

# Report

## 3 Draper Road Heyfield – Stormwater Management Plan

10 August 2023

PLANNING AND ENVIRONMENT ACT 1987  
WELLINGTON PLANNING SCHEME

This is the plan referred to in Clause 43.04 - Schedule 11 of Development Plan Overlay and has been approved by Wellington Shire Council

DATE: 25 September 2023

SIGNED: Caragh Button  
STRATEGIC PLANNER

PAGE: 1 of 23





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## 1 INTRODUCTION

██████████ is currently proposing to subdivide the property at 3 Draper Road, Heyfield as well as all lots under the Development Plan Overlay (DP011) including 21, 29, 31 and 39 Draper Road, Heyfield in Gippsland referred to 'the subject site' in this Stormwater Management Plan. A copy of the proposed development layout including all lots under the Development Plan Overlay, DP011 is provided in 6Appendix A with lots 2; 3; 4 and 5 (zoned LDRZ) already partially developed.

The subject site is located within the Wellington Shire Council jurisdiction and adjacent to One Mile Creek. In response to the Planning Permit application, Council has referred the proposal to West Gippsland Catchment Management Authority (WGCMA) for flood and stormwater management advice.

In a letter of advice from WGCMA dated 4 November 2022, the WGCMA advises the following in relation to the proposed developed of the subject site at 3 Draper Road (Lot#1 only) in Heyfield;

- The property is not likely to be subject to riverine inundation during a 1% Annual Exceedance Probability (AEP).
  - The Authority **does not require any conditions relating to flood risk mitigation.**
- Only a small percentage of the property (approximately 1%) is within 30 metres of a waterway.
  - The Authority **does not require a Waterway Management Plan** on this occasion.
- The proponent will need to demonstrate that the subdivision will comply with the 'Urban Stormwater Best Practice Environmental Management Guidelines' (CSIRO, 1999) to reduce pollutant loads (suspended solids, nitrogen and phosphorus) and flow quantity.
  - The Authority **does require a Stormwater Management Plan** demonstrating the subdivision will comply with the above pollutants loads reduction and flow quantity guidelines and objectives.
- The WGCMA has **no objection for the small dam** in the north-west corner of the property **being filled.**

We note that the WGCMA did not provide any conditions in relation to 21 (lot 2), 29 (lot 3), 31 (lot 5) and 39 (lot 4) Draper Road, Heyfield which is excluded from the CMA advice letter. However, it is expected that the 30 metres waterway buffer, waterways management plan and stormwater management plan requirements are likely to apply to all lots under the Development Plan Overlay (DP011) outside of 3 Draper Road. It is likely subdivided lot 53 (2.1 ha, at 39 (lot 4) Draper Road) in the south-west corner of the site have further requirement in relation to flood risk since the developable land would need a driveway to access the proposed subject site road. Flood risk analysis is excluded from this stormwater management plan focused on 3 Draper Road (lot 1) with stormwater recommendation for all other lots at 21, 29, 31 and 39 Draper Road, Heyfield.

Water Technology has completed a Stormwater Management Plan (SWMP) which addressed the following aspects;

- An assessment of the peak/critical 1% AEP (Annual Exceedance Probability) pre and post-development flows and sizing of a retarding basin to retard the 1% AEP peak flows back to the pre-development flows at the outlet of the development (One Mile Creek).
- An assessment of the stormwater runoff water quality which addresses treatment objectives of the *Urban Stormwater Best Practice Management Guidelines* (BPEMG) and Clause 56.07-4 of the Planning Scheme.
- A conceptual layout of the stormwater management strategy, showing invert levels, approximate location and footprint of the proposed SWM assets (e.g. flood retarding basin).

## 2 BACKGROUND

The proposed development at 3 Draper Road in Heyfield and all lots under the Development Plan Overlay (including 5, 21, 29 and 39 Draper Road) is bounded by One Mile Creek to the west, Heyfield – Seaton Road (sealed Council road) to the south and Draper Road (unsealed Council road) to the east; and is zoned Low Density Residential Zone (LDRZ) in the Planning Scheme.

The subject site (mainly undeveloped) is currently occupied by some dwellings along the eastern boundary and one small farm dam in the north-west corner. [REDACTED] is proposing to develop the site and construct a 12 lots (approx. 0.4 ha each) residential lot subdivision at 3 Draper Road; 4 additional lots (0.4 to 2.0 ha) with an access road from Heyfield – Seaton Road as shown in Figure 2-1. The subject site total area equals to 13.6 ha; with 9.4 ha proposed to be developed.

