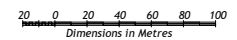


LEGEND			
	Site boundary		Major vehicle circulation
	Title boundary		Minor vehicle circulation
	Township boundary		Existing access point
	Contours		High point of site
	Existing vegetation		Direction of drainage
			Low point of site
			Ridge line
			Catchment area 1
			Catchment area 2
			Catchment area 3



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**Site Analysis Plan**  
 Shingler Street, Leongatha  
 "Shamrock Springs"



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17.12.2018  
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## Memo – Interim Stormwater Management Strategy

**Date:** 29 November 2019  
**Project Number:** 1801419  
**Project Name:** Shamrock Springs, Leongatha  
**Author:** Joan Deng, Aram Manjikian

### Memo

The purpose of this memo is to demonstrate the Interim Stormwater Strategy for the Stage 1 of the 77 Gibson Street, Leongatha development and shall be to the satisfaction of West Gippsland Catchment Management Authority and South Gippsland Shire Council, and other relevant authorities. This memo also provides an indication of the sequencing of drainage reserve delivery in line with the proposed staging of the overall development.

This interim stormwater Management Strategy is based on the Stormwater Management Strategy for the overall development issued February 2019.

The original interim strategy for the Stage 1 of the development to treat stormwater intended to only require assets built within the indicative extent is presented in **Figure 1** to deliver Sediment Basin B and Wetland B. .and **Figure 2**.

Discussions with Council since have indicated a modified interim arrangement is preferred, with assets for the subject site have been sized to cater for the interim developed flow only. Details of the basins are provided in the following sections.

#### 1. Interim Water Quality - Sedimentation Basin



Figure 1: Interim Drainage Assets as per Preliminary Stormwater Management Strategy

**Not to scale**

The arrangement of sediment basin B and wetland B within a temporary RB at the head of the proposed swale would have allowed the Stage 1 site to proceed and meet treatment and detention requirements. Therefore, the Stage 1 site could be considered as a stand-alone development treated to BPMSG targets. The treatment results are outlined in **Table 1** and the concept plan is presented in **Figure 1**Figure 2.

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**Table 1: Catchment B MUSIC Treatment Results**

	Sources	Residual Load	% Reduction
Flow (ML/yr)	166	131	21.3
Total Suspended Solids (kg/yr)	34,200	1,960	94.3
Total Phosphorous (kg/yr)	68.7	13.2	80.7
Total Nitrogen (kg/yr)	470	214	54.5
Gross Pollutants (kg/yr)	6,290	0.0	100.0

The Sediment Basin B and Wetland B in their ultimate form were sized as part of the overall development to achieve BPEMG targets as a whole, and as can be seen in **Table 1**, they are oversized to compensate for other areas that can't be treated to best practice independently.

However, the Council has expressed that the wetland could be delivered at a later stage, so the focus for Stage 1 interim works is the retardation and the sedimentation treatment. The sediment basin would likely be perched above the wetland level when it is to be constructed due to the topography of the site. This conveniently allows the two assets to be constructed independently at different times without impacting established assets.

The extent of the drainage reserve required to cater for the post-development flows for Stage 1 is presented in **Figure 2**.

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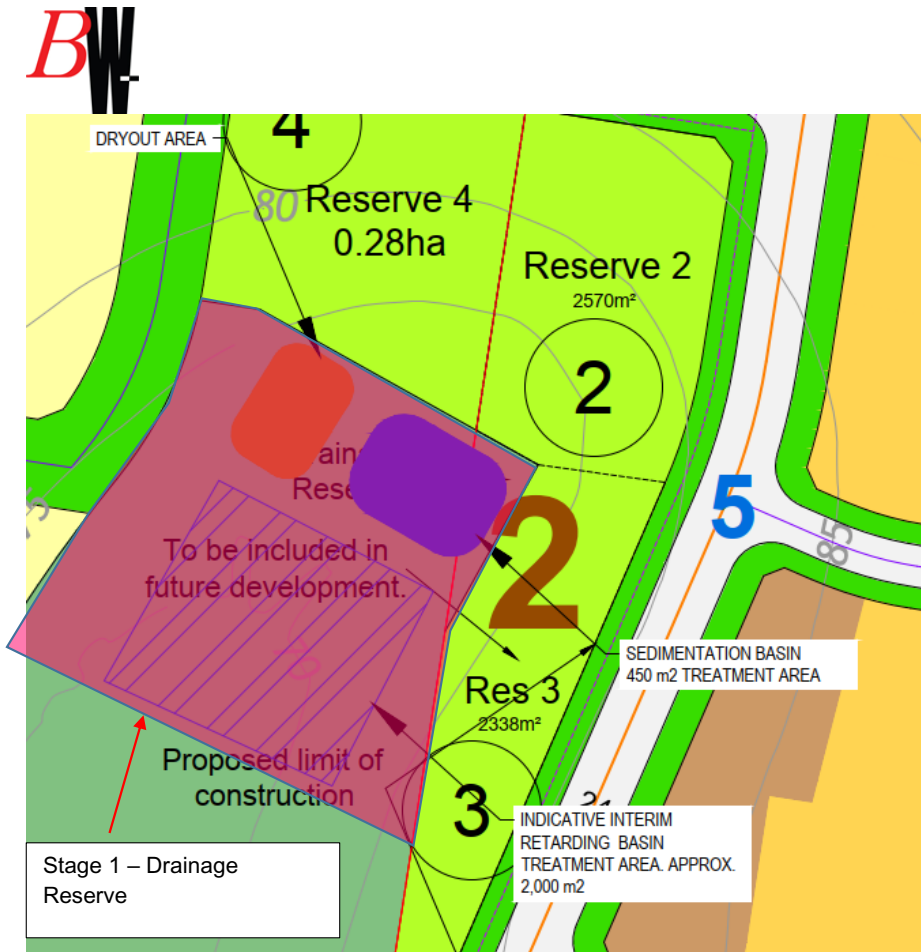


