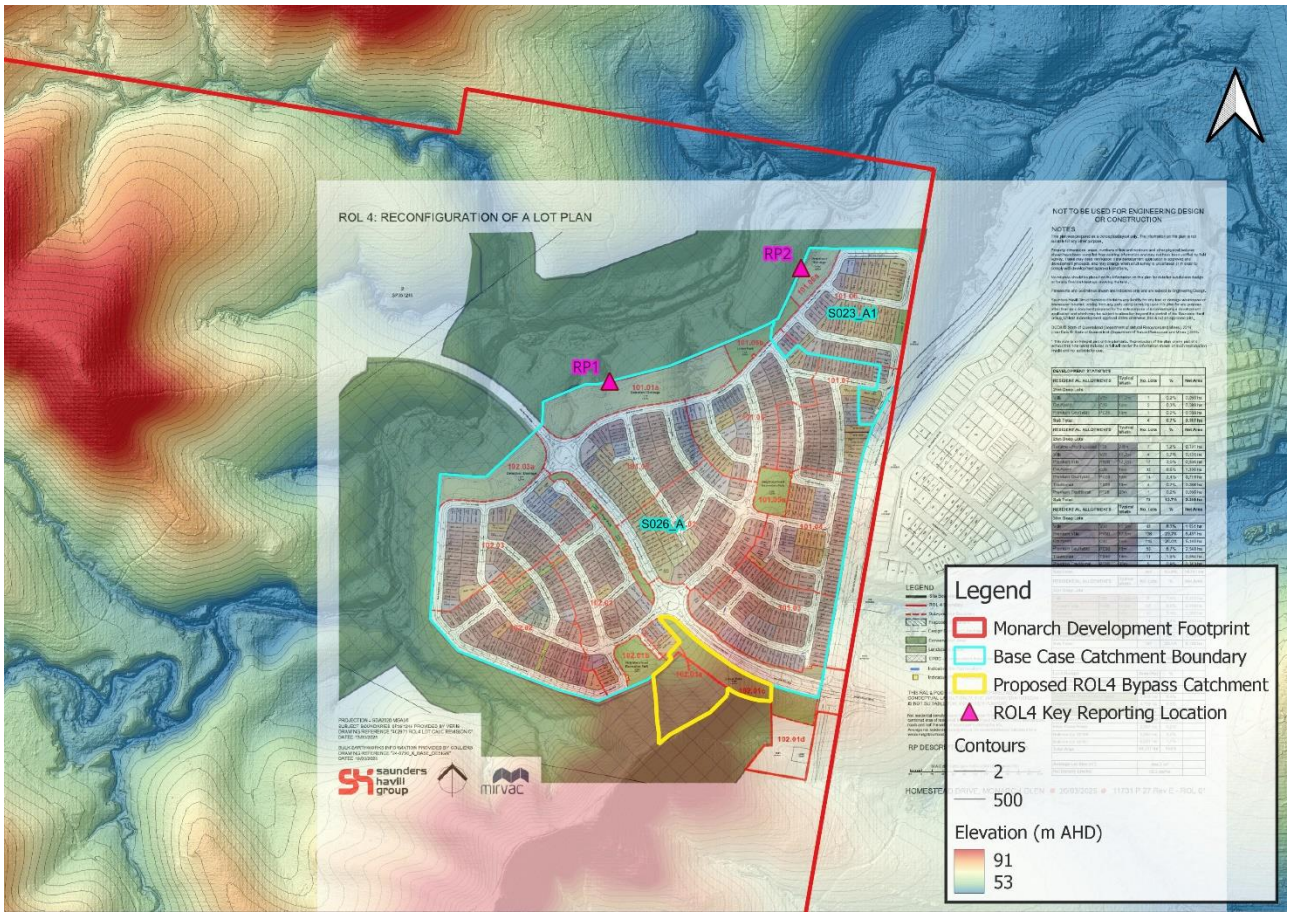

Figure 4.2: Developed Scenario Catchments

4.2 Rainfall-Runoff Parameters

The assumed rainfall-loss parameters adopted in WBNM are summarised as follows:

- Application of storm initial loss of 24 mm, as per ARR 2019 specifications, for all pervious surfaces.
- Application of storm continuing loss of 1.6 mm/h, as per ARR 2019 specifications, for all pervious surfaces.
- Application of initial and continuing losses of 1 mm and 0 mm/h, respectively, for all impervious surfaces.
- Application of ARR 2019 rainfall depths sourced from the Bureau of Meteorology (BoM), as per ARR 2019 specifications.
- Application of ARR 2019 median pre-burst rainfall depths, as per ARR 2019 specifications, prior to main burst.
- Simulation of the full ensemble of ten (10) temporal patterns for the East Coast North region, as per ARR 2019 specifications.
- No application of Aerial Reduction Factors.
- WBNM default value of C = 1.6 was adopted.

4.3 Detention Basin Sizing

Detention basins are proposed to mitigate the developed scenario peak flows back to the existing scenario from the 63.2% AEP to the 1% AEP flood events prior to entering Sandy Creek. The detention volume is proposed to be located above the extended detention depth of the bioretention basins and all outlet pipes are proposed at the extended detention surface level. Details of the proposed detention parameters are summarised below in Table 4.2 and Table 4.3, and the basins performance in Table 4.4 and Table 4.5. Concept plans for the detention basins are provided in Appendix B. Please note that Basin 1 and Basin 2 operate as a single detention basin at the end of catchment S026 because they are hydraulic connected under the future road. The batters also include 1 in 3 batters along the interface with the EPBC corridor and a small boulder wall to interface with the bikeway, which have been discussed with EDQ and LCC as shown in Figure 4.3.

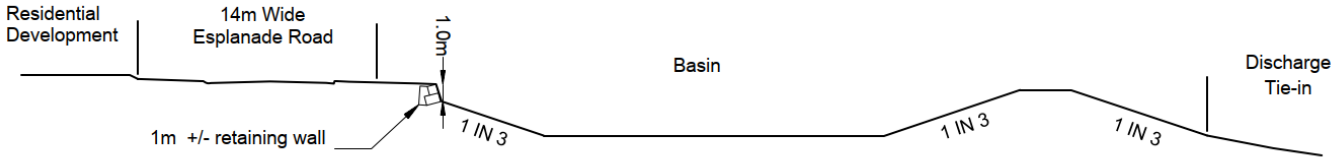

Figure 4.3: Agreed Typical Section

TABLE 4.2: DETENTION BASIN PARAMETERS – CATCHMENT S026_A – BASINS 1 &2

Basin Details	Basin
Low Flow Outlet	5/ 375 mm at 53.7 m AHD
Spillway	5 m wide weir at 54.65 m AHD
Minimum Embankment Crest Level required (Assume 300mm buffer)	55.43 m AHD
Maximum Water Level in 1% AEP	55.13 m AHD
Maximum Storage in 1% AEP Event	28.98 ML

TABLE 4.3: DETENTION BASIN PERFORMANCE– CATCHMENT S026_A – BASINS 1 &2

Design Event	Peak Elevation (m AHD)	Peak Storage (ML)
1% AEP	55.1	28.98
2% AEP	55.0	25.78
5% AEP	54.8	21.13
10% AEP	54.6	17.28
20% AEP	54.4	12.74
50% AEP	54.1	7.37
63.2% AEP	54.0	5.97

TABLE 4.4: DETENTION BASIN PARAMETERS – CATCHMENT S023_A1 - BASIN 3

Basin Details	Basin
Low Flow Outlet	1/ 375 mm at 50 m AHD
Spillway	5.5 m wide weir at 51 m AHD
Minimum Embankment Crest Level required	51.54 m AHD
Maximum Water Level in 1% AEP	51.24 m AHD
Maximum Storage in 1% AEP Event	1.92 ML

TABLE 4.5: DETENTION BASIN PERFORMANCE – CATCHMENT S023_A1 - BASIN 3

Design Event	Peak Elevation (m AHD)	Peak Storage (ML)
1% AEP	51.2	1.92
2% AEP	51.2	1.82
5% AEP	51.1	1.70
10% AEP	51.1	1.55
20% AEP	50.9	1.20
50% AEP	50.5	0.64
63.2% AEP	50.4	0.50

4.4 Peak Flow Mitigation Results

The peak flow mitigation results at for each of the local catchments which drain west into Sandy Creek are summarised in Table 4.6 and Table 4.7, refer Figure 2.1 for reporting locations. These demonstrate the local catchments, including the additional diversion of the existing eastern catchments, have mitigated the flows to existing conditions prior to entering Sandy Creek. It is anticipated with this mitigation the peak flows at the MG site boundary (LPD SC2) will be achieved.

TABLE 4.6: PEAK FLOW RESULTS – RP1

Design Event	Existing Scenario Peak Flow (m^3/s)	Developed Scenario Peak Unmitigated Flow (m^3/s)	Developed Scenario Peak Mitigated Flow (m^3/s)	Difference in Peak Flow – Mitigated minus Base (m^3/s)	Difference in Peak Flow – Mitigated minus Base (%)
1% AEP	5.51	15.54	4.83	-0.68	-13.2
2% AEP	4.64	13.79	3.48	-1.16	-28.6
5% AEP	3.56	11.46	1.98	-1.58	-57.0
10% AEP	2.81	9.6	1.41	-1.4	-66.4
20% AEP	2.07	7.57	1.22	-0.85	-51.7
50% AEP	1.12	5.24	0.94	-0.18	-17.5
63.2% AEP	0.91	4.59	0.85	-0.06	-6.8

TABLE 4.7: PEAK FLOW RESULTS – RP2

Design Event	Existing Scenario Peak Flow (m^3/s)	Developed Scenario Peak Unmitigated Flow (m^3/s)	Developed Scenario Peak Mitigated Flow (m^3/s)	Difference in Peak Flow – Mitigated minus Base (m^3/s)	Difference in Peak Flow – Mitigated minus Base (%)
1% AEP	1.48	2.38	1.47	-0.01	-0.7
2% AEP	1.25	2.08	1.12	-0.13	-11.0
5% AEP	0.98	1.71	0.78	-0.2	-22.7
10% AEP	0.73	1.4	0.45	-0.28	-47.5
20% AEP	0.53	1.09	0.27	-0.26	-65.0
50% AEP	0.28	0.76	0.21	-0.07	-28.6
63.2% AEP	0.2	0.67	0.19	-0.01	-5.1

5. FLOOD COMPLIANCE

The flood compliance for the ROL04 Site has been considered against the LCC TLPI 2023 Flood Hazard Overlay Code. This code identifies LCC's Flood Investigation Area at the application's location, as shown in Figure 5.1.