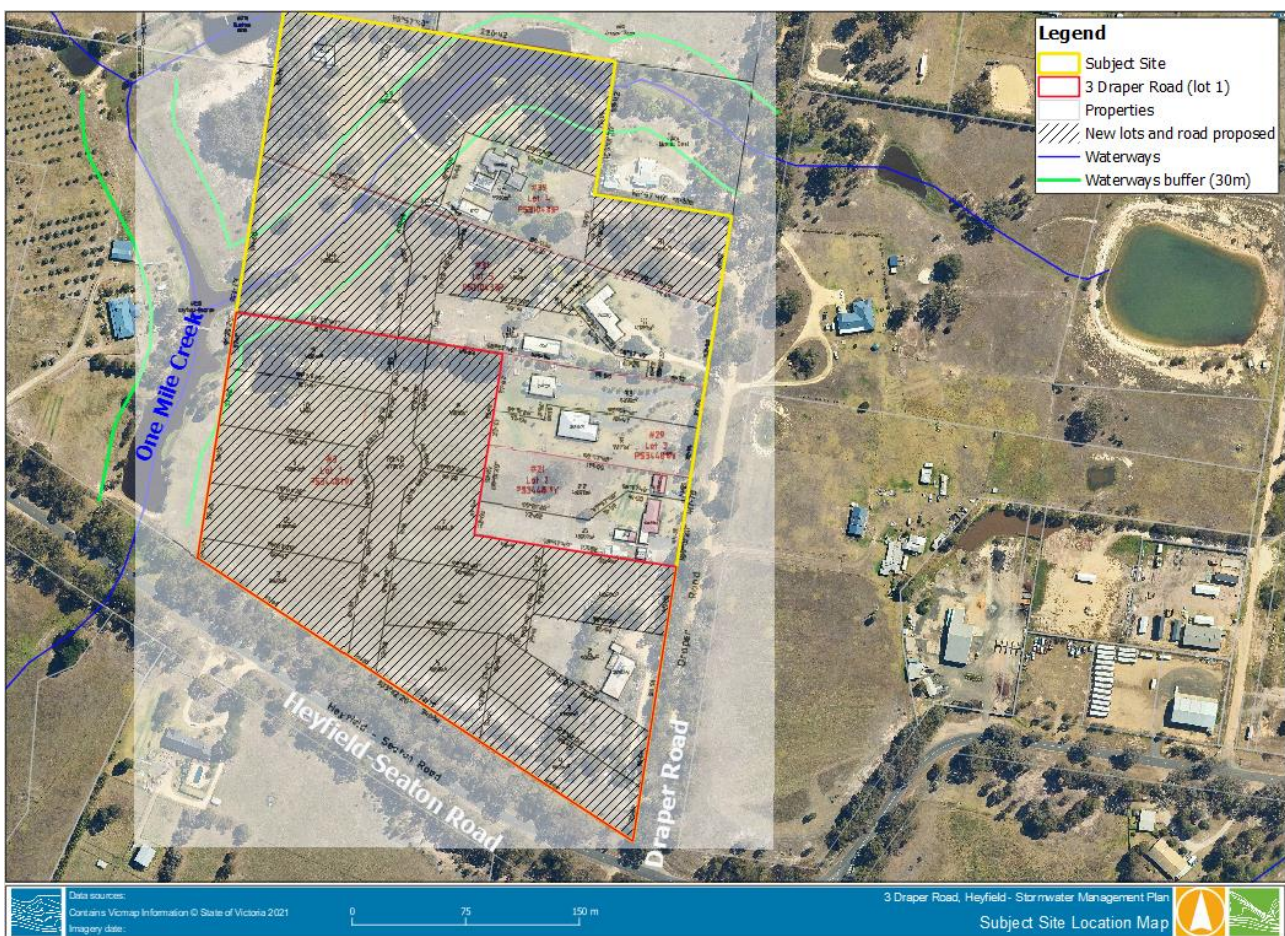
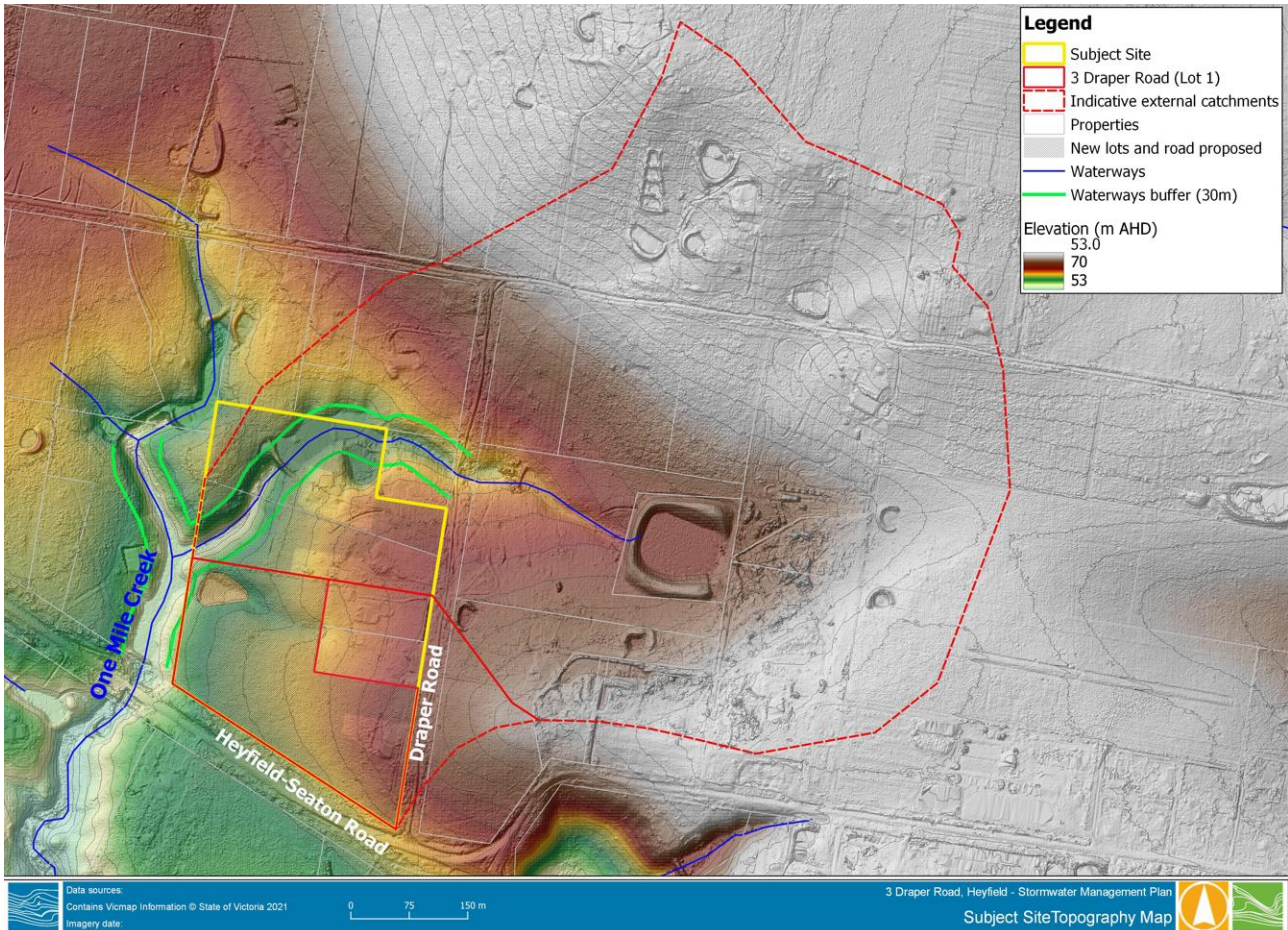


Figure 2-1 Subject Site Location Map

The subject site topography slopes in a westerly direction towards One Mile Creek with elevation ranging from 64.0 m AHD along the western boundary facing Draper Road to 54.0 m AHD at the north-west small farm dam outfall to One Mile Creek. The site is traversed by a drainage line feeding to the small dam. A small portion of the site to the south naturally drain towards Heyfield-Seaton Road and a second outfall to One Mile Creek for the subject site. There is a small (~3.4 ha) external catchment to the east of the subject site which stormwater runoff is expected to potentially enter the subject site. As shown in Figure 2-2.

