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WATER, COASTAL & ENVIRONMENTAL CONSULTANTS

Report

Maffra-Briagolong Road, Maffra – Stormwater Management Plan

June 2026

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1 INTRODUCTION

This report sets out a recommended Stormwater Water Management Plan (SWMP) for a proposed rural living residential development (~48 ha) on Maffra-Briagolong Road, Maffra within the Wellington Shire Council municipality. The proposed development involves the subdivision of two parcels zoned Rural Living Zone with 62 proposed lots with an average size of ~ 6,122 m^2.

The investigation identified on-site stormwater management solutions under the proposed developed conditions, and identified a concept drainage design for the site that will:

- Ensure the development attenuates post-development peak 1% AEP runoff to pre-development levels:
- Achieve best practice stormwater quality management targets:

The SWMP for the site is founded on best practice principles and achieves compliance with the requirements of the Water Act 1989 and Best-Practice Environmental Management Guidelines (CSIRO, 1999) and Standards for water quality treatment.

This report addresses the phased development of land located on Briagolong Road, Maffra, which will proceed in stages. The land identified within the Maffra Structure Plan is appropriate for increased density rural living development, subject to further investigation and preparation of technical reports.

As we understand, the Site is currently zoned to facilitate subdivision into 23 rural living zoned lots with a nominated schedule of 2.0 hectares and is proposed to be developed through a coordinated three-phase planning process (staged):

- Phase 1: Preparation and approval of a Development Plan to establish the overall subdivision and servicing framework to address the requirements of the Development Plan Overlay Schedule 1.
- Phase 2: A planning permit application for the creation of 22 lots generally 6,000 m² in size, together with a balance lot, addressing the current requirements of the Rural Living Zone (Schedule 2).
- Phase 3: A Planning Scheme Amendment to the Wellington Planning Scheme to change the Zone Schedule and planning permit application to facilitate the subdivision of the balance land into 40 additional lots, also generally 6,000 m² in size. The stage proposes to delete the Development Plan Overlay applying to the land.

The draft plans for this phased approach can be seen in Appendix A.

This report addresses all three phases (stages) of the development and considers both interim and ultimate development outcomes for the subject land.

2 BACKGROUND

2.1 Subject Land

The subject land consists of two parcels of land located in the north of the Maffra township, as shown in orange in Figure 2-1. Three Chain Road is located to the west with Maffra-Briagolong Road to the east. There are other Rural Living Zone parcels to the north and south, as well as Public Use Zone (associated with Maffra cemetery) to the south.

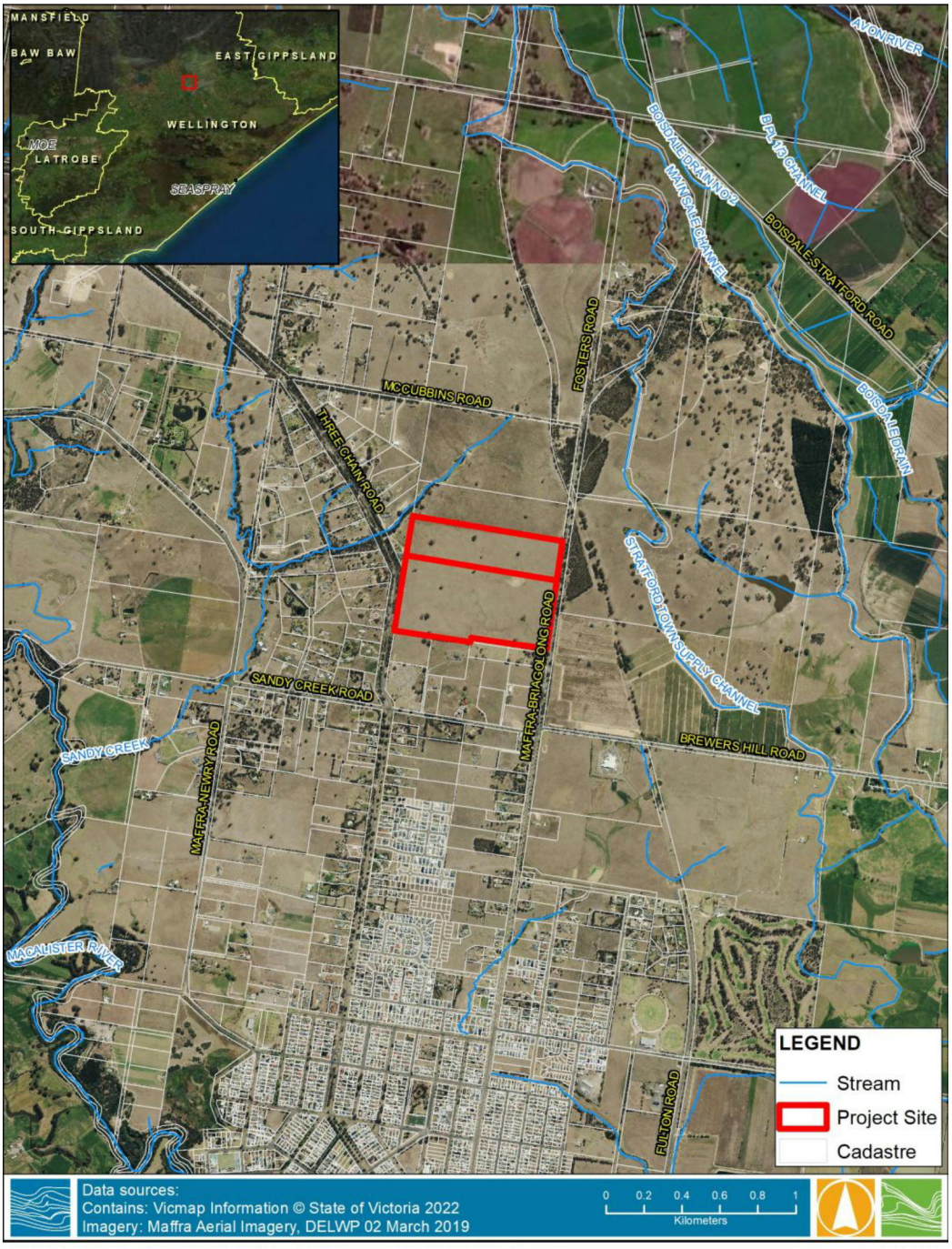

Figure 2-1 Subject Site

The parcels are affected by overlays, shown in Figure 2-2;

- A Development Plan Overlay; and
- A Bushfire Management Overlay.