An updated WOS Flood Assessment for the Masterplan is being concurrently being lodged with EDQ. The applicable Performance Outcomes of the Flood Hazard Overlay Code to ROL04 therefore are:

- **Performance Outcome 4**
  - Development is located outside of a Flood investigation area identified on Flood hazard overlay map OM-05.01, unless development:
    a) is demonstrated to be compatible with the level of flood risk;
    b) delivers the relevant outcomes for the flood risk area, including a:
       I. High flood risk area;
       II. Moderate flood risk area;
       III. Low flood risk area, Very low flood risk area and High flood island where involving essential community infrastructure activities or a vulnerable use.
- **Performance Outcome 5**
  - Development provides a development envelope area that is:
    a) above the flood level during the defined flood event;
    b) of an area and dimensions to accommodate the activities associated with the intended use.

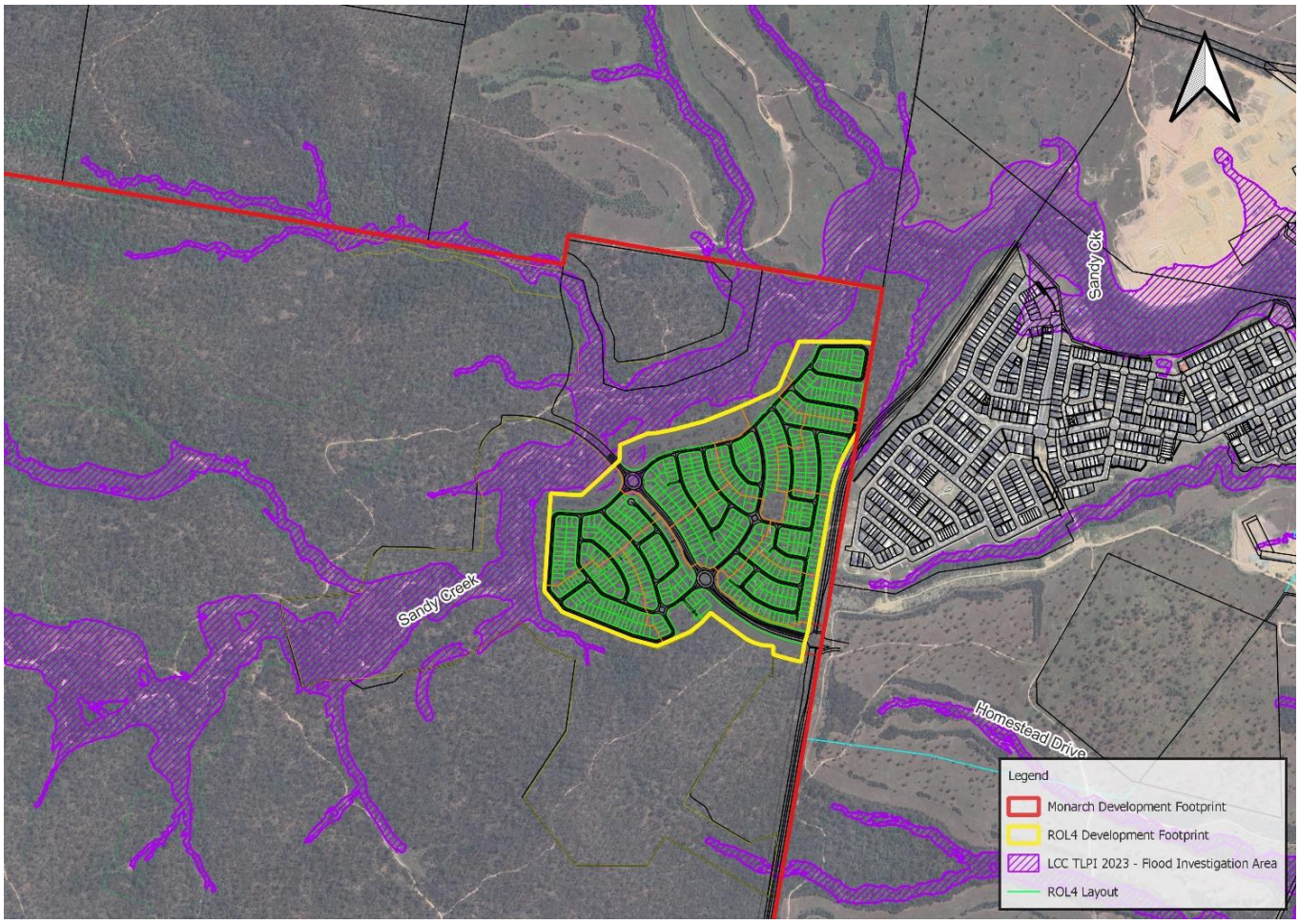

Figure 5.1: LCC TLPI 2023 Overlay

The compliance of the ROLO4 application with the identified Performance Outcomes (PO) LCC TLPI 2023 Flood Hazard Overlay Code is summarised in Table 5.1.

TABLE 5.1: COMPLIANCE OF ROL04 WITH LCC TLPI 2023 PERFORMANCE OUTCOMES

Performance Outcome	Compliance Assessment
PO4	• ROL04 is proposed to be predominantly located outside the extent of the LCC TLPI 2023 Flood Investigation Area as shown on Figure 5.1. • The exception to this is isolated interaction with the proposed drainage reserves.
PO5	• The defined flood event applicable to ROL04 is the 1% AEP RCP4.5 2100 horizon flood event. Mapping for this event has been completed as part of the concurrent WOS Flood Assessment scope. • The 1% AEP flood event mapping is provided in Figure 5.2. • The PMF flood event mapping is provided in Figure 5.3. • This mapping demonstrates compliance of ROL04 with PO5 through; – The development envelope area is located at elevations of 53.2 m AHD to 58.7 m AHD. The PMF flood event elevations range from 50 m AHD to 54.2 m AHD. Therefore, the development envelope area is expected to be well above the flood level during the defined flood event as the PMF flood event is far more conservative than the 1% AEP RCP4.5 2100 horizon flood event. – The development envelope area is of an area and dimensions to accommodate the activities associated with the intended use.