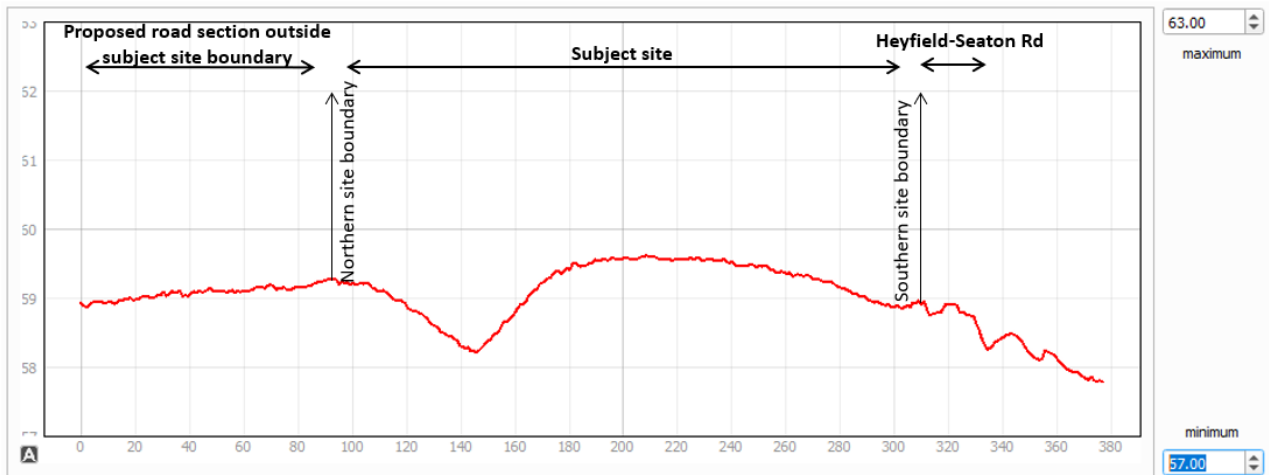


The proposed road section to the north, outside 3 Draper Road, is part of another external catchment draining to another tributary to One Mile Creek, north of the small farm dam as discussed in Section 3.2. The total area proposed to be developed equals to 9.4 ha, with the external catchment covering approximately 64 ha.



**Figure 2-2 Subject Site Topography Map**

The proposed internal road alignment topography presented in Figure 2-3 indicates that a low point at the drainage line discharging to the existing small farm dam with steep (~ 6%) longitudinal slope which may require some filling. To allow for centralised flood storage and stormwater treatment assets to capture stormwater runoff, the stormwater management strategy will rely on regarding the road towards the drainage line.



**Figure 2-3 Proposed Road alignment existing topography**



### 3 HYDROLOGICAL MODELLING AND FLOOD STORAGE SIZING

#### 3.1 RORB Modelling

The industry standard RORB hydrological runoff-routing program was used to assess the hydrological peak 1% Annual Exceedance Probability (AEP) discharges under the pre and post development scenarios together with the Australian Rainfall and Runoff 2019 (ARR 2019) IFD from the Bureau of Meteorology (BoM) and the Guide to flood estimation (ARR).

The catchment and RORB subarea delineation are based on LiDAR data sourced from DELWP (2009/10) with the RORB model schematisation presented in Figure 2-3. The RORB model includes all lots under the Development Plan Overlay, DP011, the proposed road ending immediately north of the site and all external catchments to the east.

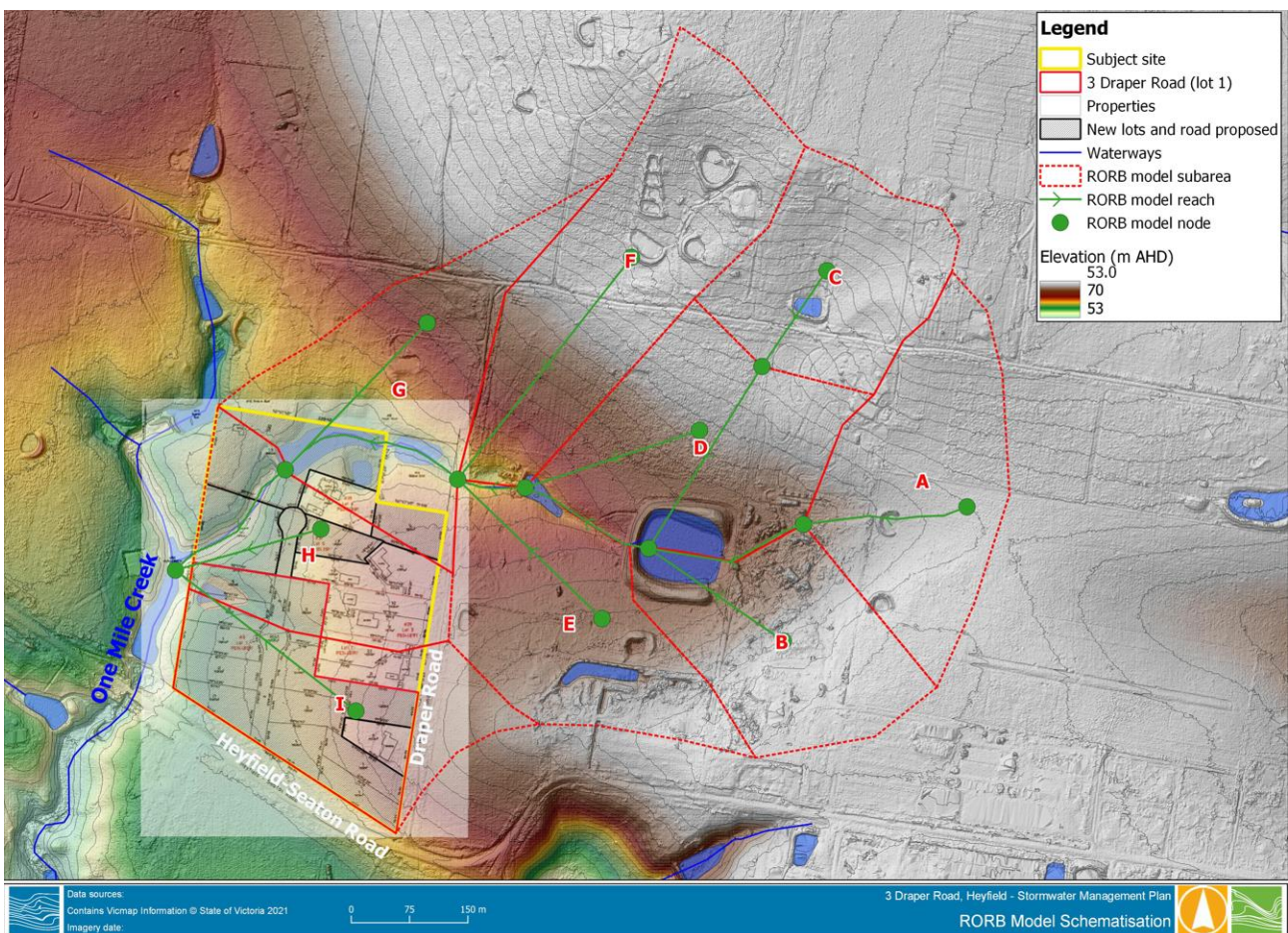


Figure 3-1 Hydrological RORB model schematisation

The following parameters were applied to the RORB model in line with industry standards;

- Fraction impervious using the Total Impervious Area (TIA) definition of 0.1 to all land currently undeveloped including the new lots and road proposed.
  - Given the low-density nature of the proposed residential development with low directed connected areas, we applied the TIA rather than split the impervious areas into directly and indirectly connected areas.





- Fraction impervious using the TIA definition of 0.2 to land currently developed and zoned 'LDRZ' under the pre-development conditions; and land proposed to be developed and zoned 'LDRZ' under post-development conditions.
- Fraction impervious using the TIA definition of 0.6 to the proposed road.
- Reach type is all set to 'natural' under the pre-development conditions, and set to 'excavated but unlined' under the post-development conditions within the subject site only.