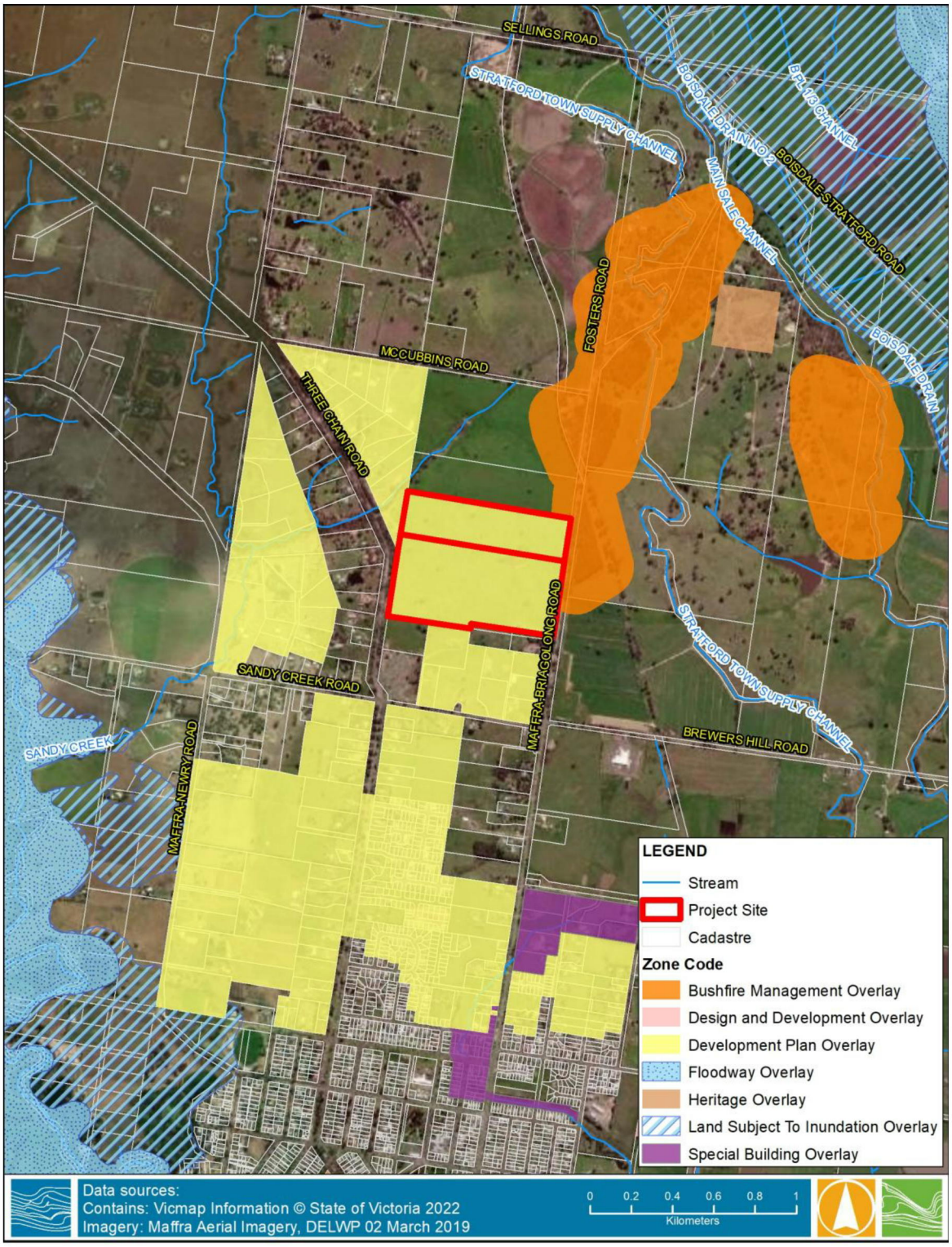

Figure 2-2 Planning Overlays

Figure 2-3 shows the site and wider catchment topography. There is a ridge through the site, with site generally sloping to the south-east or south-west. A small proportion of the site drains to the north-west, towards a tributary of Sandy Creek. Terrain elevation ranges from ~ 61.0 m AHD at the northern ridge line; to ~47.0 m AHD in the north-west corner of the site.

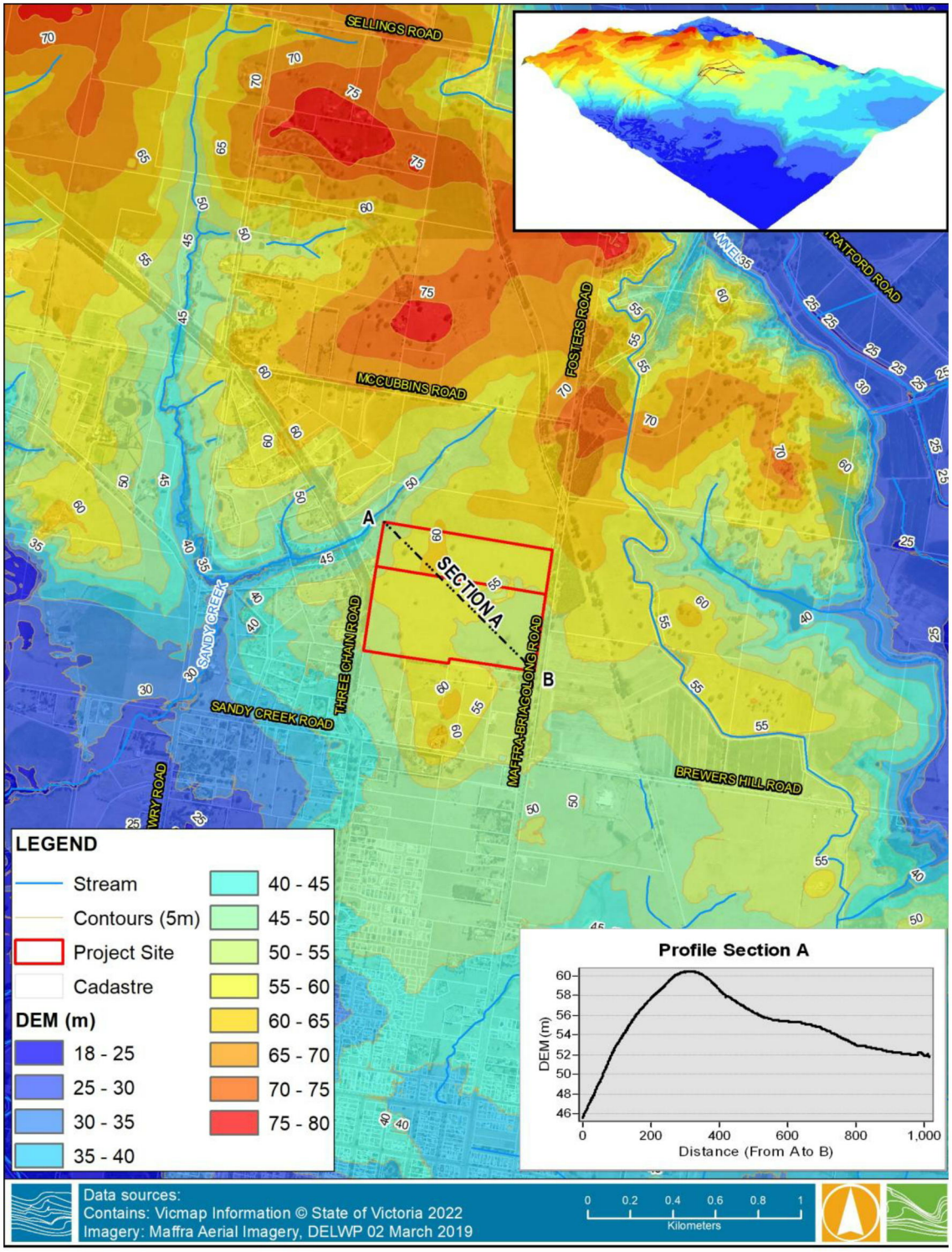

Figure 2-3 Site topography

2.2 Conceptual Development

Figure 2-4 shows an indicative development layout for the site upon completion of Phase 3. The proposed subdivision would result in the creation of 62 lots, with an average size of approximately 6,122 m². Two drainage reserves are proposed in the south-east and south-west corners, to provide end-of-line drainage infrastructure. Conveyance to these two locations is proposed to be delivered via swales along the road reserve.

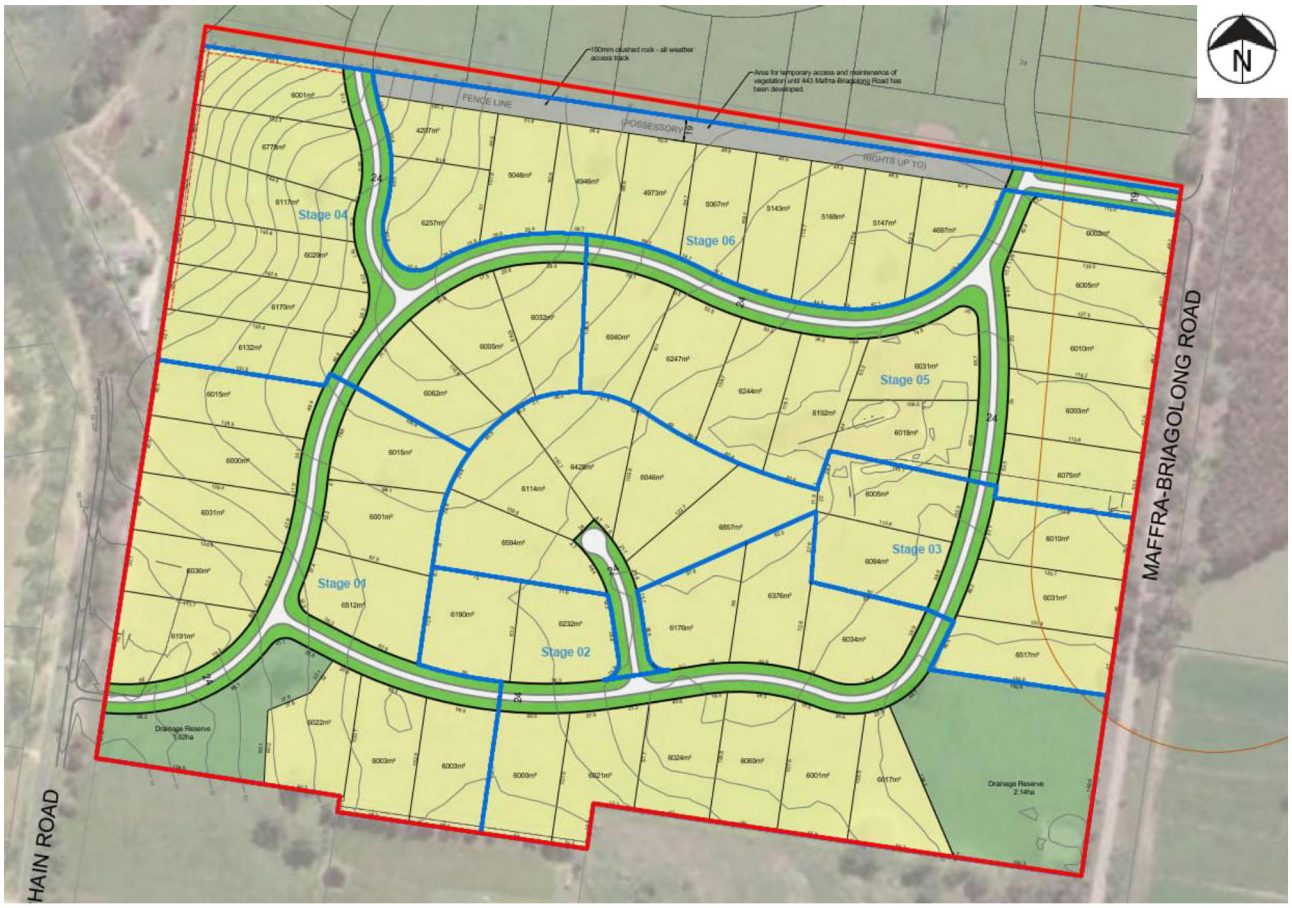

Figure 2-4 Ultimate Development Layout (supplied by Beveridge Williams, May 2026)

There should be no structures or buildings located within 30 metres of Sandy Creek tributary to maintain a vegetated buffer (riparian corridors) along this designated waterway.