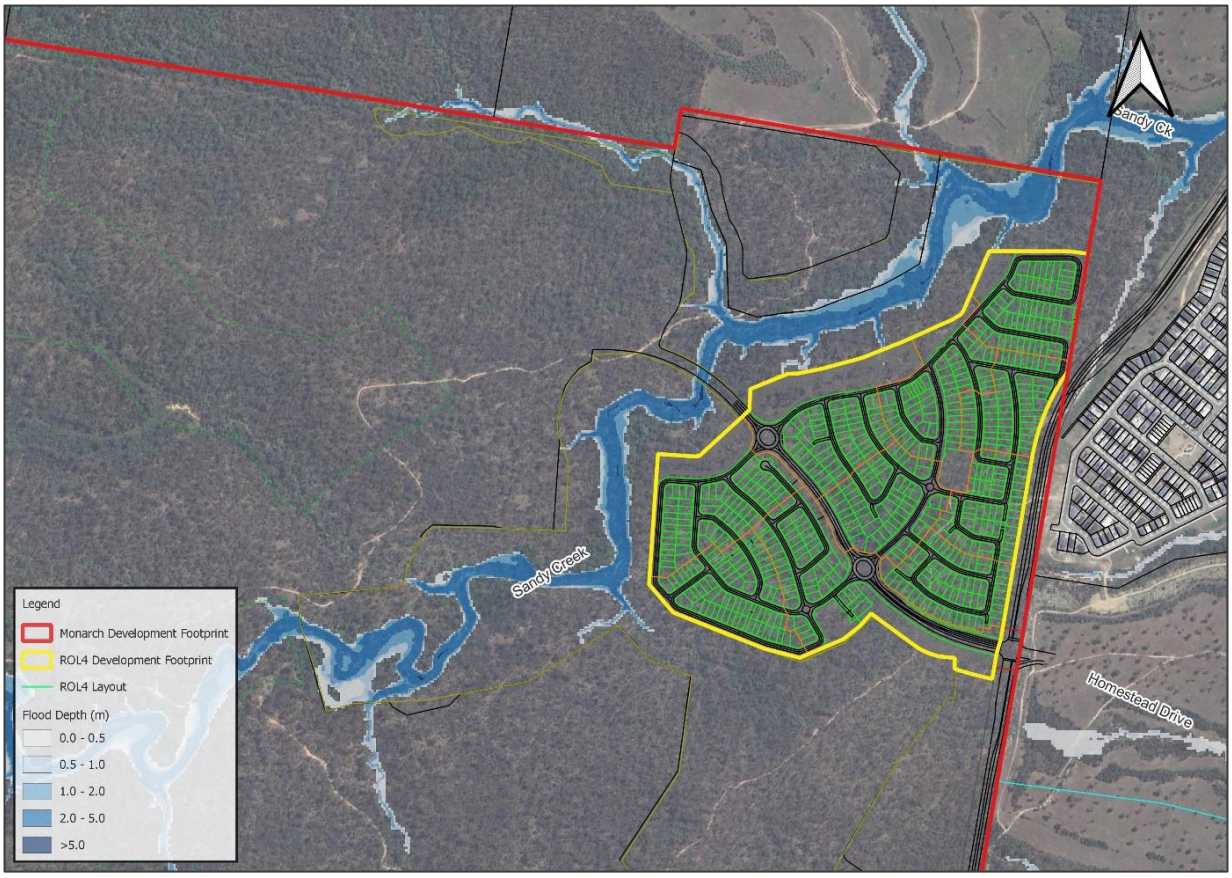

Figure 5.2: ROL04 – 1% AEP Climate Change Flood Mapping

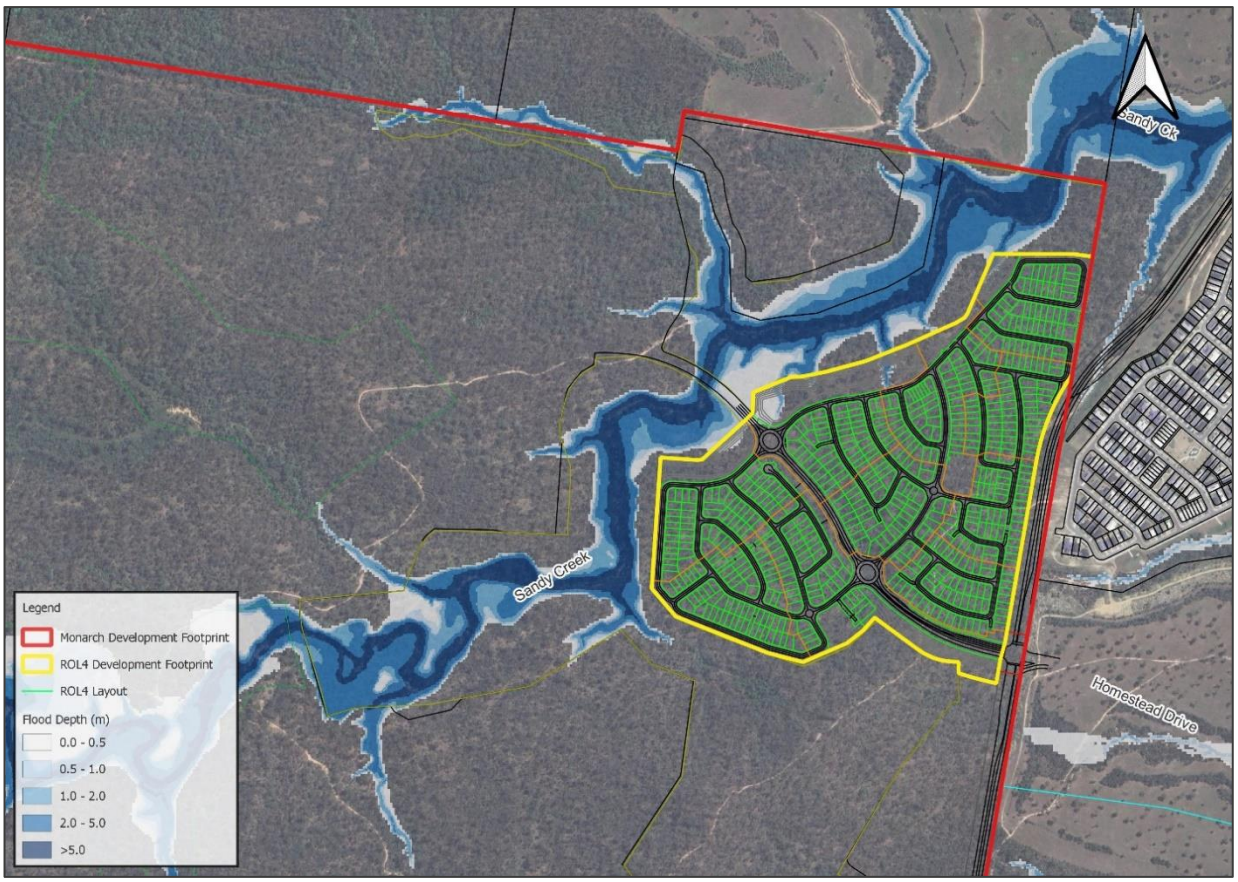

Figure 5.3: ROL04 – PMF Flood Mapping

6. WATERWAY STABILITY MANAGEMENT

Engeny's *Monarch Glen – Masterplan: Waterway Stabilisation and Rehabilitation Plan* (Engeny, 2024) identifies the current geomorphic condition of the MG Site and the proposed design considerations to maintain waterway stability as the Development proceeds. The following sections outline the waterway condition in the vicinity of ROL04, proposed waterway stability design elements, and the assessment of the Development with the LCC Planning Scheme Policy 5 and the Water Sensitive Urban Design: Developing Design Objectives for Urban Development in South-East Queensland (Healthy Waterways. 2007).

6.1 Current Waterway Condition

Sandy Creek lies to the north-west of ROL04 and acts as the legal point of discharge. Water currently discharges to Sandy Creek through six incised tributaries on the southern bank of Sandy Creek. Figure 6.1 shows a photo of the current waterway condition of Sandy Creek, captured during the site visit. The waterway condition of Sandy Creek and associated tributaries in the vicinity of ROL04 is described as follows:

- Sandy Creek:
  - Sandy mobile bed, no evidence of recent bed lowering.
  - Well vegetated with mid- high density vegetation present on banks. High canopy cover from mature canopy trees, and dense shrubby understory.
  - Generally stable. Dispersive soils are exposed where waterway diverting to 4WD track and disturbance from vehicles causing gullying in outlet drains.
- Tributaries:
  - Exposed dispersive soils and bed lowering evident in upper reach.
  - Evidence of historical incision on all tributaries.
  - Evidence of active incision on the norther tributary.
  - Medium density vegetation with medium canopy cover and medium-low density groundcovers.

Figure 6.1: Sandy Creek Site Visit Photo

6.2 Proposed Waterway Stability Management

It is proposed to discharge flows from the development detention and bioretention systems to Sandy Creek through four of the six tributaries downstream of ROL04, locations of these tributaries are shown in Figure 6.2. The following sections outline the design considerations and frequent flow management considerations for ROL04, with the detail engineering outcomes included in Appendix B.

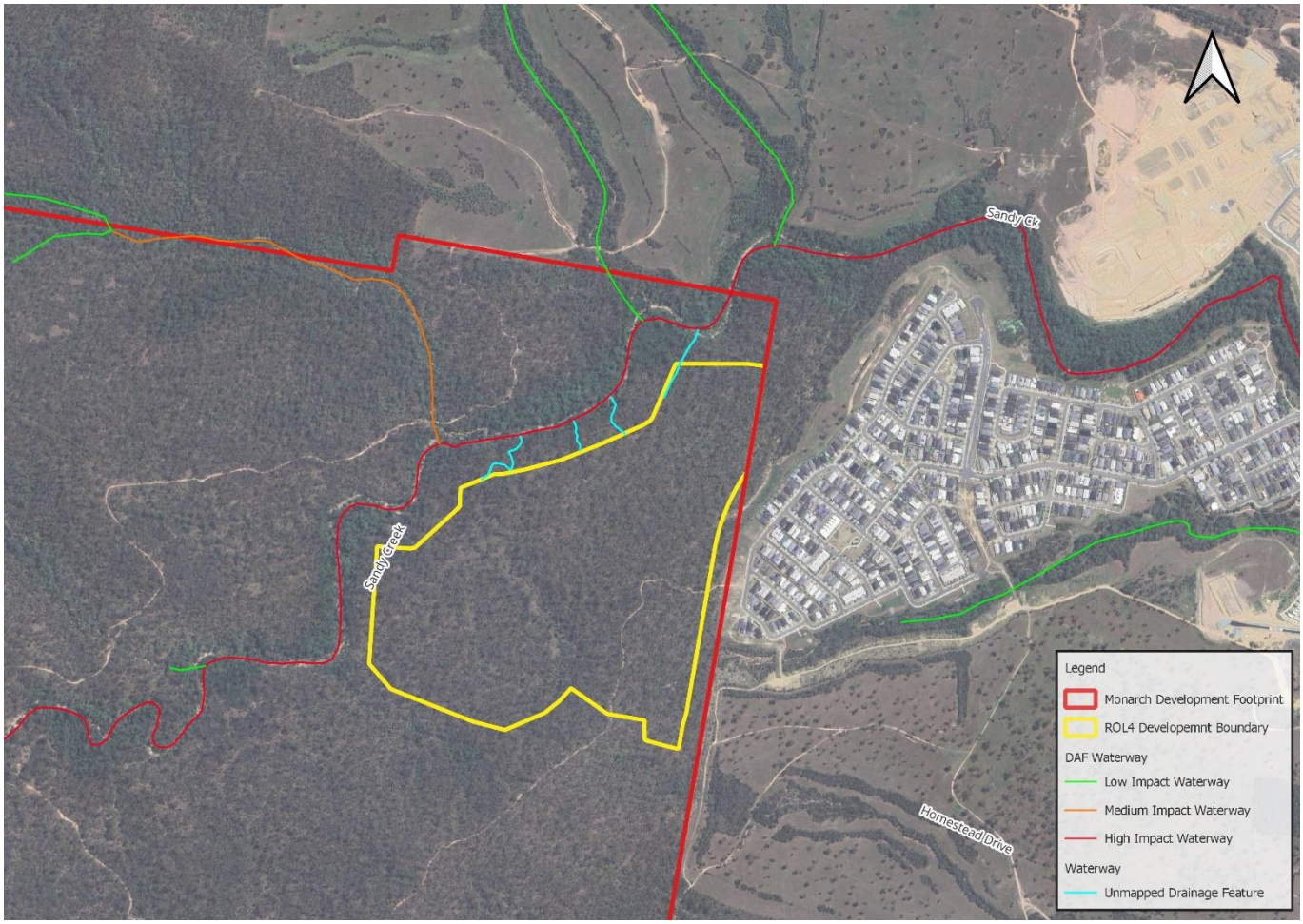

Figure 6.2: Tributaries Locality

6.2.1 Design Considerations

To maintain waterway stability in the vicinity of ROL04 the following design elements are proposed:

- Profiling of banks to tie into the existing low flow gullies to Sandy Creek, with the intent to create a stable outlet to minimise the risk of future scour.
- Use of rock chutes to convey spillway flows from the basin to the existing gullies.

Scour protection to pipe outlets:

- Revegetation of flow lines where vegetation density is lacking.
- Structures to stabilise head cut erosion, further details to be provided in subsequent applications. Works will be undertaken with consideration for EPBC area to minimise impacts.

6.2.2 Frequent Flow Management

In accordance with the requirements of LCC Planning Scheme Policy 5 and the Water Sensitive Urban Design: Developing Design Objectives for Urban Development in South East Queensland (Healthy Waterways. 2007), mitigation of the developed scenario peak flows to below existing scenario peak flows for the frequent flow event, nominally the 63.2% AEP flood event, has been achieved. The proposed detention

basins as outlined in Section 4 have been sized to mitigate developed scenario peak flows to below existing scenario peak flows for all flood events from the 63.2% AEP to 1% AEP flood events.