Design rainfall, Intensity Frequency Duration (IFD data), temporal pattern and regional losses were obtained from the ARR Data Hub based on the site geographical location and applied to the model. The pre and post-development conditions RORB models were run for the 1% AEP event, across the ensemble of temporal patterns and a range of durations (from 10 min to 72-hour duration) for determination of the pre and post-development peak discharge and critical durations. The RORB model Kc routing parameter value was tested under a range of regional equations, with the Pearse et al. (2002) equation returning a peak 1% AEP flow comparable to that of the Rational Method estimate. The total catchment area being less than 1 km<sup>2</sup>, the Regional Flood Frequency Estimation cannot be relied on.

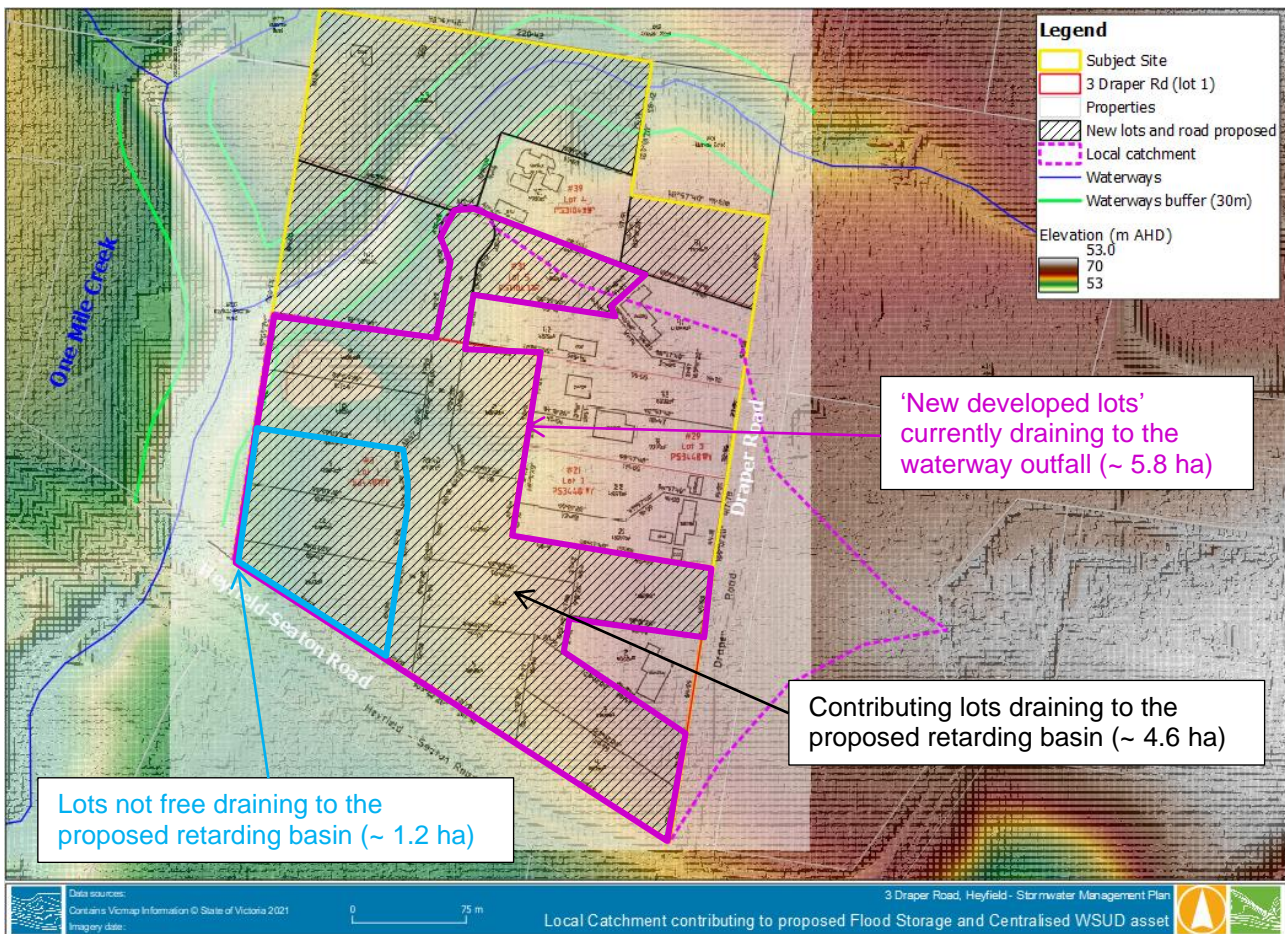
Table 3-1 summarises the RORB models assumptions and derived 1% AEP peak flows at the One Mile creek outlet under pre and post-development conditions. Considering the external catchments, the change in fraction imperviousness from the subject site is negligible. The 1% AEP peak flow estimate is lower under the post-development conditions compared to the pre-development conditions due to the timing of the peak flow from the subject site likely to peak slightly earlier than the peak of the external catchment to One Mile Creek.

**Table 3-1 RORB models assumptions and 1% AEP peak flow between pre and post-development conditions**

	<b>Pre-Development Conditions</b>	<b>Post-Development Conditions</b>
Total Surface Area	0.69 km <sup>2</sup>	0.69 km <sup>2</sup>
Total Surface Area	69.0 ha	69.0 ha
Average Fraction Impervious	0.25	0.26
Peak 1% AEP Flow	7.7 m <sup>3</sup> /s	7.6 m <sup>3</sup> /s
1% AEP Critical Duration	1 hour	1 hour

### 3.2 Boyds Method

The stormwater management plan assumes that the stormwater runoff generated off the lots to the east of the proposed road and the runoff generated off the proposed road will be conveyed towards a drainage reserved located nearby the current small farm dam. To estimate the flood storage required to retard the subject site 1% AEP post development peak flow back to the pre-development level was completed using the Rational Method estimate based on the catchment presented in Figure 3-2 and the Boyds Method.