The proposed concept site layout may slightly change as the development progresses. Provided that the overall density and layout are not significantly altered, minor revisions will not impact the drainage and water quality drainage concept design and modelling (see section 3) presented in this report. It must, however, be acknowledged that an increase in lot yield is likely to impacts the outcomes and sizing undertaken.

It is appropriate for details of the drainage concept design to be reviewed and optimised at the detailed design stage. This is typical practice for development, with detailed design occurring once a planning permit has been granted. Should there be any concerns regarding details of the proposed works, these can be addressed through appropriate conditions.

3 DRAINAGE CONCEPT DESIGN

This section of the SWMP outlines the drainage infrastructures required to:

- Convey overland flows during the 1% AEP peak flood events via swales drains within the road reserves.
- Retard post-development runoff to ensure the permissible site discharge in a 1% AEP is not exceeded.
- Water quality assets to meet Best Practice objectives.

The proposed drainage strategy for the site is in accordance with:

- The Infrastructure Design Manual (Local Government Infrastructure Design Association) which Wellington Shire Council is a participating council.
- The Construction and establishment guidelines: swales, bioretention systems and wetlands guideline (Water by Design 2010b)

3.1 Flood Retardation

In response to the development application for the site, the West Gippsland CMA provided comments on DP1/2026 stating that they require the consideration of Climate Change when determining the sizing of stormwater quantity management assets.

The hydrological modelling for the sizing of retarding basins has been prepared for the SSP3 year 2100 climate conditions.

3.1.1 Hydrological Modelling

A hydrological RORB model of the site was built to assess the current and future surface flow paths and determine the peak 1% AEP design storm flow for SSP3 year 2100 climate conditions under both pre- and post-development conditions. This assessment was completed using the Australian Rainfall and Runoff 2019 (ARR 2019) Guidelines for Flood Estimation.

Subcatchment delineation was undertaken by reviewing LiDAR and land survey topography. Figure 3-1 shows the subcatchment delineation within the study area and including the external catchments which stormwater runoff enter the subject site. There are the following three outfalls:

- South-West outfall draining to a low depression at 48.9 m AHD along the existing eastern open drain along Three Chain Road.
- South-East outfall draining to an existing farm dam and subsequently, via a culvert under Maffra-Briagolong.
- North-West outfall draining to 47.1 m AHD towards the Sandy Creek tributary located 30 metres away from the waterway corridor.

Two separate drainage reserve have been allocated at the south-west and south-east corner of the subject site to allow for stormwater retardation. It was assumed that there are free-draining conditions downstream of these outfalls. No information was available on downstream culvert(s) and it is recommended that a feature survey and site inspection be undertaken to ascertain dimensions and confirm it is sufficient to convey flows from the site.

It is unpractical and partially unfeasible to drain the catchment draining towards the North-West drains towards the proposed south-west corner of the site. Therefore, alternative arrangement for stormwater retardation and

treatment for the north-west portion of the site are proposed. This catchment (~5 to 6 ha) has been excluded from the hydrological RORB model and will be discussed separately in this SWMP.

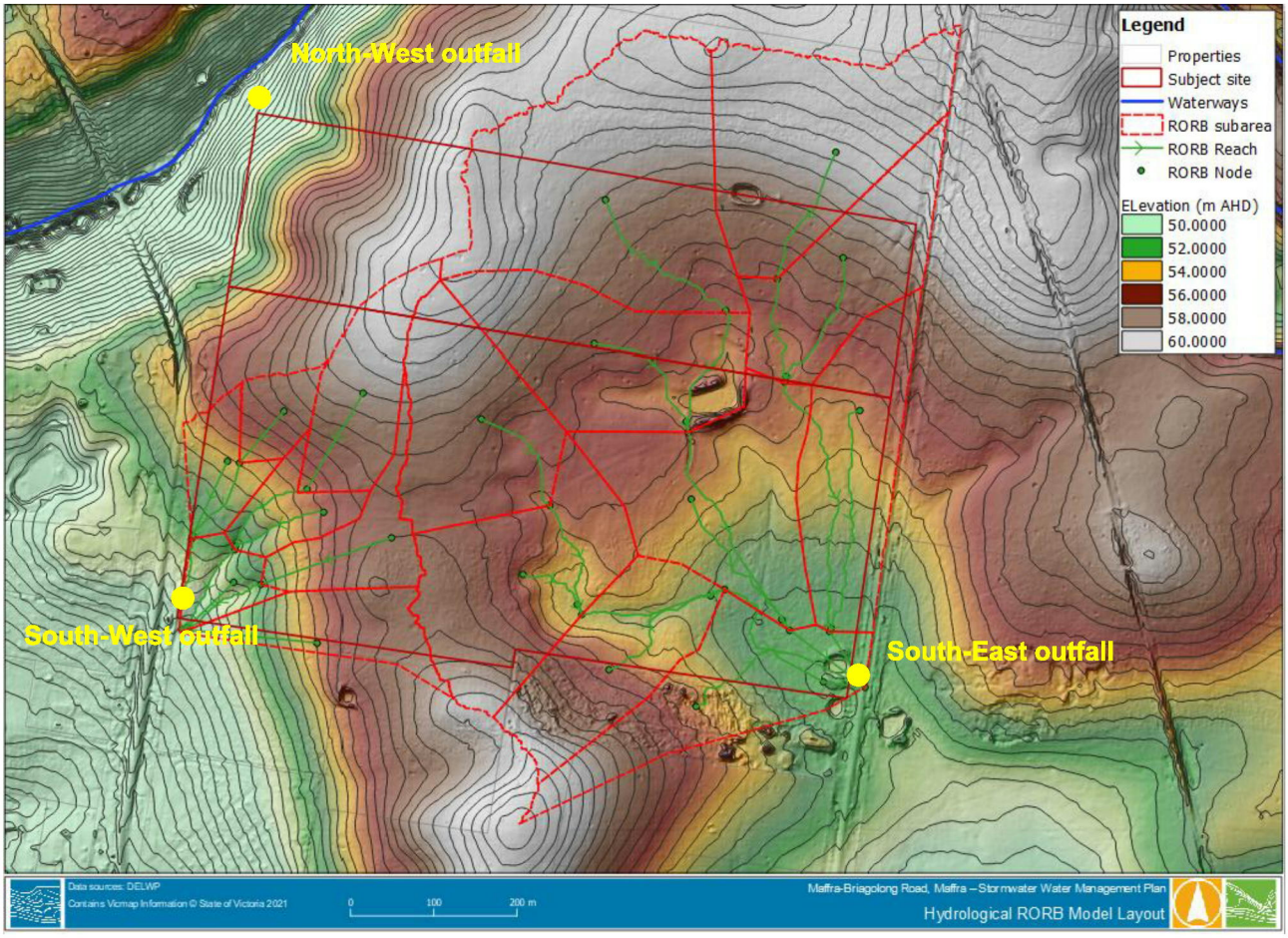

Figure 3-1 Hydrological RORB Model Layout and catchment delineation

To following assumptions were adopted in completing the hydrological modelling and peak flow estimation at the South-West and South-East outfalls;

- The existing small farm dams onsite have been assumed full under pre-development conditions when assessing the Permissible Site Discharge (1% AEP SSP3 2100 peak flow at the outlets).
- The Total Impervious Area (TIA) was set to 0.10 for all sub-catchments to replicate pre-developed conditions. A typical TIA value of 0.2 for the Rural Living Zone and 0.6 for the internal road layout in line with industry standards. The TIA was split across the three urban surface types: Effective Impervious Area (EIA), Indirectly Connected Area (ICA) and Pervious Area (PA) in line with the ARR 2019 guidelines.
- The following two RORB reach types were adopted:
  - "natural" reach type for runoff being conveyed through non-formalised drainage paths (i.e. grassed slope without channel) and applied to all reaches in the pre-developed hydrological model.
  - "excavated & unlined" reach type for runoff being conveyed via open channel/swales (grassed or earthen) and roads.

- The following initial and continuing losses were used in the modelling, in accordance with ARR 2019;

Table 3-1 Initial and Continuing Loss assumptions

	Initial Loss (mm)	Continuing Loss (mm/hr)
EIA	1.73 mm	0 mm/hour
ICA	4.95 mm	3.35 mm/hour
PA	6.7 to 7.89 mm (varied per duration)	4.69 mm/hour

- Five regional equations applicable to the catchment have been tested with kc values ranging from 0.29 to 0.82 for the catchment (7.8 ha) draining to the South-West outfall; and kc values ranging from 0.71 to 1.82 for the catchment (46.5 ha) draining to the South-East outfall.
  - The regional equation ($kc = 2.2*A^{0.5}$) from the RORB V6 Manual Equation 2-5 has been selected as the 1% AEP SSP3 2100 peak flow estimated using this equation (applicable across all catchments) matches closely the peak flow estimate from the Rational Method estimate and the Nikoloau/Vont Steen equation for rural catchments ($Q1\% =\ 4.67*A^{0.763}$).
- The kc/Dav (RORB distance average) has been maintained constant between pre- and post-developed conditions model.