7. SUMMARY OF PERFORMANCE CRITERIA COMPLIANCE

The performance criteria for the development relating to stormwater quality and stormwater quantity was outlined in Section 1.2 of this report. The method for satisfying each of the relevant criteria for the ROL04 development is summarised below:

- **Stormwater Quality**
  - The load-based reduction targets are achieved through the implementation of six (6) bioretention basins proposed at the outlets of the developed catchments.
- **Stormwater Quantity**
  - Stormwater quantity is achieved through the implementation of two (2) detention basins mitigating peak flows from the 63% AEP flood event to the 1% AEP flood event. These are located at the outlet of each developed catchment which mitigate peak flows in the Developed Scenario to Existing Scenario flows.
- **Flood Compliance**
  - The proposed development complies with the LCC TLPI 2023 Flood Hazard Overlay Code, through ensuring that the proposed development is located well outside/above the DFE flood extent.
- **Waterway Stability**
  - The Water Sensitive Urban Design: Developing Design Objectives for Urban Development in South-East Queensland waterway stability targets are achieved through the implementation of two (2) detention basins mitigating peak flows down to the 63% AEP flood event. These are located at the outlet of each developed catchment which mitigate peak flow in the Developed Scenario to Existing Scenario flows.
  - Stabilisation of tributaries that discharge flow from the detention/ bioretention systems will be managed through a combination of rock chutes, pipe outlet scour protection, vegetation, and structures to stabilise head cut erosion.

By achieving these outcomes the ROL4 SBSMP meets the requirements of the following overarching reports:

- Undullah – Rice, Dairy and Wyatt Roads, Undullah Stormwater Infrastructure Master Plan (ADG, 2016) (ref. DEV DEV2017/857).
- Monarch Glen Stormwater Infrastructure Management Plan (Engeny, 2024) (ref. BBNE00356_0016-704-0).
- Undullah – Rice, Dairy and Wyatt Roads, Undullah Total Water Cycle Management Overarching Site Strategy (ADG, 2016) (ref. DEV DEV2012/248).
- Monarch Glen Total Water Cycle Management Overarching Site Strategy (Engeny, 2024) (ref. BBNE00356_0016-REP-006-0).

8. REFERENCES

Australian Government Bureau of Meteorology (www.bom.gov.au).

Ball et. al. (2019). *Australian Rainfall and Runoff: A Guide to Flood Estimation*, © Commonwealth of Australia

Department of Environment and Science (DES) (2021), *State Planning Policy 2017. State Interest Water Quality – Supplementary Implementation Guideline.* © State of Queensland February 2021.

Department of Infrastructure, Local Government and Planning (DILGP) (2017), *State Planning Policy (SPP).* © State of Queensland July 2017

Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIO) (2019), *State Development Assessment Provisions.* © State of Queensland July 2019. Version 2.5.

Department of Transport and Main Roads (DTMR) (2019). *Road Drainage Manual.*

Healthy Land and Water (2014). *Bioretention Technical Design Guidelines.* October 2014. Version 1.1

Healthy Land and Water (2018). *MUSIC Modelling Guidelines.* November 2018.

Healthy Waterways (2007). *Water Sensitive Urban Design: Developing Design Objectives for Urban Development in South East Queensland*. Version 2. November 2007.

Healthy Waterways (2011). *Framework for the Integration of Flood and Stormwater Management into Open Space.* August 2011. Version 1.1

Institute of Public Works Engineering Australasia Queensland (IPWEAQ) (2017). *Queensland Urban Drainage Design Manual*. 4th Edition

Logan City Council (2015). *Logan City Council Planning Scheme.*

Logan City Council (2023). *Temporary Local Planning Instrument No. 1/2023.*

State of Queensland (2018). *Environmental Protection (Water) Policy 2009.*

9. QUALIFICATIONS

(a) In preparing this document, including all relevant calculation and modelling, Engeny Australia Pty Ltd (Engeny) has exercised the degree of skill, care and diligence normally exercised by members of the engineering profession and has acted in accordance with accepted practices of engineering principles.

(b) Engeny has used reasonable endeavours to inform itself of the parameters and requirements of the project and has taken reasonable steps to ensure that the works and document is as accurate and comprehensive as possible given the information upon which it has been based including information that may have been provided or obtained by any third party or external sources which has not been independently verified.

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  (ii) Engeny considers it prudent to revise any aspect of the works in light of any information which becomes known to it after the date of submission.

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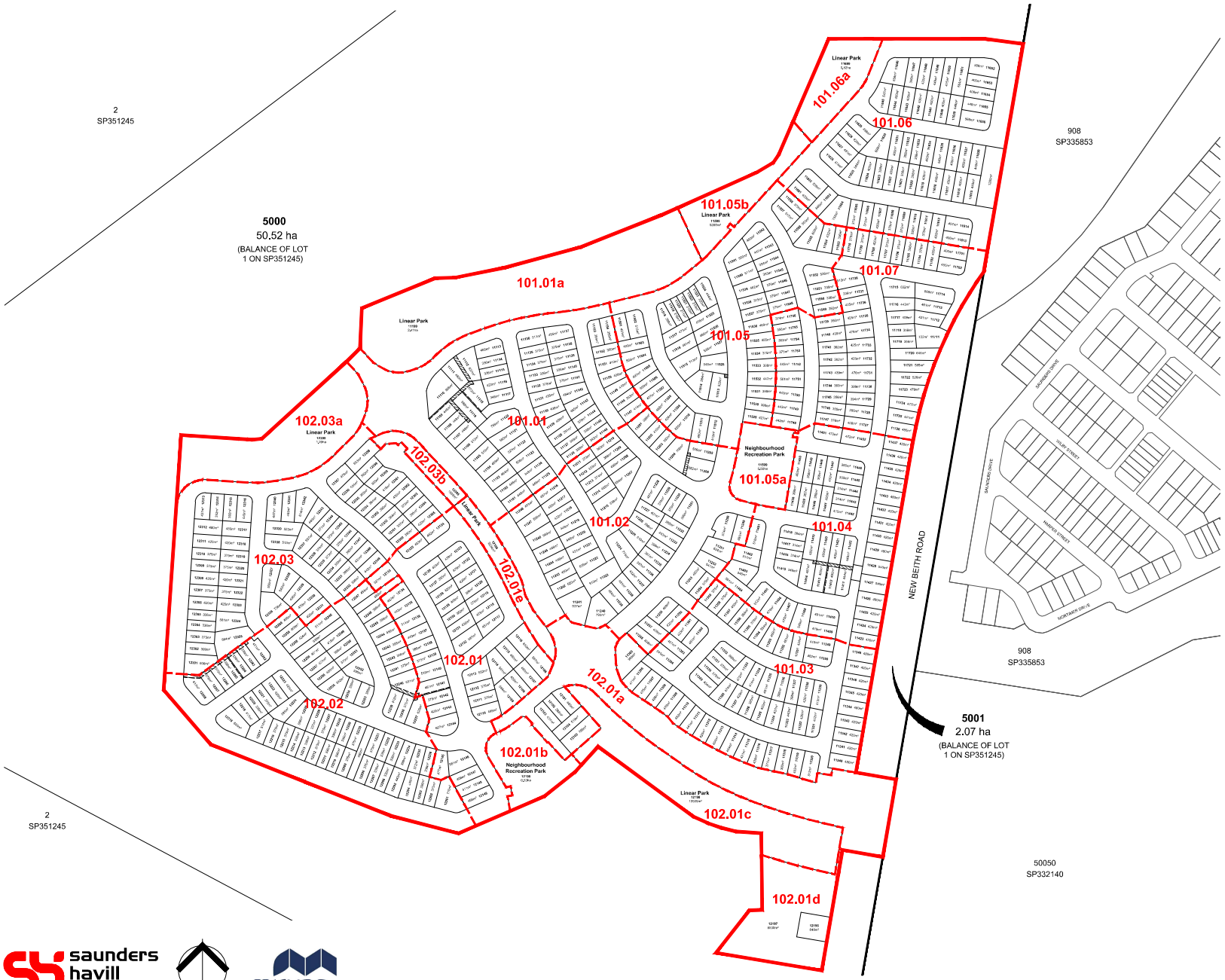
(g) This Report does not provide legal advice.

APPENDIX A: DEVELOPMENT LAYOUT

ROL 4: PRECINCT 101 & 102 - PRELIMINARY SUB-PRECINCT PLAN



NOT TO BE USED FOR ENGINEERING DESIGN OR CONSTRUCTION

NOTES

This plan was prepared as a conceptual layout only. The information on this plan is not suitable for any other purpose.

Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions.

No reliance should be placed on the information on this plan for detailed subdivision design or for any financial dealings involving the land.

Pavements and centrelines shown are indicative only and are subject to Engineering Design.

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Net residential density means the total number of dwellings divided by the combined area of residential lots, Neighbourhood Recreation Parks, internal local roads and half the width of local roads bordering the site.
Average net residential density means net residential density calculated for a whole neighbourhood.

PROJECTION - GDA2020 MGA56
SUBJECT BOUNDARIES SP351245 PROVIDED BY VERIS
DRAWING REFERENCE "402971 ROL4 LOT CALC REVISION C"
DATED 13/03/2025

BULK EARTHWORKS INFORMATION PROVIDED BY COLLIERS
DRAWING REFERENCE "24-0750_X_BASE_DESIGN"
DATED 20/03/2025

THIS RAL & POD PACKAGE WAS PREPARED AS A CONCEPTUAL LAYOUT ONLY. THE INFORMATION HEREON IS NOT SUITABLE FOR ANY OTHER PURPOSE.