**Figure 3-2 Subject site and local external catchment used in the Boyds Method**

The 1% AEP peak flow estimated from the Rational Method estimate under the pre-development conditions equals to approximately **0.52 m<sup>3</sup>/s** (corresponding to 75% of the 1% AEP peak flow estimate of 0.69 m<sup>3</sup>/s, as per the IDM) as shown in Figure 3-3 and Figure 3-4.

$$\text{ToC} = 0.76 * A^{0.38} \quad A = \text{Catchment area in (km}^2\text{)} = 0.058 \text{ km}^2$$

$$\text{ToC} = \text{Time of Concentration (hours)} \sim 15 \text{ minutes}$$

**Figure 3-3 ToC equation and calculations (Full subject site)**

$$Q = C * I * A \quad C = \text{Runoff coefficient (unitless)} = 0.317$$

$$i = \text{Average rainfall intensity (m/s) for the ToC for a selected AEP} = 135 \text{ mm/hr} = 3.75\text{e-5 m/s}$$

$$A = \text{Catchment area in (m}^2\text{)} = 58,000 \text{ m}^2$$

$$Q = \text{Peak flow estimate (m}^3\text{/s)} = 0.69 \text{ m}^3\text{/s}$$

**Figure 3-4 Rational Method Estimate equation and calculations (new development lots, ~5.8 ha)**



With the three south-west lots (#11, 12 and 13) unlikely to free drain towards the proposed retarding basin, the Rational Method estimate including reduced PSD was updated to account for the reduced upstream contributing catchment (~4.6 ha). The revised PSD for the site equals to **0.41 m<sup>3</sup>/s** (corresponding to 75% of the 1% AEP peak flow estimate of 0.55 m<sup>3</sup>/s, as per the IDM) as shown in Figure 3-5 and Figure 3-6.

$$\text{ToC} = 0.76 * A^{0.38} \quad A = \text{Catchment area in (km}^2\text{)} = 0.046 \text{ km}^2$$

$$\text{ToC} = \text{Time of Concentration (hours)} \sim 14 \text{ minutes}$$

**Figure 3-5 ToC equation and calculations (Contributing Catchment to the proposed retarding basin)**

$$Q = C * I * A \quad C = \text{Runoff coefficient (unitless)} = 0.317$$

$$i = \text{Average rainfall intensity (m/s) for the ToC for a selected AEP} = 135 \text{ mm/hr} = 3.75\text{e-}5 \text{ m/s}$$

$$A = \text{Catchment area in (m}^2\text{)} = 46,000 \text{ m}^2$$

$$Q = \text{Peak flow estimate (m}^3\text{/s)} = 0.55 \text{ m}^3\text{/s}$$

**Figure 3-6 Rational Method Estimate equation and calculations (Contributing lots to the proposed retarding basin, ~4.6 ha)**

Using the Boyds Method, the **flood storage** required to retard the 1% AEP peak post-development flow estimate back to the Permissible Site Discharge (nominal PSD reduced by 25%) **is estimated at approximately 415 m<sup>3</sup>** as show in Table 3-2.

**Table 3-2 Flood Storage estimation using the Boyds Method**

Storm duration (min)	1% AEP Intensity (mm/hr)	Peak Inflow (m <sup>3</sup> /s)	Peak Outflow (m <sup>3</sup> /s)	Volume (m <sup>3</sup> )
5	216	1.39	0.41	295
10	165	1.06	0.41	392
<b>15</b>	<b>135</b>	<b>0.87</b>	<b>0.41</b>	<b>414</b>
20	115	0.74	0.41	397
25	101	0.65	0.41	361
30	90.3	0.58	0.41	309

Proposed lot 51 (~0.5 ha), lot 44 (1.0 ha) and lot 53 (2.1 ha) towards the north of the subject site are not suitable for a centralised end of line flood storage with stormwater runoff currently draining towards the existing waterways and inline dams. As demonstrated in the RORB model, the 1% AEP peak flow from those local sub-catchments are likely to peak earlier than the upper catchment peak flow. If deemed required by the Authority, onsite detention tanks can be installed upstream the outfall to the waterway as per Table 3-3.



**Table 3-3 Northern proposed lots Onsite Detention and PSD**

	<b>Area (ha)</b>	<b>RoC</b>	<b>PSD (m<sup>3</sup>/s)</b>	<b>Storage (m<sup>3</sup>)</b>
Proposed lot 51	0.5 ha	0.40	0.07 m <sup>3</sup> /s	15 m <sup>3</sup>
Proposed lot 44	1.0 ha	0.35	0.13 m <sup>3</sup> /s	35 m <sup>3</sup>
Proposed lot 53	2.1 ha	0.30	0.23 m <sup>3</sup> /s	45 m <sup>3</sup>



## 4 STORMWATER QUALITY MODELLING AND WSUD SIZING

MUSIC (Model for Urban Stormwater Improvement Conceptualisation) models were used to estimate pollutants and nutrients (Total Suspended Solids or TSS, Total Phosphorus or TP, Total Nitrogen or TN) levels generated off the subject site pre- and post-development. MUSIC is commonly used in Australia to assess the stormwater pollutant generation and treatment effectiveness of various Water Sensitive Urban Design (WSUD) assets.

### 4.1 MUSIC Modelling

Typically, a MUSIC model is run for continuous period 10 or 20 years at sub-daily interval (6 min), based on a representative period of long-term climate of the catchment area being investigated.

The mean annual rainfall at Glenmaggie Weir is 630 mm (BoM station ID 85034, using rainfall records between 1938 to 2022) with the 6-minute rainfall dataset for this station extracted from the eWater MUSIC pluviograph tool.

The period between 1 January 1963 to 31 December 1972 was selected as the representative 10-year climate dataset. This period was chosen because it has minimal missing data and the monthly and daily rainfall distribution is similar to that of the BoM daily rainfall records. The modelled mean annual rainfall was 616 mm. Monthly areal potential evapotranspiration rates (PET) were extracted from the BoM. A summary of modelled<sup>1</sup> monthly rainfall vs the long-term average MUSIC input is shown in Table 4-1.

**Table 4-1 Comparison of modelled vs long-term climate statistics**

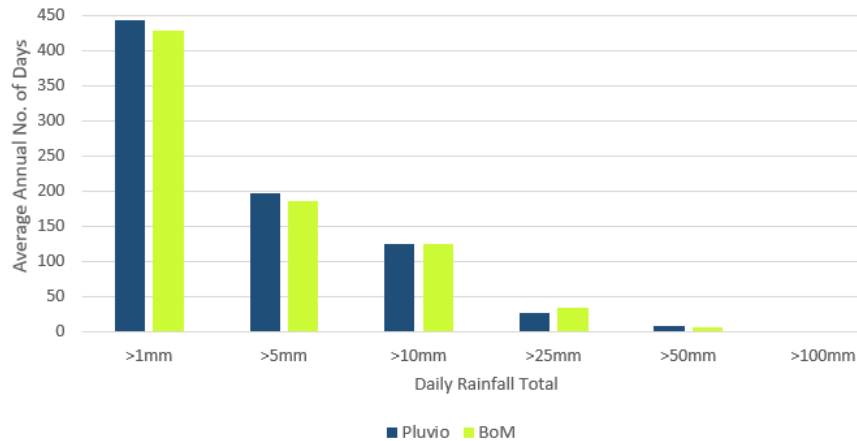
Month	Glenmaggie Weir <sup>2</sup> Long-term average rainfall (mm/month)	MUSIC model average rainfall (mm/month)	MUSIC model average PET <sup>1</sup> (mm/month)
January	76.1	74.9	160.0
February	35.5	32.6	124.0
March	55.0	55.3	101.1
April	52.8	50.9	68.1
May	62.2	65.3	39.1
June	28.8	22.6	30.0
July	27.7	27.0	31.9
August	48.5	47.1	41.9
September	44.9	46.1	63.0
October	55.8	51.6	114.1
November	70.3	63.9	132.9
December	78.9	79.1	134.9
<b>Total</b>	<b>636.4</b>	<b>616.3</b>	<b>1,041.0</b>