Table 3-2 and Table 3-3 presents the pre and post development 1% AEP SSP3 2100 design storm peak flow estimates with the critical duration and Temporal Pattern (TP) at the South-West and South-East outfalls where a proposed retarding basin is to be sized to retard the post-development 1% AEP SSP3 2100 peak flow (Permissible Site Discharge) back to the pre-development levels.

The Permissible Site Discharge increases from 0.8 to 2.1 m^3/s at the South-West outfall; and from 2.8 to 5.1 m^3/s at the South-East outfall.

Table 3-2 Pre- and Post-development kc values and associated 1% AEP SSP3 2100 peak flow at the South-West outfall

	Pre-development conditions	Post-development conditions
kc	0.68	0.68
Q1% SSP3 2100 AEP	**1.5 m^3/s**	**3.8 m^3/s**
1% AEP SSP3 2100 critical duration and TP	1 hr (TP23)	30 min (TP28)

Table 3-3 Pre- and Post-development kc values and associated 1% AEP SSP3 2100 peak flow at the South-East outfall

	Pre-development conditions	Post-development conditions
kc	1.50	1.50
Q1% SSP3 2100 AEP	**4.8 m^3/s**	**9.7 m^3/s**
1% AEP SSP3 2100 critical duration and TP	1.5 hr (TP30)	45 min (TP27)

3.1.2 South-West Retarding Basin

The hydrological RORB model was updated to include a conceptual retarding basin at the South-West outfall assuming a depth of storage of approximately one metre, outlet pipe(s) at the bottom of the storage and an emergency spillway at the top.

The South-West outfall draining to a low depression at 48.9 m AHD along the existing eastern open drain along Three Chain Road. The invert level of the Three Chain Road open drain is approximately 49.5 m AHD.

Using RORB iterative design, the flood storage volume required to retard the post-development peak flow to the pre-development level while retarding peaks flows and re-instating some of the pre-development critical duration is estimated at **3,850 m^3**.

Table 3-4 1% AEP SSP3 2100 peak flow at the South-West outfall

	Peak 1% AEP SSP3 2100 Flow Characteristics
Pre-developed conditions	1.5 m^3/s (1 hr, TP23)
Post-developed conditions (without flood storage)	3.8 m^3/s (30 min, TP28)
Post-developed conditions (with 3,850 m^3 flood storage)	1.7 m^3/s (1 hr, TP27)

It is proposed to accommodate the required flood storage as follow:

- An end-of-line retarding basin located within the south-west reserve;
- Residual flood storage to be provided via the swales and, subject to agreement from Council, with on-lot Rainwater tanks.

3.1.2.1 Post-Development Layout

The RORB model was developed based on a previous development layout which proposed a total of 67 lots, as the internal catchments areas were not meaningfully altered it is considered suitable for the RORB model not to be updated to reflect the current development layout with a reduced 62 lots.

3.1.3 South-East Retarding Basin

The hydrological RORB model was updated to include a conceptual retarding basin at the South-East outfall assuming a depth of storage of approximately one metre, outlet pipe(s) at the bottom of the storage and an emergency spillway at the top.

For this assessment, we sized the retarding basin to meet the 1% AEP SSP3 2100 design storm peak flow estimate from the South-East catchment under pre-developed conditions. It is assumed that that the capacity of the culvert immediately downstream of the proposed Legal Point of Discharge is sufficient, because the retarding basin would restrict post-development peak flows to pre-development. If the capacity of the Maffra-Briagolong culvert crossing is smaller than the pre-development 1% AEP SSP3 2100 peak flow estimate, the Permissible Site Discharge may be further reduced and the volume for retardation increased.

Using RORB iterative design, the flood storage volume required to retard the post-development peak flow to the pre-development level while retarding peaks flows and re-instating some of the pre-development critical duration is estimated at **16,500 m^3**.

Table 3-5 1% AEP SSP3 2100 peak flow at the South-East outfall

	Peak 1% SSP3 2100 AEP Flow Characteristics
Pre-developed conditions	4.8 m^3/s (1.5 hr, TP30)
Post-developed conditions (without flood storage)	9.7 m^3/s (45 min, TP27)
Post-developed conditions (with 16,500 m^3 flood storage)	4.9 m^3/s (1.5 hr, TP28)

It is proposed to accommodate the required flood storage as follows:

- An end-of-line retarding basin located within the south-east reserve;
- Residual flood storage to be provided via the swales and, subject to agreement from Council, with on-lot Rainwater tanks.

3.1.4 North-West Retardation

No hydrological RORB model was built for the North-West portion of the site draining towards the North-West corner set at 47.1 m AHD and sloping towards the Sandy creek tributary.

The Rational Method estimate was used to estimate the 1% AEP SSP3 2100 peak flow estimate from this 5.94 ha catchment under the pre-developed conditions with Boyds calculations used to estimate the required flood storage assuming a notional 25% reduction of Permissible Site Discharge[1]. The flood storage volume required to retard the post-development peak flow to the pre-development level is estimated at approximately **850 m^3**. The Northwest detention storage volume was calculated using a conservative Runoff Coefficient of 0.6, allowing for some flexibility in the development design and can be refined post permit.

Table 3-6 1% AEP SSP3 2100 peak flow at the North-West outfall

	Peak 1% AEP SSP3 2100 Flow Characteristics
Pre-developed conditions	2.15 m^3/s
Pre-developed conditions reduced by 25% (PSD for Boyds)	1.6 m^3/s
Post-developed conditions (without flood storage)	2.6 m^3/s
Post-developed conditions (with 850 m^3 flood storage)	1.6 m^3/s

It is proposed to provide this storage within the road swales on both sides of the roads and on-lot rainwater tanks acting as flood storage, in lieu of a separate drainage reserve on the North-West corner of the site. To ensure that rainwater tank airspace is available for storage, an additional airspace volume should be set aside in the rainwater tank (separate to the storage volume for rainwater reuse).

One potential arrangement for this storage breakup (to maximise detention in the tanks) is for 'up to 10 m^3 of rainwater tank detention volume per lot', on the assumption that each lot contains a 300 m^2 roof footprint that is fully connected to the rainwater tank, and that each tank has a control outlet restricting outflow to 0.005 m^3/s or lower.

It is suitable for this detention arrangement to be finalised at detail design.

It is Council's preference that lots are not serviced with potable water, so all lots will require rainwater tanks.

[1] As storage would be provided in assets whose plan shapes are constant with increasing depth (refer to IDM)

3.1.5 Retarding Basin Concept

Figure 3-2 documents conceptual analysis of the South-West and South-East detention basins. The following parameters were adopted in the modelling:

- South-East Basin:
  - Basin Invert level = 51.8 m based on LiDAR data of the existing swale drainage in the adjacent road reserve.
  - Design slope = 1 in 6
  - Embankment top berm = 0.7m width
  - Storage depth = 1.1 m (+0.3 m freeboard = 1.4 m depth to embankment top)
  - The adjacent proposed lots and road reserve finished level strategy would have to be raised above the existing topographic levels to meet the proposed basin top storage level (and freeboard).
  - Approximate embankment height of 1.2 m

It is important to note that though the formation of the development finished level strategy, along with the asset functional design process, additional storage may be available than allowed in the above conceptual retarding basin.

- South-West Basin:
  - Basin Invert level = 48.9 m based on LiDAR data of the existing swale drainage in the adjacent road reserve.
  - Design slope = 1 in 6
  - Embankment top berm = 0.7 m width
  - Storage depth = 1.0m (+0.3m freeboard = 1.3m depth to embankment top)
  - No allowance for potential maintenance access track arrangements
  - Minor earthworks extents outside of the proposed reserve area would be required to be adopted in the finished level strategy.
  - Approximate embankment height of 0.9 m

3.1.5.1 Retarding Basin design further development

It is suitable for the basin(s) and stormwater asset maintenance requirements to be finalised at detail design. Additionally, it is suitable for the basin design and asset footprint to be finalised at detailed design to ensure non-encroachment into lots or road reserves.