LEGEND

- Site Boundary
- ROL 4 Boundary
- Sub-precinct Boundary
- Proposed Easement

RP DESCRIPTION: Lots 1-3 on SP351245

SCALE @A1 1:2000 @A3 1:4000 - LENGTHS ARE IN METRES
20 0 20 40 60 80 100 120 140 160 180 200 220

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ROL 4: RECONFIGURATION OF A LOT PLAN

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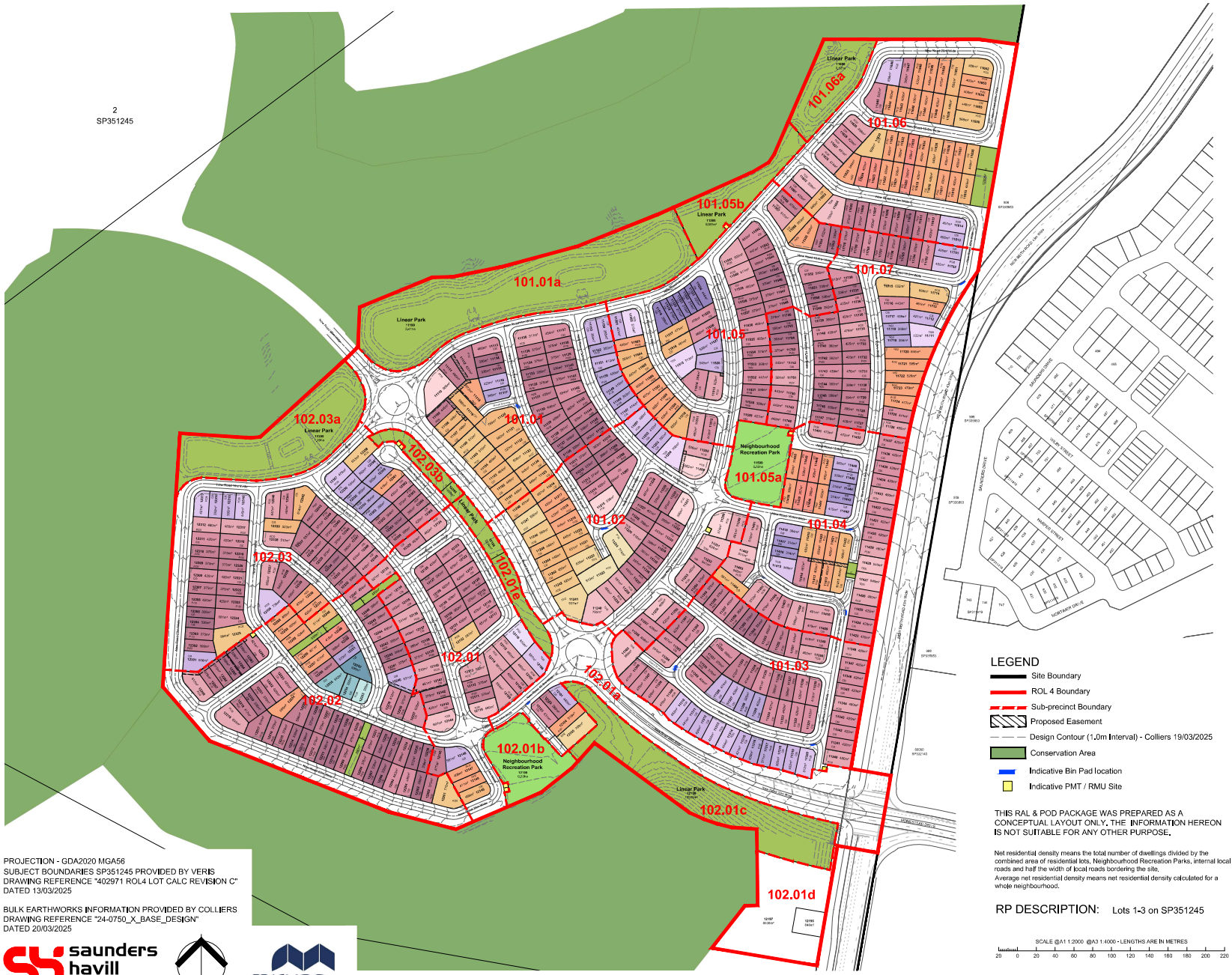

NOTES

This plan was prepared as a conceptual layout only. The information on this plan is not suitable for any other purpose.

Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions.

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DEVELOPMENT STATISTICS					
RESIDENTIAL ALLOTMENTS		**Typical Width**	**No. Lots**	**%**	**Net Area**
25m Deep Lots					
Villa	V25	11.2m	1	0.2%	0.059 ha
Courtyard	C25	14m	2	0.3%	0.089 ha
Premium Courtyard	PC25	16m	1	0.2%	0.039 ha
Sub Total			**4**	**0.7%**	**0.187 ha**
RESIDENTIAL ALLOTMENTS		**Typical Width**	**No. Lots**	**%**	**Net Area**
28m Deep Lots					
Terrace - Front Loaded	T28	7.5m	7	1.2%	0.191 ha
Villa	V28	11.2m	4	0.7%	0.126 ha
Premium Villa	PV28	12.5m	17	3.0%	0.636 ha
Courtyard	C28	14m	32	5.6%	1.396 ha
Premium Courtyard	PC28	16m	14	2.4%	0.719 ha
Traditional	TD28	18m	4	0.7%	0.266 ha
Premium Traditional	PT28	20m	1	0.2%	0.065 ha
Sub Total			**79**	**13.7%**	**3.399 ha**
RESIDENTIAL ALLOTMENTS		**Typical Width**	**No. Lots**	**%**	**Net Area**
30m Deep Lots					
Villa	V30	11.2m	48	8.3%	1.651 ha
Premium Villa	PV30	12.5m	136	23.7%	5.431 ha
Courtyard	C30	14m	115	20.0%	5.140 ha
Premium Courtyard	PC30	16m	50	8.7%	2.548 ha
Traditional	TD30	18m	11	1.9%	0.684 ha
Premium Traditional	PT30	20m	5	0.9%	0.343 ha
Sub Total			**365**	**63.5%**	**15.797 ha**
RESIDENTIAL ALLOTMENTS		**Typical Width**	**No. Lots**	**%**	**Net Area**
32m Deep Lots					
Villa	V32	11.2m	9	1.6%	0.333 ha
Premium Villa	PV32	12.5m	57	9.9%	2.484 ha
Courtyard	C32	14m	41	7.1%	2.008 ha
Premium Courtyard	PC32	16m	14	2.4%	0.863 ha
Traditional	TD32	18m	4	0.7%	0.295 ha
Premium Traditional	PT32	20m	2	0.3%	0.169 ha
Sub Total			**127**	**22.1%**	**6.152 ha**
Total Allotments			**575**	**100%**	**25.535 ha**

Land Budget	**Area (Ha)**	**%**
Area of Subject Site / Stage	**48.211 ha**	—
Net Residential Allotments	**25.535 ha**	53.0%
Linear Park / Pedestrian Linkage	6.762 ha	14.0%
Neighbourhood Recreation Park	1.026 ha	2.1%
Local Road Areas	10.983 ha	22.8%
Major Road Areas	2.967 ha	6.2%
Balance Lot 12196	0.085 ha	0.2%
Balance Lot 12197	0.853 ha	1.8%
Total Area	**48.211 ha**	**100%**
Average Lot Size (m²)	**444.1 m²**	
Net Density (dw/ha)	**15.3 dw/ha**	

PROJECTION - GDA2020 MGA56
SUBJECT BOUNDARIES SP351245 PROVIDED BY VERIS
DRAWING REFERENCE "402971 ROL4 LOT CALC REVISION C"
DATED 13/03/2025

BULK EARTHWORKS INFORMATION PROVIDED BY COLLIERS
DRAWING REFERENCE "24-0750_X_BASE_DESIGN"
DATED 20/03/2025

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APPENDIX B: CONCEPT BASIN PLANS

LEGEND (SURFACE TREATMENTS)

- BIORETENTION FILTER MEDIA
- 200mm TOPSOIL BELOW DESIGN SURFACE
- SAFETY BENCH / MACROPHYTE ZONES
- GRADED ROCK, SCOUR PROTECTION
- NOMINAL ROCK
- CONCRETE VEHICLE ACCESS PATH
- SEALED SURFACES (BY OTHERS)
- GRAVEL ACCESS TRACK

LEGEND - EXISTING FEATURES

- CONTOUR LABEL
- CONTOUR MAJOR (1m INTERVAL)
- CONTOUR MINOR (0.5m INTERVAL)
- EPBC CONSERVATION AREA B
- PROPERTY/LEASE BOUNDARY
- TREE TO RETAIN
- TREE TO BE RETAINED SUBJECT TO ARBORIST INSPECTION
- TREE TO BE REMOVED
- WATERWAY
- RETAINING WALL (BY OTHERS)

LEGEND - PROPOSED SERVICES

- STORMWATER PIPES
- STORMWATER FIELD INLET
- HEADWALL
- CONCRETE SILL
- FLOW PATH

LEGEND - SERVICES BY OTHERS

- STORMWATER (UG)
- SEWER (UG)
- TRUNK SEWER (UG)
- WATER (UG)

LEGEND - FEATURES BY OTHERS

- CONTOUR LABEL
- CONTOUR MAJOR (1m INTERVAL)
- CONTOUR MINOR (0.5m INTERVAL)

LEGEND - PROPOSED FEATURES

- BATTER TADPOLES
- CONTROL LINE
- CONTOUR LABEL
- CONTOUR MAJOR (1m INTERVAL)
- CONTOUR MINOR (0.1m INTERVAL)
- 1% AEP FLOOD SURFACE EXTENT

NOTE:

PRELIMINARY BASIN CONCEPT DETAILS TO SUPPORT RE-CONFIGURING A LOT APPLICATION

BASIN 2, REFER DWG SERIES 2000 FOR DETAILS

ADDITIONAL EARTHWORKS REQUIRED INSIDE EPBC 750m²

LOW FLOW PIPE

2/ϕ1050 RCP BASIN CONNECTION PIPE (HYDRAULICALLY LINKED) ASSUMED 2m CLEARANCE TO ROAD FOR SERVICES

DETENTION BASIN TO BE PLANTED. REFER LANDSCAPE ARCHITECT PLANS FOR DETAILS.

SATURATED BIORETENTION BASIN 1 RL53.4 (280m2)

ϕ375mm OUTLET PIPE

SEDIMENT BASIN OVERFLOW

SATURATED BIORETENTION BASIN 1B RL53.4 (540m2)

3m WIDE GRAVEL ACCESS TRACK

INFLOW CULVERTS (BY OTHERS)

REFER LANDSCAPE ARCHITECT PLANS FOR SURFACE TREATMENTS OUTSIDE OF EARTHWORKS EXTENT.

1% AEP OVERLAND FLOW SCOUR PROTECTION

1m WIDE GRAVEL ACCESS TRACK

MAINTENANCE TRACK AND HIGH FLOW INFLOW POINT

SEDIMENT BASIN

ROAD 02 · ROAD 03 · ROAD 04 · ROAD 07 · ROAD 08 · ROAD 22

SCALE 1:1000 (A1)
SCALE BEFORE REDUCTION

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LAST MODIFIED:28/03/2025 1:59 PM

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B	TD	20.03.25	ISSUED FOR REVIEW	DN	BBNE00356_0016-REP-001-A	MONARCH GLEN ROL04 SBSMP
A	NWN	05.12.24	ISSUED FOR REVIEW	DN	DOC. NUMBER	

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RPEQ		RPEQ No.		