<sup>1</sup> [http://www.bom.gov.au/jsp/ncc/climate\\_averages/evapotranspiration/index.jsp](http://www.bom.gov.au/jsp/ncc/climate_averages/evapotranspiration/index.jsp)

<sup>2</sup> BoM station ID 85034 from 1 January 1963 to 31 December 1972

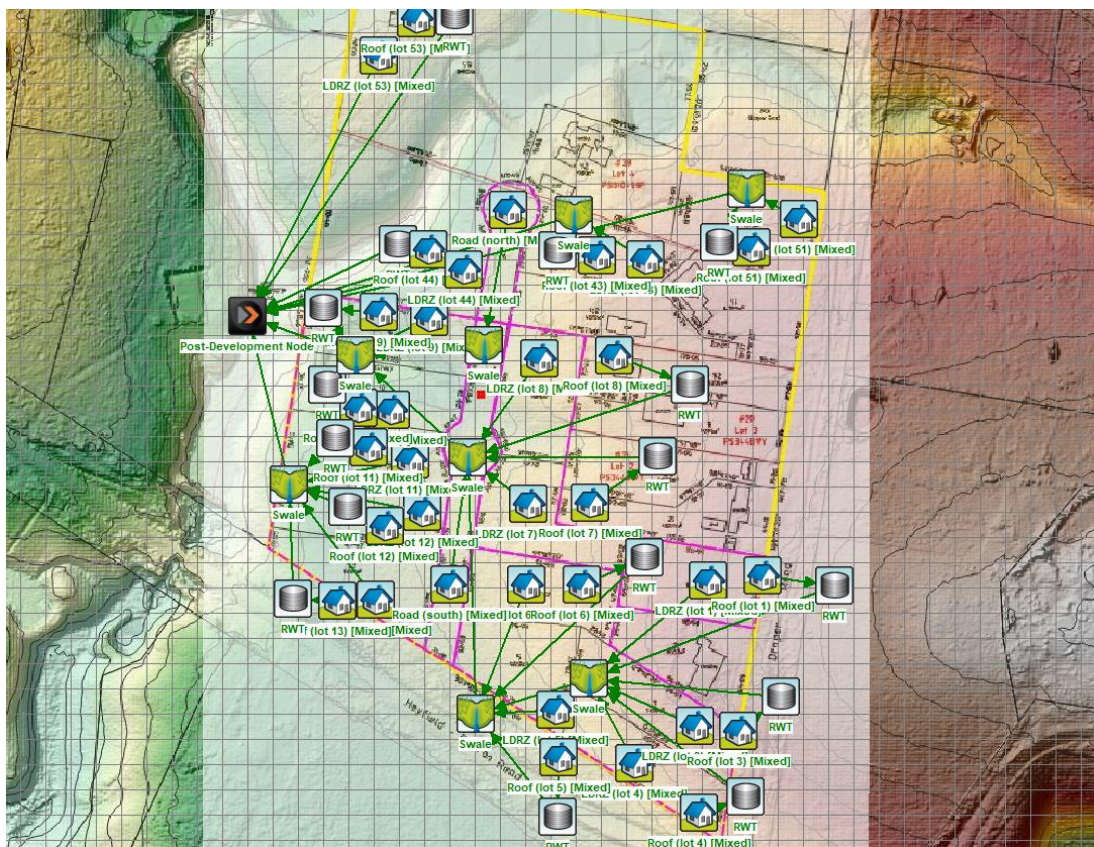


The 6-minute rainfall data from 1/01/1963 – 31/12/1972 (inclusive) yielded a mean annual rainfall of 616 mm and comparable rainfall distribution to long-term rainfall distribution observed at the nearest rain gauge at the BoM as shown in Figure 4-1.



**Figure 4-1 Daily Rainfall Distribution Total Comparison (Glenmaggie 1963 – 1972)**

Separate MUSIC source nodes were used to represent the road, all the new lots proposed to be developed, all using 'Mixed' MUSIC Zoning/Surface Type. The proposed stormwater treatment train consists of on lot rainwater tanks, swales along the road or property boundary. Any lots already developed under the Development Plan Overlay (DP011) do not require to form part of the proposed stormwater treatment train.



**Figure 4-2 MUSIC model schematisation**



## 4.2 Proposed Treatment Train

The proposed stormwater quality treatment train consists of a swale network mainly running along the existing and proposed road network and on lot rainwater tanks. This option relies on regrading the road towards the drainage line to allow for the proposed eastern lots stormwater runoff contribution to discharge to the proposed retarding basin. The runoff generated from the three proposed south-west lots are proposed to be treated via a swale but is unlikely to be able to discharge to the proposed retarding basin. Additional storage could be provided on the on-lot rainwater tank if required.

The **swales** have been sized in MUSIC assuming a 300 mm depth (0.5 m base width, 3 m top width) and longitudinal slope from the LIDAR interpretation allowing for some regarding of the proposed central road as shown in Figure 4-3. With the subject site land expected to heavy clay according to the [Victoria Resources online map](#), a exfiltration rate of 0.36 mm/hour has been applied. To account for the runoff process and entry point to each swale, we have only accounted for half the swale length in the treatment train.

Properties of Swale	
Location	Swale
Inlet Properties	
Low Flow By-Pass (cubic metres per sec)	0.000
Storage Properties	
Length (metres)	40.0
Bed Slope (%)	0.88
Base Width (metres)	0.5
Top Width (metres)	3.0
Depth (metres)	0.30
Vegetation Height (metres)	0.250
Exfiltration Rate (mm/hr)	0.36
Calculated Swale Properties	
Mannings N	0.561
Batter Slope	1:4.1667
Velocity (m/s)	0.052
Hazard	0.015
Cross sectional Area (m <sup>2</sup> )	0.525
Swale Capacity (cubic metres per sec)	0.027

Buttons: Fluxes..., Notes..., More, Cancel, Back, Finish

Figure 4-3 MUSIC Model Swale Node Properties (one swale example)



The **rainwater tanks (5 KL on each lot)** have been sized and tested in MUSIC assuming that only half the roof area (~200 m<sup>2</sup>) is connected to the tank. We assumed that all tanks are empty at the start of the 10-year simulation and that they are plumbed to toilets and laundry. Re-use values was assumed to be 128 l/day, based on the following assumptions:

- 2.4 people per household
- 20 Litres per person per day
- 80 Litres per household per day

These above assumptions are in accordance with the Melbourne Water MUSIC guidelines (2018 and conservative as rural residential properties are likely to be using harvested water for irrigation and equip themselves with larger rainwater tanks being in designated bushfire prone area.