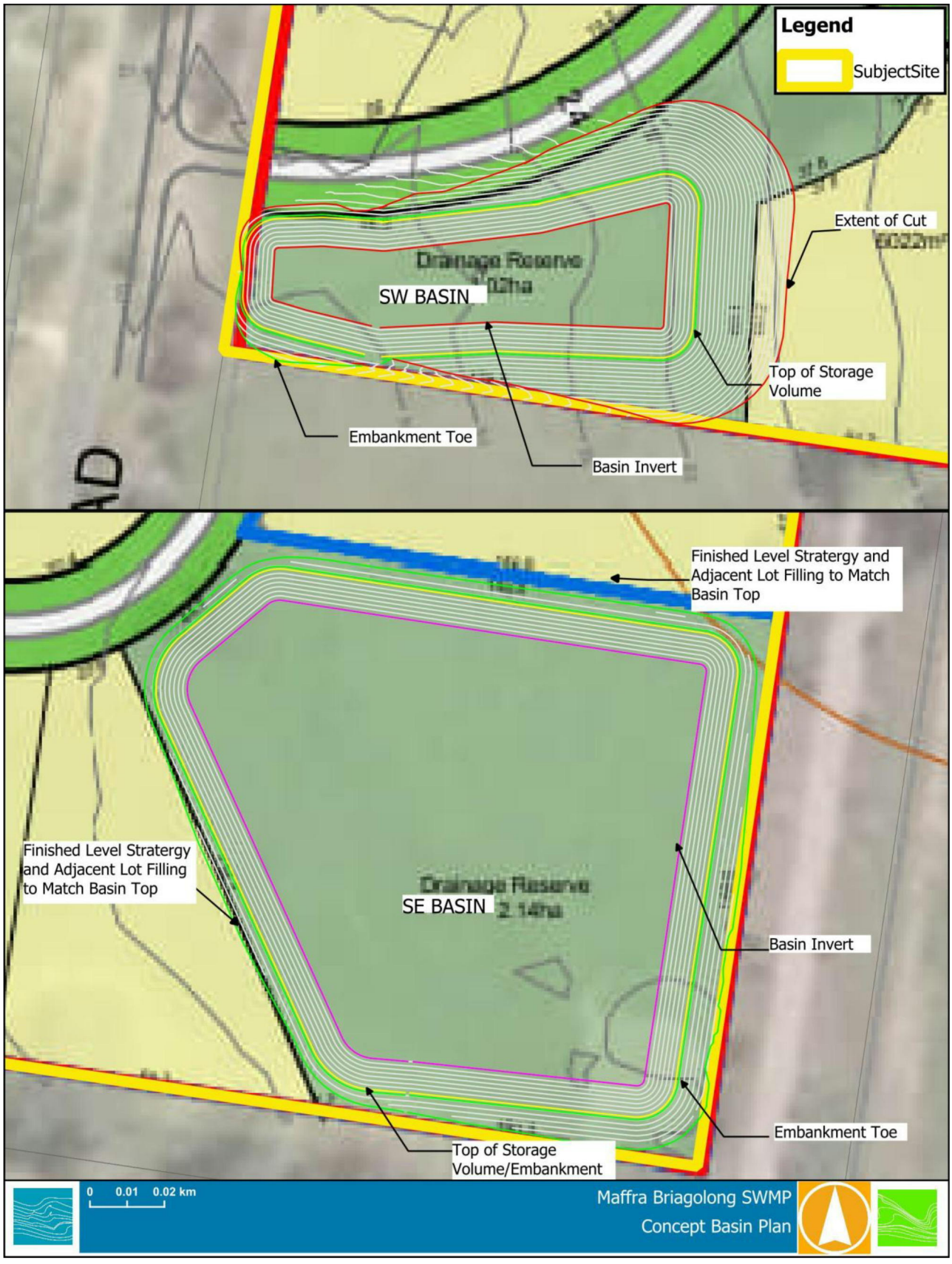

Figure 3-2 Basin Concepts

3.2 Road Design

The internal 24m road reserve is proposed to be constructed as a standard low density residential road cross section with swales on both sides of the road. The road reserve is proposed to convey the critical 1% AEP SSP3 2100 flow to downstream retarding basins. The proposed swale dimension were assessed as bed width of 0m, top width of 4 m, batter slope of 1 in 5, and a channel depth of 0.4 m. This swale arrangement can be reviewed at detail design to increase the capacity. Refer to Figure 3-3 for indicative road typical section.

According to the previous hydrological assessment, the entire subject site has the 1% AEP SSP3 2100 critical flow of 9.7= m^3/s occurring at right upstream of the south-west outfall. The critical cross section was determined as the north-south aligned road which conveys the north-eastern development catchment area to the proposed south-east basin asset. The portion of the post development flows attributed to this critical section is approximately 4.8 m3/s. The longitudinal road grading was adopted as 1% in line with the existing topography,

Based on Manning's calculation, the capacity of a proposed swale is 0.9 m^3/s, therefore swales on both sides of the road could provide conveying capacity of 1.8 m^3/s. The remaining 3 m^3/s is proposed to be accommodated within the 24-m wide road cross-section by utilising the carriageway and additional head storage above the swales. A Mannings calculation using PC-Convey showed the road section is capable of conveying the flow, refer to Figure 3-4. The freeboard to the edge of the road reserve is 110 mm, with the additional 40 mm freeboard required to achieve the minimum 150 mm will be provided with minor lot filling. This is only expected to be for a handful of lots in the south east of the site, with the majority of lots not requiring any additional fill.

Both the road network and the southern drainage reserves will need to be designed to allow flows from the external catchments (southern and northern) to be captured and conveyed.

It is noteworthy that this SWMP only provides a high-level road reserve design, more detailed calculation should be done during the detailed design stage.

It is suitable for an overland flow path assessment for the development and adjacent areas to be undertaken at detail design. This assessment is to consider pre- vs post-development flows and address areas where flows are concentrated.

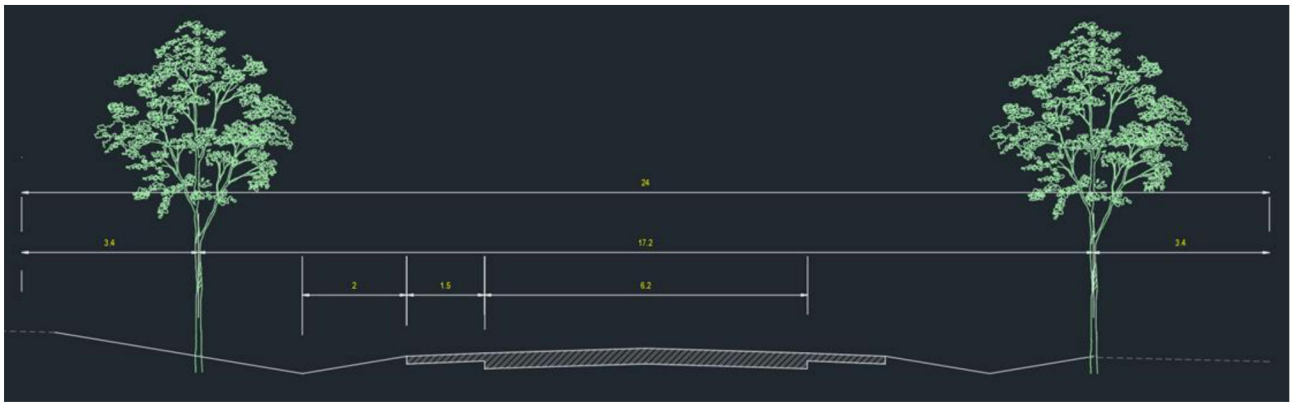

Figure 3-3 Indicative Typical Road Cross-section

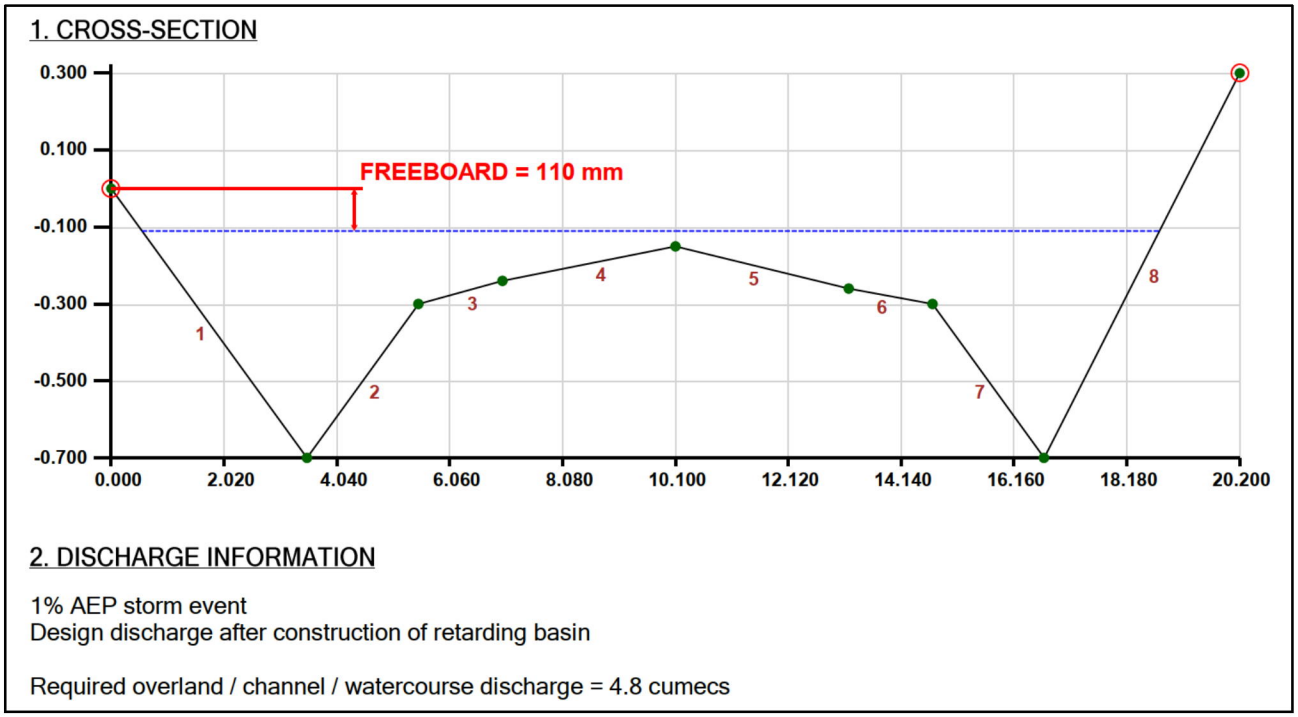

Figure 3-4 PC Convey

3.3 Water Quality Modelling

MUSIC Version 6.3.0 was used to model the stormwater runoff quality regards Total Suspended Solids (TSS), Total Nitrogen (TN) and Total Phosphorous (TP).