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MONARCH GLEN ROL4
BASIN 1 - GENERAL ARRANGEMENT PLAN

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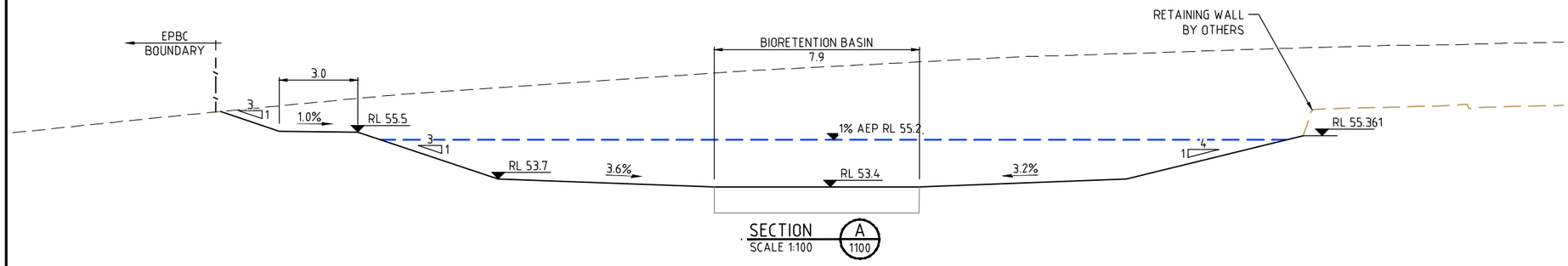
DWG NO.: BBNE00356-0016-DWG-1100
REV.: B



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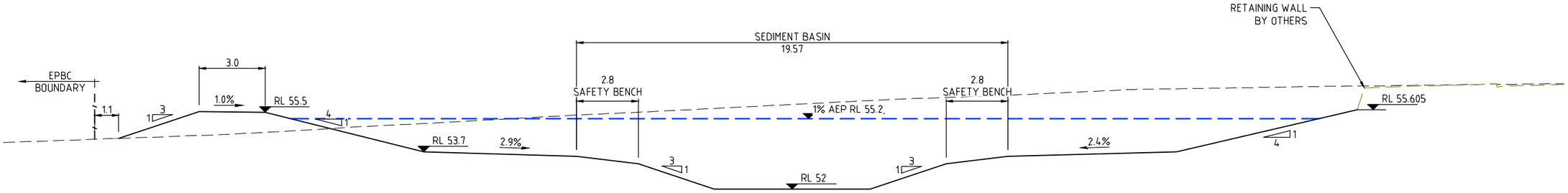

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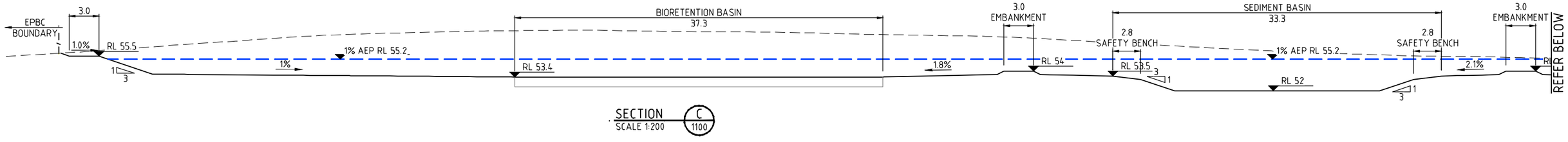

SECTION C
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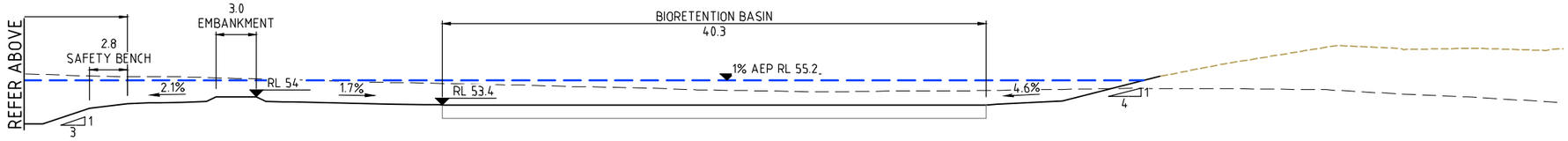
LEGEND

- EXISTING SURFACE
- DESIGN SURFACE
- BULK EARTHWORKS BY OTHERS
- 1% AEP FLOOD SURFACE



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SCALE 1:200 1100

NOTE:

PRELIMINARY BASIN CONCEPT DETAILS TO SUPPORT RE-CONFIGURING A LOT APPLICATION

SCALE 1:100 (A1)
SCALE BEFORE REDUCTION

SCALE 1:200 (A1)
SCALE BEFORE REDUCTION

REV	BY	DATE	REVISION DESCRIPTION	PM APPD.
B	TD	20.03.25	ISSUED FOR REVIEW	DN
A	NWN	05.12.24	ISSUED FOR REVIEW	DN

REFERENCE DOCUMENTS	
BBNE00356_0016-REP-001-A	MONARCH GLEN ROL04 SBSMP
DOC. NUMBER	DOCUMENT TITLE

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RPEQ		RPEQ No.		

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MONARCH GLEN ROL4
BASIN 1 - TYPICAL SECTIONS AND DETAILS

ORIGINAL SIZE	DWG No.	REV.
A1	BBNE00356-0016-DWG-1101	B

LEGEND (SURFACE TREATMENTS)

- BIORETENTION FILTER MEDIA
- 200mm TOPSOIL BELOW DESIGN SURFACE
- SAFETY BENCH / MACROPHYTE ZONES
- GRADED ROCK, SCOUR PROTECTION
- NOMINAL ROCK
- CONCRETE VEHICLE ACCESS PATH
- SEALED SURFACES (BY OTHERS)
- GRAVEL ACCESS TRACK

LEGEND - EXISTING FEATURES

- CONTOUR LABEL
- CONTOUR MAJOR (1m INTERVAL)
- CONTOUR MINOR (0.5m INTERVAL)
- EPBC CONSERVATION AREA B
- PROPERTY/LEASE BOUNDARY
- TREE TO RETAIN
- TREE TO BE REMOVED
- WATERWAY
- RETAINING WALL (BY OTHERS)

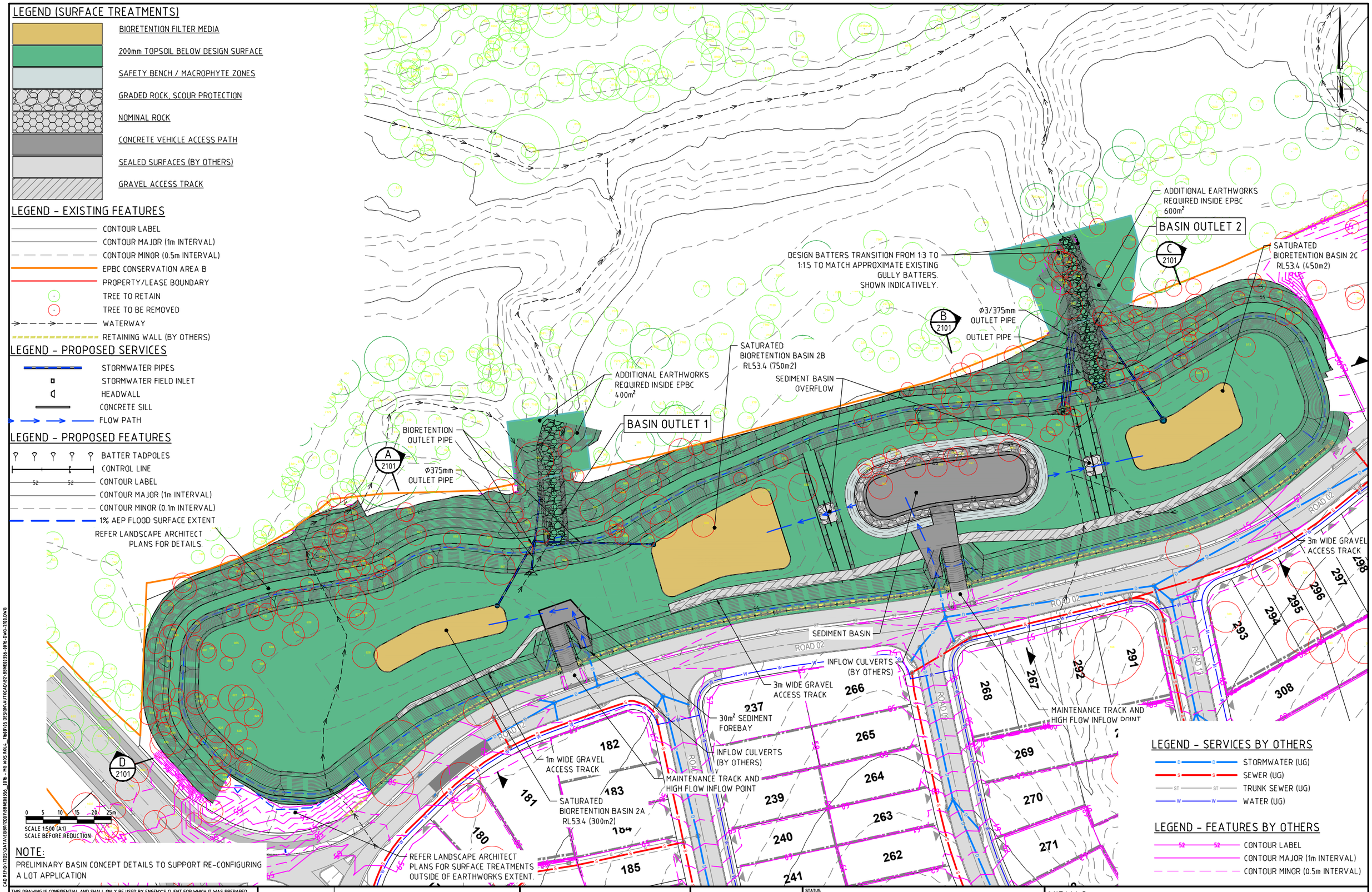
LEGEND - PROPOSED SERVICES

- STORMWATER PIPES
- STORMWATER FIELD INLET
- HEADWALL
- CONCRETE SILL
- FLOW PATH

LEGEND - PROPOSED FEATURES

- BATTER TADPOLES
- CONTROL LINE
- 52 52 CONTOUR LABEL
- CONTOUR MAJOR (1m INTERVAL)
- CONTOUR MINOR (0.1m INTERVAL)
- 1% AEP FLOOD SURFACE EXTENT

REFER LANDSCAPE ARCHITECT PLANS FOR DETAILS.