Under the Victorian Planning Provisions, the proposed development must design urban stormwater systems to meet the Best Practice Environment Management (known as BPEM) objectives. The subject site once developed must reduce levels of pollutants and nutrients to meet the following reduction targets:

- 80 % removal of TSS
- 45% removal of TP and TN
- 70% removal of litter/gross pollutants

The proposed treatment train effectiveness has been tested in the MUSIC model. It does not quite meet the BPEM removal targets for TSS, TP and TN with only the gross pollutants meeting the BPEM guidelines as presented in Figure 4-4.

	Sources	Residual Load	% Reduction
<b>Flow (ML/yr)</b>	17.6	16.5	6
<b>Total Suspended Solids (kg/yr)</b>	2540	915	64
<b>Total Phosphorus (kg/yr)</b>	5.79	3.24	44
<b>Total Nitrogen (kg/yr)</b>	44.6	33.6	24.6
<b>Gross Pollutants (kg/yr)</b>	496	145	70.8

Include Pre-Development

Figure 4-4 MUSIC model Treatment Train Effectiveness

The BPEM pollutants and nutrients removal rates have been set for a typical urban development which is not comparable to low density residential developments in regional areas. While the pollutants removal rate are not met, the post-development mean annual loads (kg/year) for the TSS, TP and TN are lower than the mean annual loads (kg/year) under pre-development conditions as shown in Figure 4-5. Therefore, the proposed treatment train is deemed appropriate to treat stormwater runoff generated from the subject site.





Mean Annual Loads - Pre-Development Node

	Inflow	
	Pre	Post
<b>Flow (ML/yr)</b>	9.84	16.5
<b>Total Suspended Solids (kg/yr)</b>	1.71E3	915
<b>Total Phosphorus (kg/yr)</b>	4.82	3.24
<b>Total Nitrogen (kg/yr)</b>	34.9	33.6
<b>Gross Pollutants (kg/yr)</b>	208	145

Include Post-Development



 

Figure 4-5 MUSIC model Mean Annual Loads Comparison Pre and Post-development



## 5 CONCEPT DESIGN

The preliminary concept design assumes that a ~ 900 m<sup>2</sup> drainage reserve is set aside at the location of the existing small farm dam, at the rear of proposed lot 10 with a side easement access (~7m wide including a 2.5 m wide swale plus 4.5 m wide access track from the road reserve). The easement depicted in Figure 5-1 includes an access track (4 m minimum) from the road reserve to allow for Council maintenance access. It is suitable for these details to be developed further at the functional/detail design stages. It is proposed to construct a retarding basin designed to retard the post-development flows back to the permissible site discharge and allow access for maintenance. Stormwater runoff will be treated via swales and on lot rainwater tanks before entering the downstream waterway. The stormwater strategy includes for;

- All stormwater to discharge to an on-lot rainwater tank with minimum air space required for detention purposes.
- Overflow from each rainwater tank is to be discharged to lot swale. Once treated, stormwater could then be discharged back could Wellington managed table drains with excess runoff stored in the proposed retarding basin.
- The treatment swales are to be constructed in all lots for each stage of the development with ongoing maintenance the responsibility of the property owner.

Figure 5-1 presents a plan view of the proposed concept with Table 5-1 summarising the preliminary concept design levels, surface areas and batter slopes considerations.

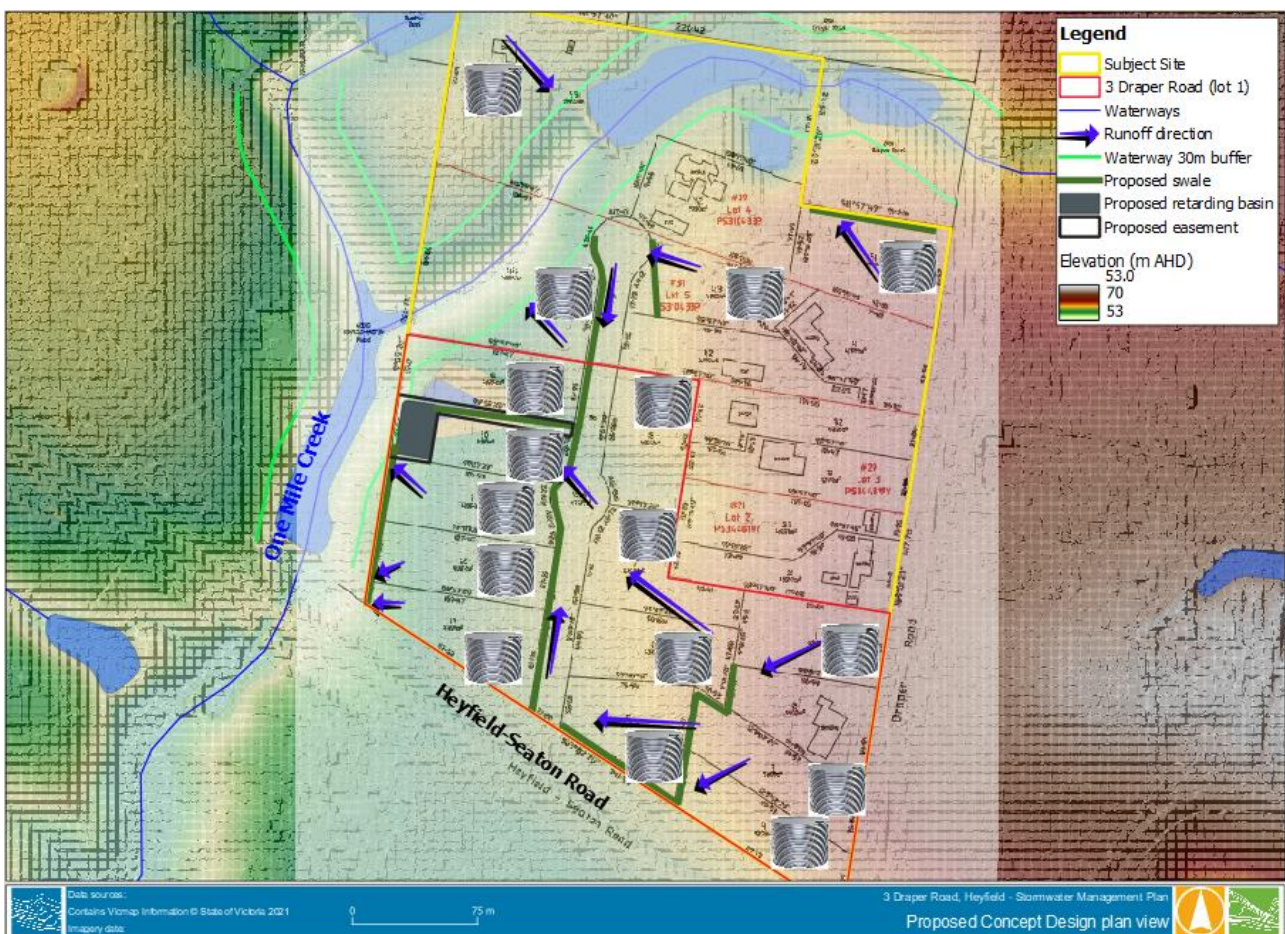


Figure 5-1 Rainwater Tanks/Swales and Retarding Basin Proposed Concept Design - plan view