A MUSIC model with a 6-minute time interval was run using Melbourne Water's Melbourne Airport rainfall template in the MUSIC modelling for the period 1971-1980 (mean annual rainfall 500-650 mm). Monthly evapotranspiration data recorded in this template was also used. We understand that the meteorological data is comparable to the long-term meteorological records for Maffra (mean annual rainfall 597.7 mm, BOM station ID 225201).

The model setup for the proposed site is shown in Figure 3-5[2].

[2] The MUSIC model was undertaken based on a previous development layout which proposed a total of 67 lots; as the internal catchments areas were not meaningfully altered it is considered suitable for the MUSIC model not be updated to reflect the current development layout with a reduced 64 lots.

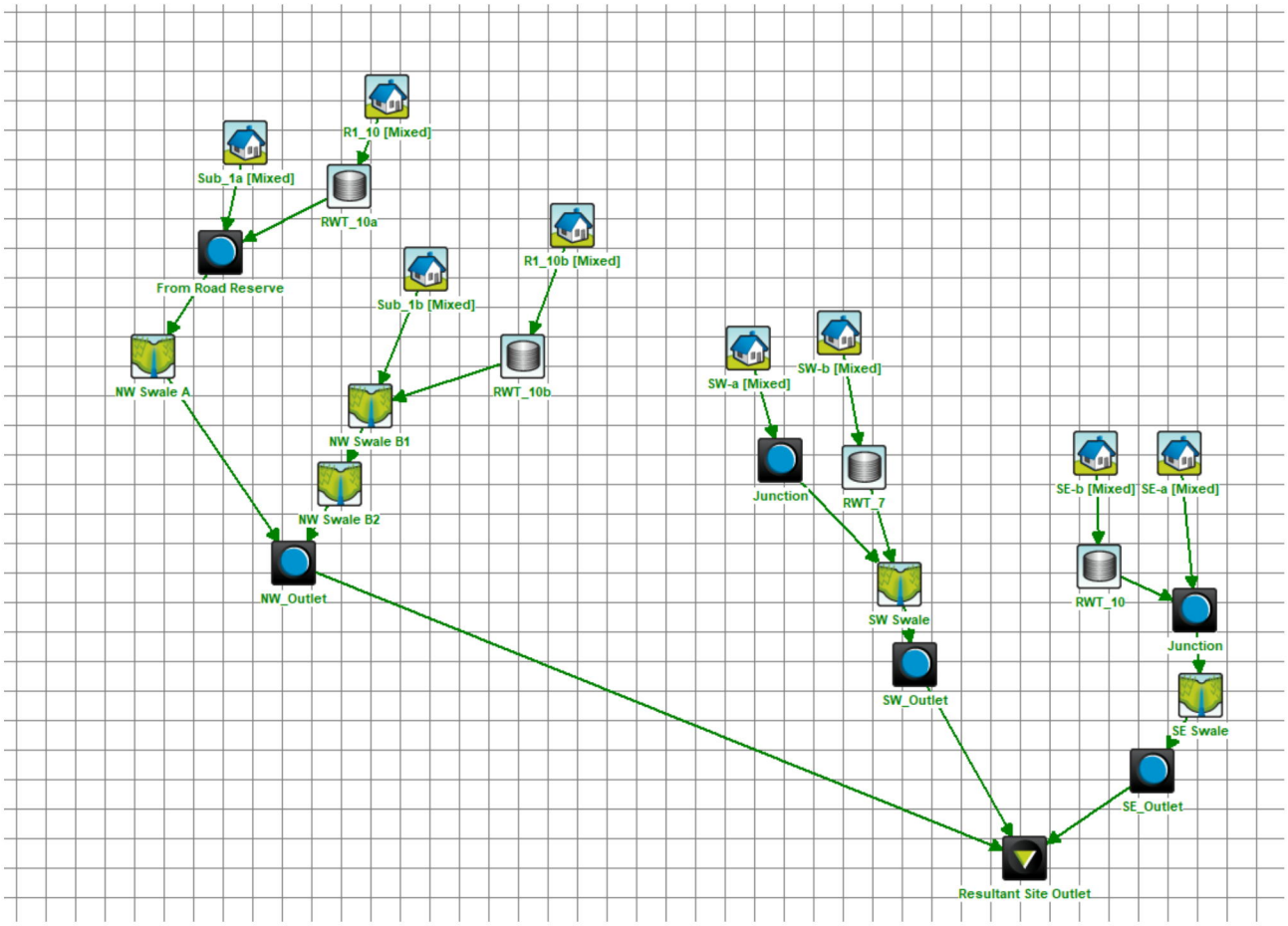

Figure 3-5 MUSIC model set-up

There are a few assumptions made in regard to setting up the above MUSIC model:

- Each parcel lot contains a 300 m^2 roof footprint that is 100% connected to a minimum 5KL of permanent storage per rainwater tank.
- The daily non-potable reuse demand was calculated to be 180 L for each dwelling based on following published assumptions:
  - An occupancy of 3.4 people for each detached dwelling (>3 bedrooms);
  - Toilet flushing (25L per person per day);
  - Cold water laundry (23L per person per day);
  - External use (5L per person per day)
- Proposed swales are to be delivered as end of line attachment treatment; parameters adopted:
  - SW and SE swales were adopted as vegetated assets.
  - NW swales were adopted as mown grass
  - The swale is modelled with an infiltration rate of 3.6 mm/hr (medium clay). Detailed percolation tests need to be conducted during the detailed design stage to determine the actual soil infiltration capacity.

Table 3-7 summarises the Swale Parameters. It is suitable for the ultimate swale profile to be refined at the detail design stage. Alternative design arrangements are to be validated with updated MUSIC modelling.

Table 3-7 Water Quality Treatment Parameters

Parameters	NW-a	NW-b[3]	SW	SE
Length (m)	108	40 + 70	175[2]	425[1]
Bed Slope (%)	5	4 and 0.5	0.5	0.5
Base Width (m)	1	1	1	1
Depth (m)	0.5	0.5	0.5	0.5
Vegetation Height (m)	0.1	0.1	0.45	0.45

[1] 355m length of swale is required if an alternative base width of 2m is adopted. 318m length of swale is required if an alternative base width of 2.5m is adopted.

[2] 135m length of swale is required if an alternative base width of 2m is adopted.

[3] NW-b swale modelled in two separate nodes to represent the topography. Additionally, the swale length was conservatively modelled at a total length of 110m. The total length of cut-off swale is approximately 290m.

The modelled stormwater quality management performance at the resultant site outlet (combining all three outlets) based on proposed design is shown in Table 3-8 below. BPEM removal targets were achieved at each of the three outlets.

Table 3-8 Water Quality Treatment Performance

Parameters	Source Load	Residual Loads	Reduction
Flow (ML/yr)	74.4	55.7	25.1%
Total Suspended Solids (kg/yr)	10,900	1,160	86.4%
Total Phosphorus (kg/yr)	25.2	7.96	68.5%
Total Nitrogen (kg/yr)	198	108	45.5%

Figure 3-4 depicts the conceptual arrangement of the proposed WSUD swales. It is suitable for these asset arrangements to be finalised at detail design stage.