NOTE:

PRELIMINARY BASIN CONCEPT DETAILS TO SUPPORT RE-CONFIGURING A LOT APPLICATION

LEGEND - SERVICES BY OTHERS

- STORMWATER (UG)
- SEWER (UG)
- TRUNK SEWER (UG)
- WATER (UG)

LEGEND - FEATURES BY OTHERS

- 52 52 CONTOUR LABEL
- CONTOUR MAJOR (1m INTERVAL)
- CONTOUR MINOR (0.5m INTERVAL)

REV	BY	DATE	REVISION DESCRIPTION	PM APPD.
B	TD	20.03.25	ISSUED FOR REVIEW	DN
A	NWN	05.12.24	ISSUED FOR REVIEW	DN

REFERENCE DOCUMENTS	
DOC. NUMBER	DOCUMENT TITLE
BBNE00356_0016-REP-001-A	MONARCH GLEN ROL04 SBSMP

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PM APPD.	DN	PD APPD.	DS
RPEQ		RPEQ No.	

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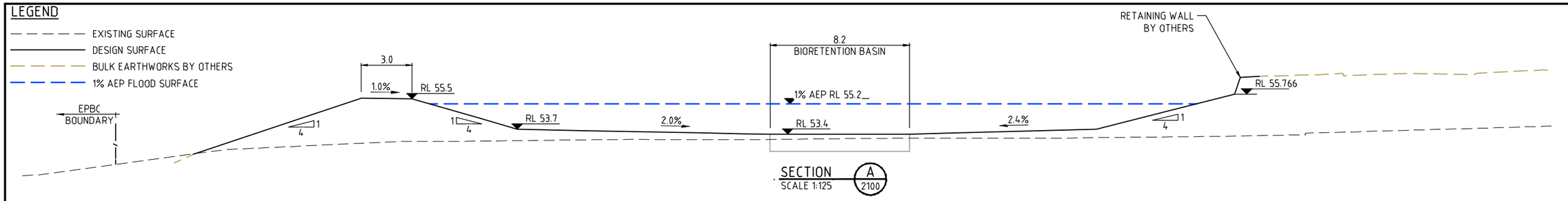
MONARCH GLEN ROL4
BASIN 2 - GENERAL ARRANGEMENT PLAN

ORIGINAL SIZE: A1
DWG NO.: BBNE00356-0016-DWG-2100
REV.: B

LAST MODIFIED: 20/3/2025 3:02 PM
CAD REF: D:\JOBS\DATA\EGBB\2021\BBNE00356_A19 - MG WOS ROL4_ 11408\15 DESIGN\AUTOCAD\02\BBNE00356-A19-DWG-2100.DWG

LEGEND

- EXISTING SURFACE
- DESIGN SURFACE
- BULK EARTHWORKS BY OTHERS
- 1% AEP FLOOD SURFACE



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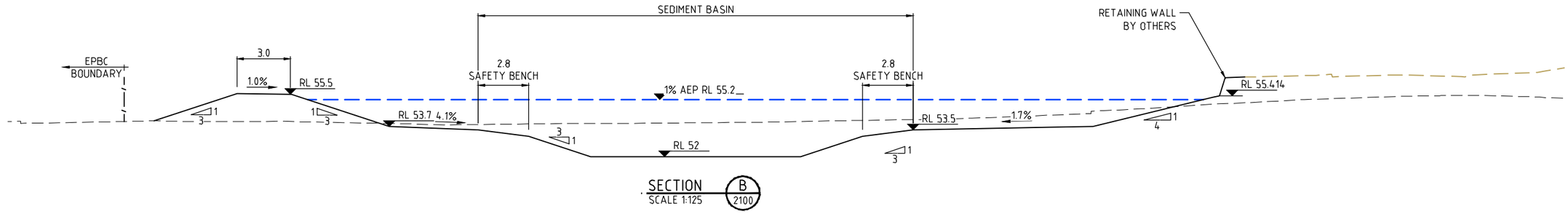

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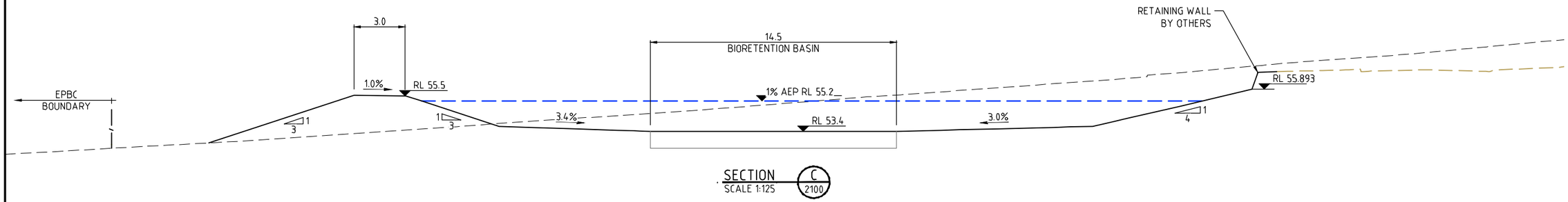

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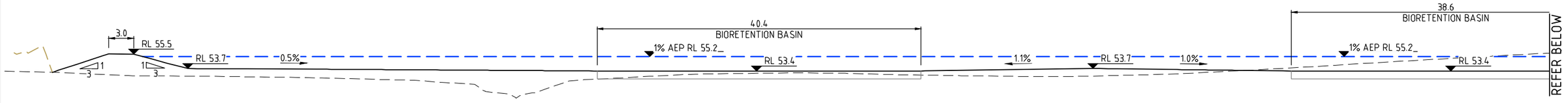

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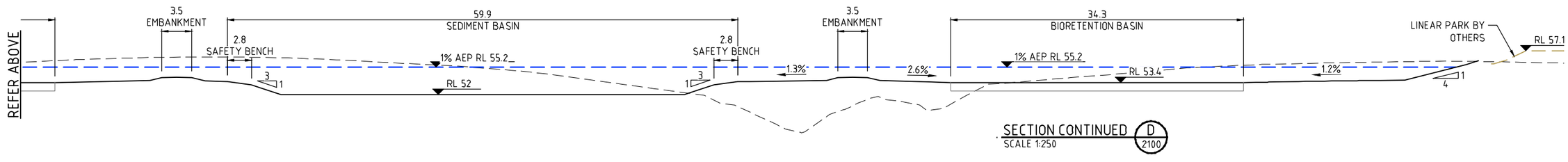

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NOTE:

PRELIMINARY BASIN CONCEPT DETAILS TO SUPPORT RE-CONFIGURING A LOT APPLICATION

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SCALE 1:125 (A1)
SCALE BEFORE REDUCTION

0 2.5 5.0 7.5 10.0 12.5m
SCALE 1:250 (A1)
SCALE BEFORE REDUCTION

REV	BY	DATE	REVISION DESCRIPTION	PM APPD.
B	TD	20.03.25	ISSUED FOR REVIEW	DN
A	NWN	05.12.24	ISSUED FOR REVIEW	DN

BBNE00356_0016-REP-001-A	MONARCH GLEN ROL04 SBSMP
DOC. NUMBER	DOCUMENT TITLE
REFERENCE DOCUMENTS	

ENGENY
Ph. 07 3221 7174
Level 1
500 Queen St
Brisbane QLD
www.engeny.com.au

STATUS: NOT FOR CONSTRUCTION - FOR REVIEW

DESIGNED	TD	CHECKED	NWN
DRAWN	NWN	CHECKED	TH
PM APPD.	DN	PD APPD.	DS
RPEQ		RPEQ No.	

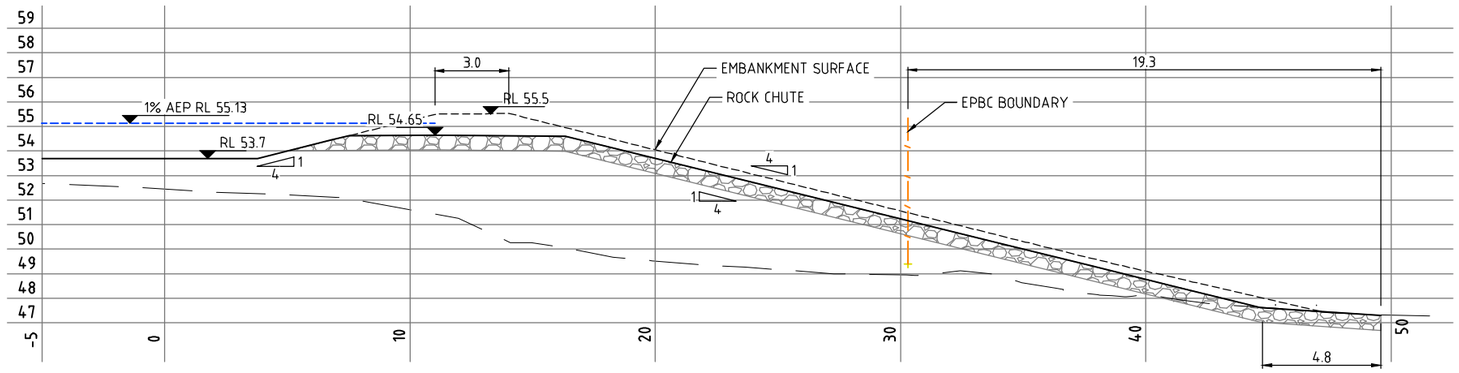
MIRVAC

MONARCH GLEN ROL4
BASIN 2 - TYPICAL SECTIONS AND DETAILS

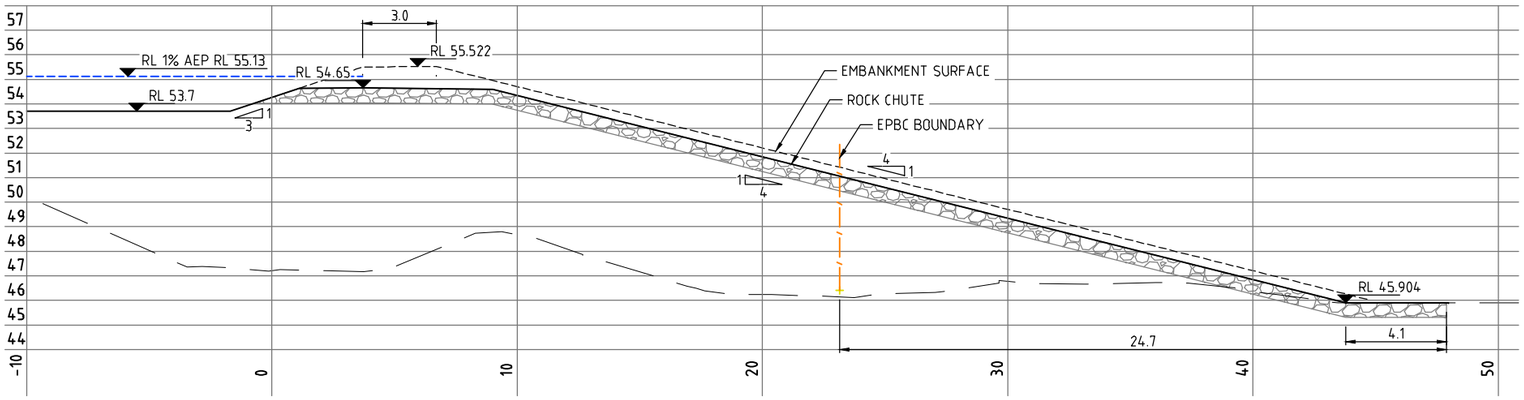
ORIGINAL SIZE: A1
DWG No.: BBNE00356-0016-DWG-2101
REV.: B