**Table 5-1 Retarding Basin Design Characteristics**

	Design Characteristics
Depth from RB TWL to WL TEDD	1 metre
RB Volume (m <sup>3</sup> ) @ RB TWL + 300mm freeboard	~ 650 m <sup>3</sup>
RB Area (m <sup>2</sup> ) @ RB TWL + 300mm freeboard	~ 900 m <sup>2</sup>
<b>Level @ RB TWL + 300mm freeboard</b>	<b>56.0 m AHD</b>
RB Volume (m <sup>3</sup> ) @ RB TWL	~ 415 m <sup>3</sup>
RB Area (m <sup>2</sup> ) @ RB TWL	~ 690 m <sup>2</sup>
<b>Level @ RB TWL</b>	<b>55.7 m AHD</b>
<b>Level @ RB Bottom</b>	<b>54.7 m AHD</b>
<i>RB Side batter slope</i>	1:6

The existing farm dam (currently over proposed Lot 9 and 10) capacity has been estimated to be approximately 100 m<sup>3</sup> in volume (at 56.6 m AHD, the dam wall crest level) using terrain modelling and the LIDAR (2009/10) dataset as shown in Table 5-2. The existing farm dam may be re-modelled to create the required flood storage volume (400 m<sup>3</sup>).

**Table 5-2 12d Volume Exact Storage Calculations Report for the existing farm dam**

Height	Delta height	Volume to height	Delta volume	Plan area	Delta plan	Slope area	Delta slope
57.000	0.100	894.368	170.874	1789.943	159.265	1794.171	159.768
56.900	0.100	723.494	155.327	1630.678	155.177	1634.404	155.671
56.800	0.100	568.167	139.460	1475.502	160.838	1478.733	161.314
56.700	0.100	428.707	123.152	1314.664	179.192	1317.419	179.673
56.600	0.100	305.555	103.765	1135.472	189.813	1137.746	190.403
56.500	0.100	201.791	87.059	945.658	145.468	947.343	146.146
56.400	0.100	114.731	73.085	800.190	151.807	801.198	152.435
56.300	0.100	41.646	41.260	648.384	601.005	648.763	601.373
56.200	0.100	0.386	0.386	47.378	47.378	47.390	47.390
56.100	0.100	0.000	0.000	0.000	0.000	0.000	0.000
56.000		0.000		0.000		0.000	



## 6 SUMMARY

The Stormwater Management Plan has been prepared to support a planning scheme application from [REDACTED] proposing to subdivide the land at 3 Draper Road, Heyfield as well as all lots under the Development Plan Overlay (DP011) including 21, 29, 31 and 39 Draper Road, Heyfield in Gippsland and build low density residential development.

The Stormwater Management Plan addresses the following aspects;

- An assessment of the peak/critical 1% AEP (Annual Exceedance Probability) pre and post-development flows and sizing of a retarding basin to retard the 1% AEP peak flows back to the pre-development flows at the outlet of the development (One Mile Creek).
  - The plan proposes the construction of a **415 m<sup>3</sup> retarding basin** near the location of the current small farm dam.
  - The existing farm dam may be re-modelled to create the above required flood storage volume.
  - The retarding basin is to be contained within an easement in favour of Wellington Shire Council with an access easement (minimum 4 metres wide) provided to the road reserve.
- An assessment of the stormwater runoff water quality which addresses treatment objectives of the *Urban Stormwater Best Practice Management Guidelines* (BPEMG) and Clause 56.07-4 of the Planning Scheme.
  - The plan proposes the construction of a **swale** network all lots with a **5 KL (min) rainwater tank** on each lot connected to toilets and laundry at a minimum. Maintenance of the treatment swales and rainwater tanks will be the responsibility of the property owner.
- A conceptual layout of the stormwater management strategy, showing invert levels, approximate location and footprint of the proposed SWM assets (e.g. flood retarding basin).
  - The plan presents a preliminary concept design plan view with a tabular levels and surface areas characteristics. The design is to be refined using terrain modelling at the functional/detail design stage.
  - The strategy relied on regrading the proposed road and filling the existing farm dam to create a retarding basin with freeboard.

We trust that this Stormwater Management Plan satisfies the conditions set by West Gippsland Catchment Management Authority and support approval of a planning permit by Wellington Shire Council.

As stated in their recent (4 November 2022) referral letter in relation to 3 Draper Road (lot 1), the WGCMA **does not require any conditions relating to flood risk mitigation**; and **does not require a Waterway Management Plan** on with the waterways 30 m buffer only slightly encroaching proposed lot 9. Dwellings are likely to be constructed on higher grounds and cannot be within the 30 metre buffer zone which can be added as a condition to the planning permit. The advice of the CMA may vary for all the other lots under the Development Plan Overlay (DP011) including 21, 29, 31 and 39 Draper Road, Heyfield.



# APPENDIX A PROPOSED DEVELOPMENT LAYOUT

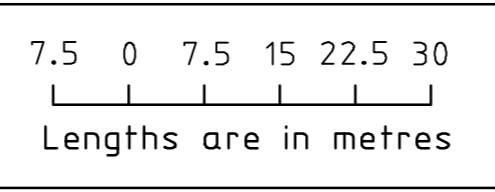




THIS PLAN HAS BEEN PREPARED AS INSTRUCTED BY [REDACTED] AND [REDACTED] FOR DISCUSSION PURPOSES ONLY

- This is not a Title survey.  
 - See Certificate of Title for Easement details.  
 - Lot Dimensions & Areas are approximate only & subject to survey.  
 - Data on this plan may only be manipulated with permission from SK Spatial Pty Ltd.

Lots 14-20 (inclusive), 23-30 (inclusive), 33-40 (inclusive) & 45-50 (inclusive) have been omitted from this plan.



**Notations**  
 #3 - Lot 1 on PS344819Y - 5.674ha  
 #21 - Lot 2 on PS344819Y - 8100m<sup>2</sup>  
 #29 - Lot 3 on PS344819Y - 8100m<sup>2</sup>  
 #39 - Lot 4 on PS310433P - 3.072ha  
 #31 - Lot 5 on PS310433P - 2.449ha  
 Total site area: 12.815ha

Sheet 1 of 1.

Wellington Shire Council	
Plan No. 18804 DCP-2a	Scale 1:750 - A1 1:1500 - A3
Drawn 30/01/2023	

**Development Concept Plan with Aerial Image**  
 Parish of Glenmaggie  
 Crown Allotments: 10 (Part) & 11  
 Lots 1, 2, 3 on PS344819Y & Lots 4, 5 on PS310433P  
 Paracentroid (MGA2020) : E 479 330, N 5797 220



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