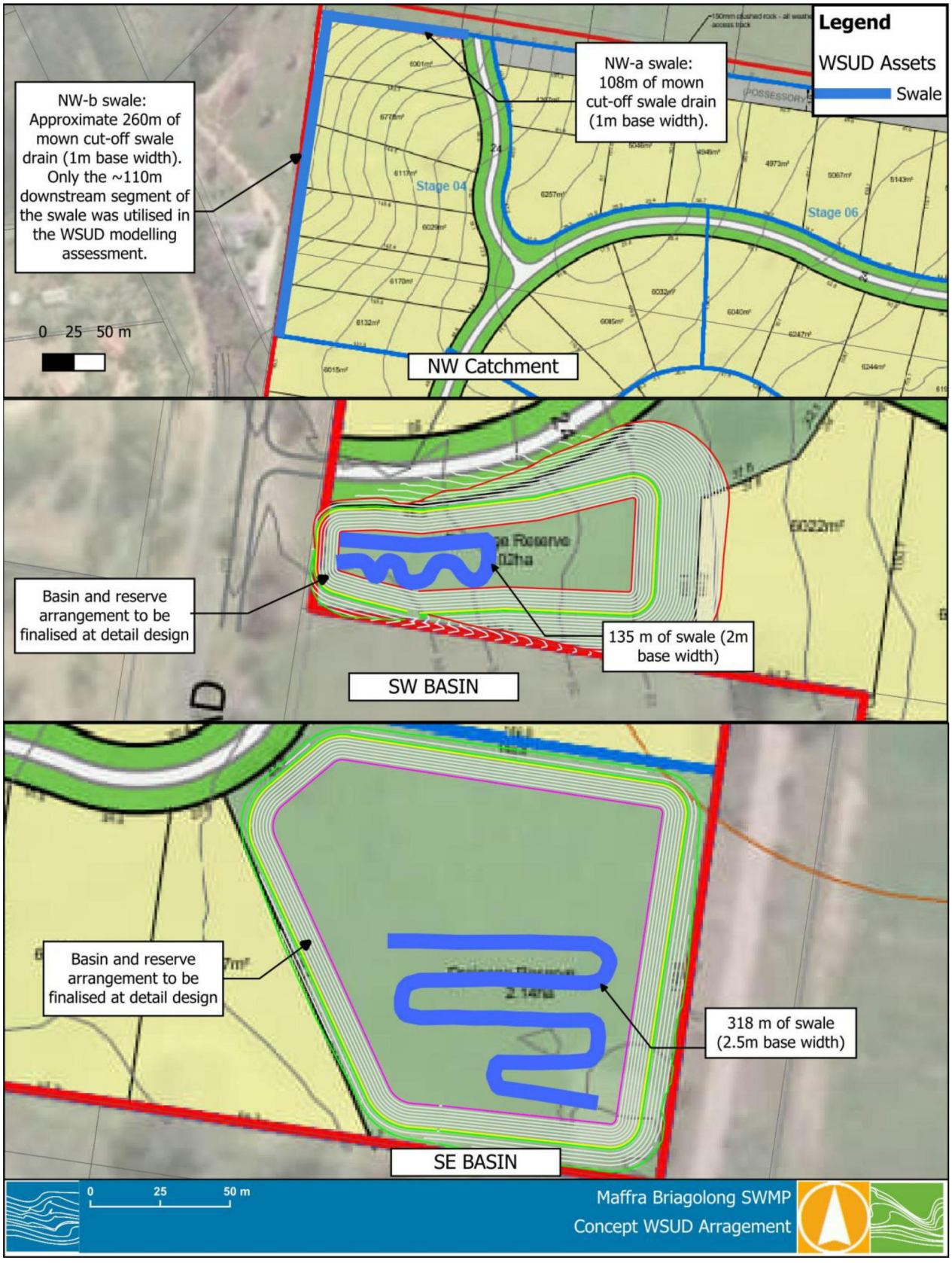

Figure 3-6 Concept Swale Layout

3.4 Staging

With reference to staging documented in Figure 2-4, the development is proposed to occur in six stages. Table 3-9 and Figure 3-7 summarises the relative drainage asset delivery timing. Subject to further detail, an easement may be required across the north-west drainage outfall external to the subject development.

Table 3-9 Staging summary

Stage	Required Drainage Assets
Stage 1 (Figure 3-7, pink assets)	The first stage will include the road connection to Three Chain Road, and the construction of the south-west stormwater detention basin.
Stage 2 (Figure 3-7, orange assets)	Stage 2 will include the extension of internal roads, and delivery of the south-east stormwater detention basin. It is understood that the creation of the reserve and handover of the basin will also be completed in Stage 2.
Stage 3	Stage 3 will include the further extension of internal roads. As part of Phase 3, the developer shall commence making a contribution to the intersection on a stage by stage basis to enable Council to commence delivery of the ultimate intersection, from Stage 3.
Stage 4 (Figure 3-7, green assets)	Stage 4 will include the extension of internal roads, and delivery of swale drains within lots as part of end of line treatment for the north-west catchment.
Stage 5	Utilise the south-east stormwater basin and end of line WSUD vegetated swale constructed as part of Stage 2.
Stage 6	Stage 6 will include the completion of internal roads, and delivery the connection to Maffra-Briagolong Road (unless Council facilitate construction sooner). The intersection works will include road widening to allow for a BAL and BAR treatment.

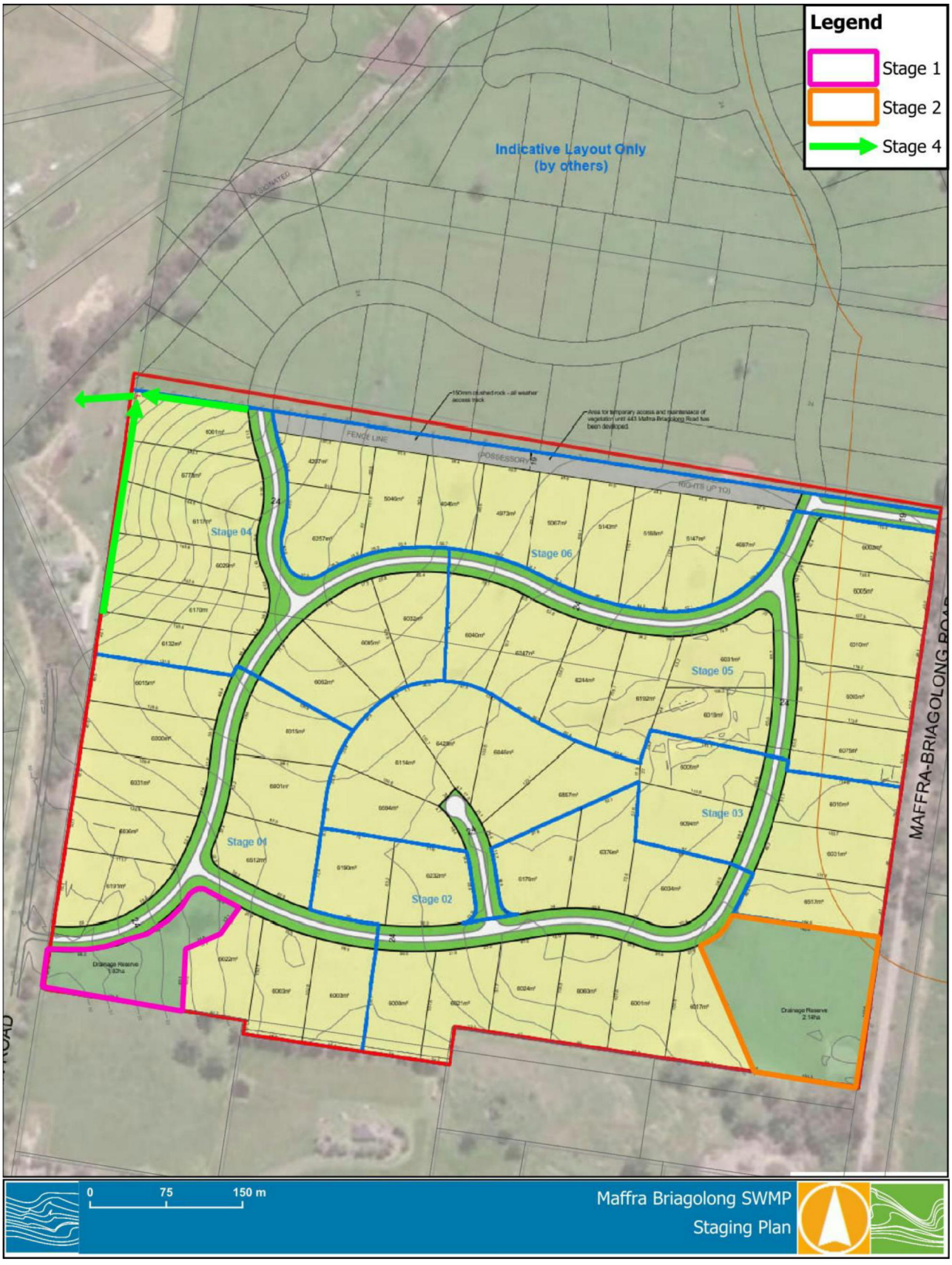

Figure 3-7 Drainage Asset Staging

4 SUMMARY

This report sets out a recommended Stormwater Water Management Plan (SWMP) for a proposed residential development on Maffra-Briagolong Road approximately 2.5 km north of Maffra town centre. The proposed development involves the sub-division of two parcels zoned within a Rural Living Zone within Wellington Shire Council municipality.

Our understanding is that the Site is currently zoned to facilitate subdivision into 23 rural living zoned lots with a nominated schedule of 2.0 hectares and is proposed to be developed through a coordinated three-phase planning process (staged):

- Phase 1: Preparation and approval of a Development Plan to establish the overall subdivision and servicing framework to address the requirements of the Development Plan Overlay Schedule 1.
- Phase 2: A planning permit application for the creation of 22 lots generally 6,000 m² in size, together with a balance lot, addressing the current requirements of the Rural Living Zone (Schedule 2).
- Phase 3: A Planning Scheme Amendment to the Wellington Planning Scheme to change the Zone Schedule and planning permit application to facilitate the subdivision of the balance land into 40 additional lots, also generally 6,000 m² in size. The stage proposes to delete the Development Plan Overlay applying to the land.