Figure 2: Concept Layout Stage 1 Interim – Drainage reserve extent

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The details of the sedimentation basin required to treat Stage 1 is presented in Table 2.

**Table 2: Details of the Interim Sediment Basin**

<b>SB1</b>	
Depth	1.0 m
Water surface area at NTWL	450 m <sup>2</sup>

### 2. Interim Retarding Basin

Retention volume requirements have been calculated for the 1 in 100 year ARI post development flows back to 1 in 100 year ARI pre development flows. For the Stage 1 development this is catered by an interim RB at the northern end just outside the boundary of the Stage 1 development. Only a proportion of the drainage reserve will need to be created for the Stage 1 development. An **indicative** location is presented in Figure 2.

The RB will have a spillway and rock beaching installed at the outlet of the RB's to dissipate energy and spread the overflow greater than the Q<sub>100</sub> flow. The interim RB will be removed at Stage 2 of the development once the ultimate RB at the end of the waterway at the western boundary is installed, and will make way for the ultimate Wetland B.

The details of the retarding basin required to treat Stage 1 is presented in **Table 3**.

**Table 3: Details of the Interim Retarding Basins for Stage 1**

<b>RB1</b>	
Storage required (at spillway)	1,370 m <sup>3</sup>

### 3. Staging of Ultimate Drainage Reserve Assets

Figure 3 indicates the drainage assets that will be installed for Stage 2 of the development, which are the ultimate assets without requiring any interim works.

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Figure 3 Stage 2 Drainage Reserves

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The last drainage reserve to be installed will be in the south east corner of the overall site as part of Stage 3, and will be completed to its ultimate design without requiring any interim works.

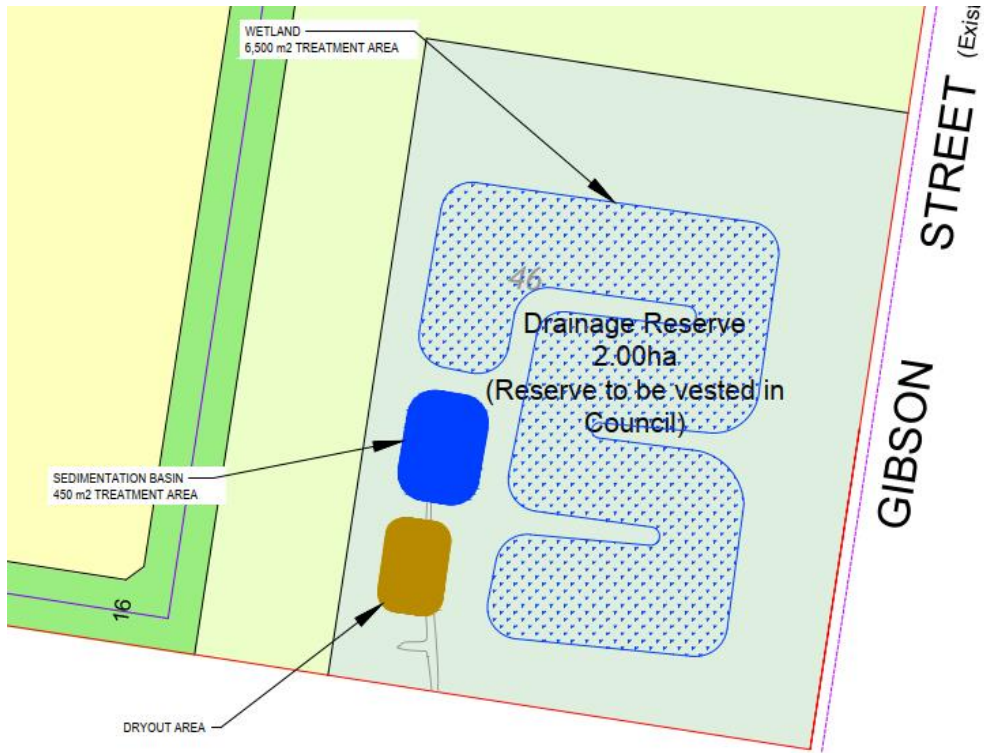


Figure 4 Stage 3 Drainage Reserve

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