LEGEND

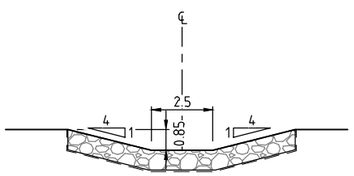
- EXISTING SURFACE
- DESIGN SURFACE
- BULK EARTHWORKS BY OTHERS
- 1% AEP FLOOD SURFACE



BASIN 2 SPILLWAY
SCALE 1:125



BASIN 2 SPILLWAY 2
SCALE 1:125



SPILLWAY TYPICAL DETAILS
SCALE 1:125

NOTE:
REFER TO DWG 0002 FOR GENERAL NOTES AND LEGEND.

0 1.25 2.5 3.75 5.0 6.25m
SCALE 1:125 (A1)
SCALE BEFORE REDUCTION

REV	BY	DATE	REVISION DESCRIPTION	PM APPD.
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RPEQ		RPEQ No.	

MIRVAC

MONARCH GLEN ROL4
BASIN 2 - TYPICAL SPILLWAY SECTIONS AND DETAILS

ORIGINAL SIZE: A1
DWG NO.: BBNE00356-0016-DWG-2102
REV.: B

LEGEND (SURFACE TREATMENTS)

- BIORETENTION FILTER MEDIA
- 200mm TOPSOIL BELOW DESIGN SURFACE
- SAFETY BENCH / MACROPHYTE ZONES
- GRADED ROCK, SCOUR PROTECTION
- NOMINAL ROCK
- CONCRETE VEHICLE ACCESS PATH
- SEALED SURFACES (BY OTHERS)
- GRAVEL ACCESS TRACK

LEGEND - EXISTING FEATURES

- CONTOUR LABEL
- CONTOUR MAJOR (1m INTERVAL)
- CONTOUR MINOR (0.5m INTERVAL)
- EPBC CONSERVATION AREA B
- PROPERTY/LEASE BOUNDARY
- TREE TO RETAIN
- TREE TO BE RETAINED SUBJECT TO ARBORIST INSPECTION
- TREE TO BE REMOVED
- WATERWAY
- RETAINING WALL (BY OTHERS)

LEGEND - PROPOSED SERVICES

- STORMWATER PIPES
- STORMWATER FIELD INLET
- HEADWALL
- CONCRETE SILL
- FLOW PATH

LEGEND - SERVICES BY OTHERS

- STORMWATER (UG)
- SEWER (UG)
- TRUNK SEWER (UG)
- WATER (UG)

LEGEND - FEATURES BY OTHERS

- CONTOUR LABEL
- CONTOUR MAJOR (1m INTERVAL)
- CONTOUR MINOR (0.5m INTERVAL)

LEGEND - PROPOSED FEATURES

- BATTER TADPOLES
- CONTROL LINE
- CONTOUR LABEL
- CONTOUR MAJOR (1m INTERVAL)
- CONTOUR MINOR (0.1m INTERVAL)
- 1% AEP FLOOD SURFACE EXTENT

NOTE:
PRELIMINARY BASIN CONCEPT DETAILS TO SUPPORT RE-CONFIGURING A LOT APPLICATION

0 2.5 5.0 7.5 10.0 12.5m
SCALE 1:250 (A1)
SCALE BEFORE REDUCTION

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RPEQ		RPEQ No.		

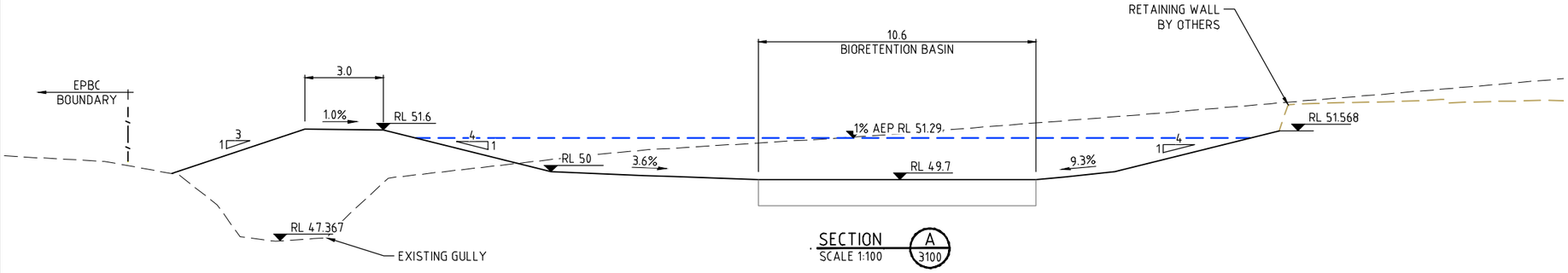
MIRVAC

MONARCH GLEN ROL4
BASIN 3 - GENERAL ARRANGEMENT PLAN

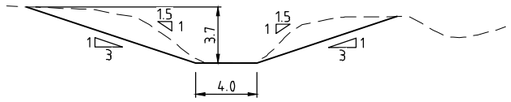
ORIGINAL SIZE: A1
DWG NO.: BBNE00356-0016-DWG-3100
REV.: B

LEGEND

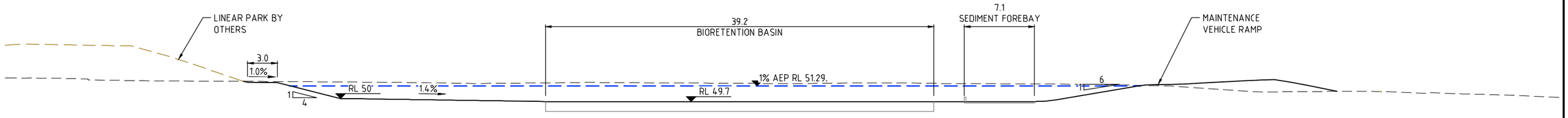
- EXISTING SURFACE
- DESIGN SURFACE
- BULK EARTHWORKS BY OTHERS
- 1% AEP FLOOD SURFACE



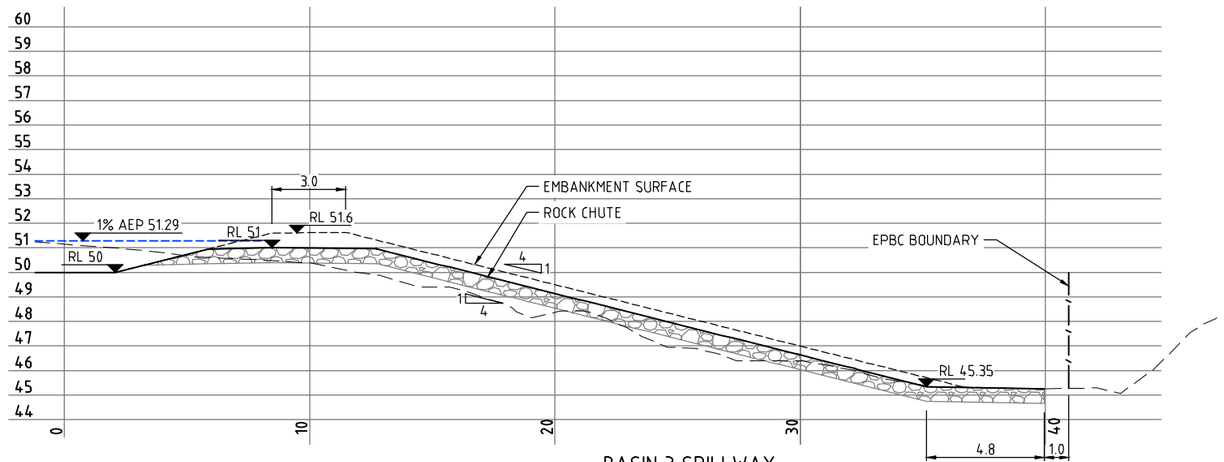
SECTION A
SCALE 1:100
3100



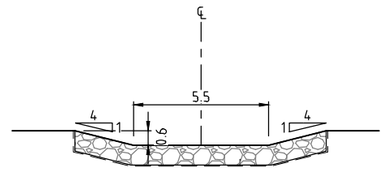
TYPICAL OUTLET INTERFACE WITH EXISTING GULLY
SCALE 1:200



SECTION B
SCALE 1:200
3100



BASIN 3 SPILLWAY
SCALE 1:125



SPILLWAY TYPICAL DETAILS
SCALE 1:125

NOTE:
PRELIMINARY BASIN CONCEPT DETAILS TO SUPPORT RE-CONFIGURING A LOT APPLICATION

0 1 2 3 4 5m
SCALE 1:100 (A1)
SCALE BEFORE REDUCTION

0 1.25 2.5 3.75 5.0 6.25m
SCALE 1:125 (A1)
SCALE BEFORE REDUCTION

0 2 4 6 8 10m
SCALE 1:200 (A1)
SCALE BEFORE REDUCTION

REV	BY	DATE	REVISION DESCRIPTION	PM APPD.	REFERENCE DOCUMENTS	DOCUMENT TITLE
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RPEQ		RPEQ No.		

MIRVAC

MONARCH GLEN ROL4
BASIN 3 - TYPICAL SECTIONS AND DETAILS

ORIGINAL SIZE A1
DWG No. BBNE00356-0016-DWG-3101
REV. B