This stormwater management strategy addresses all three phases (stages) of the development.

The stormwater management strategy includes the sizing for flood storage of the 1% AEP SSP3 2100 climate change conditions at the outlets of the sites and onsite stormwater treatment train consisting of;

- A 3,850 m³ end-of-line retarding basin at the South-West corner of the site draining towards the existing open drain on the east side of Three Chains Road;
- 16,500 m³ flood storage upstream of the south-eastern LPD and upstream of the culvert crossing at Maffra-Briagolong Road provided as a combination of an end-of-line retarding basin and upstream swales.
- A 850 m³ flood storage requirement at the North-West catchment (~6 ha) to allow for flood retardation possibly distributed throughout the catchment via swale drain storage and onsite large rainwater tanks. Alternatively, the directly and indirectly connected surfaces may be able to be piped towards the proposed South-West drainage reserve and retarding basin pending more detailed level feasibility assessment.
    - This Northwest detention volume was conservatively calculated, allowing for some flexibility in the development design and can be refined post permit.
- Swales utilised for WSUD stormwater treatment can achieve BPEM pollutant removal requirements.
- The internal roads are proposed to have a typical 24 m wide cross section. Under this design, the entire road reserve is able to convey the critical 1% AEP SSP3 2100 flow.
- The proposed stormwater quality management measures showed satisfaction against the Best Management Practice objectives.
- It is suitable for the asset maintenance requirements, asset footprint refinement, and an overland flow path assessment to be undertaken at detail design.

WATER TECHNOLOGY
WATER, COASTAL & ENVIRONMENTAL CONSULTANTS

APPENDIX A
PHASED APPROACH DRAFT PLANS

LEGEND

- Title boundary
- Site Boundary
- Drainage Easement
- Existing contours (1m interval)
- Residential Lots
- Naturestrip (indicative)
- Road pavement (indicative)
- Drainage reserve
- Bushfire Management Overlay
- Balance Land (subject to planning scheme amendment)

BMO

BMO

MAFFRA - BRIAGOLONG ROAD

THREE CHAIN ROAD

Balance Land
Subject to Planning Scheme
Amendment
28.76ha

6015m²
6000m²
6031m²
6036m²
6191m²
6015m²
6001m²
6512m²
6190m²
6232m²
6176m²
6376m²
6034m²
6022m²
6003m²
6003m²
6000m²
6021m²
6024m²
6060m²
6001m²
6017m²

Drainage Reserve
1.02ha

Drainage Reserve
2.14ha

MAFFRA-BRIAGOLONG ROAD

THREE CHAIN ROAD

Land Budget Table	
Site (Approx.)	46.735 ha
* Residential Lots	13.396 ha
* Balance Land (Subject to Planning Scheme Amendment)	28.758 ha
* Local Roads	1.426 ha
Drainage Reserve	3.155 ha
Net Developable Area	43.580 ha
Lot Yield (Overall)	22 lots @ 1.5 lots per ha 6089m² average lot size
Total Number of Lots	22

40 0 40 80 120 160 200 240m

Notes:

- This plan was prepared as a PROPOSAL only and should not be used for any other purpose.
- This plan is subject to Council approval.
- All dimensions and areas are subject to survey and final computations.
- The layout and area required will be subject to engineering detail design and Council approval.
- Existing drainage directions shown are approximate only and subject to a detailed storm water management investigation.
- Existing dams located within construction areas will be filled during construction.
- Further investigation may be required for fire buffers, vegetation retention and removal, site access and egress, and aboriginal and cultural heritage.
- Road pavement is indicative only and subject to detailed engineering design.
- NO ALLOWANCE has been made for Public Open Space within this development.
- Arc dimensions shown are length of arc (not chord)
- 25m building exclusions to be applied to trees to be retained.

Beveridge Williams

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Master Plan - Phase 1 (Development Plan)

Maffra-Briagolong Road, Maffra

Version	Date	Description	Drafted	Approved
15	25.11.2025	Amended stage boundary		
16	27.11.2025	Amended stage boundary		
17	04.03.2026	Amended to Internal/Council comments		
18	11.03.2026	Amended to Client/Internal/Council comments		
19	26.04.2026	Amended drainage reserve		

Date: 26.04.2026
Version No: 19
Job No: 2102640
Scale (A1): 1:2000
(A3): 1:4000

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LEGEND

- Title boundary
- Site Boundary
- Drainage Easement
- Existing contours (1m interval)
- Residential Lots
- Naturestrip (indicative)
- Road pavement (indicative)
- Drainage reserve
- Bushfire Management Overlay
- Balance Land (subject to planning scheme amendment)

Balance Land
Subject to Planning Scheme
Amendment
28.76ha

Stage 01

Stage 02

Drainage Reserve
1.02ha

Drainage Reserve
2.14ha

MAFFRA-BRIAGOLONG ROAD

THREE CHAIN ROAD

Land Budget Table	
Site (Approx.)	46.735 ha
* Residential Lots	13.396 ha
* Balance Land (Subject to Planning Scheme Amendment)	28.758 ha
* Local Roads	1.426 ha
Drainage Reserve	3.155 ha
Net Developable Area	43.580 ha
Lot Yield (Overall)	22 lots @ 1.5 lots per ha 6089m² average lot size
Total Number of Lots	22

40 0 40 80 120 160 200 240m

Notes:

- This plan was prepared as a PROPOSAL only and should not be used for any other purpose.
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- Existing drainage directions shown are approximate only and subject to a detailed storm water management investigation.
- Existing dams located within construction areas will be filled during construction.
- Further investigation may be required for fire buffers, vegetation retention and removal, site access and egress, and aboriginal and cultural heritage.
- Road pavement is indicative only and subject to detailed engineering design.
- NO ALLOWANCE has been made for Public Open Space within this development.
- Arc dimensions shown are length of arc (not chord)
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Master Plan - Phase 2 (Planning Permit Application for Stage 1 & 2)

Maffra-Briagolong Road, Maffra

Version	Date	Description	Drafted	Approved
15	25.11.2025	Amended stage boundary		
16	27.11.2025	Amended stage boundary		
17	04.03.2026	Amended to Internal/Council comments		
18	11.03.2026	Amended to Client/Internal/Council comments		
19	26.04.2026	Amended drainage reserve		

Date: 26.04.2026
Version No: 19
Job No: 2102640
Scale (A1): 1:2000
(A3): 1:4000

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LEGEND

- Title boundary
- Site Boundary
- Drainage Easement
- Existing contours (1m interval)
- Residential Lots
- Naturestrip (indicative)
- Road pavement (indicative)
- Drainage reserve
- Bushfire Management Overlay
- Common Property

Indicative Layout Only
(by others)

150mm crushed rock - all weather access track

Area for temporary access and maintenance of vegetation until 443 Maffra-Briagolong Road has been developed.

FENCE LINE

(POSSESSORY RIGHTS UP TO)

Stage 01

Stage 02

Stage 03

Stage 04

Stage 05

Stage 06

Drainage Reserve 1.02ha

Drainage Reserve 2.14ha

MAFFRA-BRIAGOLONG ROAD

THREE CHAIN ROAD

WATER COURSE

DESIGNATED

Site	46.735 ha
* Residential Lots	36.959 ha
* Common Property	0.995 ha
* Non-Arterial Roads	5.626 ha
Drainage Reserve	3.155 ha
Net Developable Area	43.580 ha
Lot Yield (Overall excludes common property)	62 lots @ 1.4 lots per ha 5961m² average lot size
Lot Yield (Overall includes common property)	62 lots @ 1.4 lots per ha 6122m² average lot size
Total Number of Lots	62

* Indicates inclusion in NDA

50 0 50 100 150 200 250 300m

Notes:

- This plan was prepared as a PROPOSAL only and should not be used for any other purpose.
- This plan is subject to Council approval.
- All dimensions and areas are subject to survey and final computations.
- The layout and area required will be subject to engineering detail design and Council approval.
- Existing drainage directions shown are approximate only and subject to a detailed storm water management investigation.
- Existing dams located within construction areas will be filled during construction.
- Further investigation may be required for fire buffers, vegetation retention and removal, site access and egress, and aboriginal and cultural heritage.
- Road pavement is indicative only and subject to detailed engineering design.
- NO ALLOWANCE has been made for Public Open Space within this development.
- Arc dimensions shown are length of arc (not chord)
- 25m building exclusions to be applied to trees to be retained.

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Master Plan - Phase 3 (Indicative only / Not to be approved)

Maffra-Briagolong Road, Maffra

Version	Date	Description	Drafted	Approved
15	25.11.2025	Amended stage boundary		
16	27.11.2025	Amended stage boundary		
17	04.03.2026	Amended to Internal/Council comments		
18	11.03.2026	Amended to Client/Internal/Council comments		
19	26.04.2026	Amended drainage reserve		

Date: 26.04.2026
Version No: 19
Job No: 2102640
Scale (A1):
(A3):

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