Stormwater Management Strategy

South Wurruk Development Plan

Clients
Jelaryl Pty. Ltd., Barry Hollonds, Park Ridge Investments Pty. Ltd. and Pearsondale Heights Pty. Ltd.

Issued
21/04/2022

PLANNING AND ENVIRONMENT ACT 1987
WELLINGTON PLANNING SCHEME
This is the plan referred to in Clause 43.04- Schedule 9 of Development Plan Overlay and has been approved by Wellington Shire Council
DATE: 21 June 2022
SIGNED: Barry Hearsey Coordinator Strategic Planning
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Surveying
Asset Recording
Civil Engineering
Infrastructure Engineering
Traffic & Transport
Engineering
Environmental Consulting
Water Resource Engineering
Strata Certification (NSW)
Town Planning
Urban Design
Landscape Architecture
Project Management

Revision Table

REV	DESCRIPTION	DATE	AUTHORISED
A	Draft	**28/04/2016**	**CC**
B	Updated to remove figures with proposed layouts as requested by Council	**04/07/2016**	**CC**
C	Updated subdivision layout plan	**09/08/2019**	**CC**
D	WLRB assets location shifted, RWT included - DRAFT	**16/04/2021**	**CC**
E	WLRB NE removed, rainwater tanks added, water balance model included	**29/04/2021**	**CC**
F	Addition of stormwater harvesting system and removal of wetlands	**30/09/2021**	**CC**
G	Relocation of SBRB SE	**23/03/2022**	**CC**
H	Amendments to address Council comments	**21/04/2022**	**CC**

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Glossary of terms

Alphabetical list of terms and abbreviations used in report

AHD	Australian Height Datum A common national surface level datum approximately corresponding to mean sea level.
AEP	Annual Exceedance Probability. Probability of a flood event occurring in any year
Authorities	Organisations responsible for the supply and management of sewer, water, gas, electricity and telecommunications, roads and transport
BPEMG	Best Practice Environmental Management Guidelines
BWCo	Beveridge Williams & Co Pty Ltd
CMA	West Gippsland Catchment Management Authority
Client	Jelaryl Pty. Ltd., Barry Hollonds, Park Ridge Investments Pty. Ltd. and Pearsondale Heights Pty. Ltd.
Council	Wellington Shire Council
IDM	Infrastructure Design Manual
LSIO	Land Subject to Inundation Overlay
NTWL	Normal Top Water Level
$Q_{20\%}$	Storm water flow generated from 20% AEP storm event
$Q_{1\%}$	Storm water flow generated from 1% AEP storm event
Q_{gap}	Flow difference between $Q_{20\%}$ and $Q_{1\%}$ storm event
SBRB	Sediment Basin/Retention Basin
WSUD	Water Sensitive Urban Design

1 INTRODUCTION

Beveridge Williams has been commissioned by a consortium of clients to prepare a Stormwater Management Strategy (SWMS) for a South Wurruk Development Plan, based on the **Sale, Wurruk and Longford Structure Plan** (August 2010). The total site area is approximately 146 ha and as stated in the Structure Plan, '*opportunity exists for establishment of urban residential and some rural residential development to form a complete neighbourhood that is integrated with the existing urban area and local facilities*'. It is intended to subdivide the land to form 1,256 lots.

This SWMS report is intended to provide a conceptual drainage strategy for the development plan. The strategy aims to retain post-development stormwater runoff to pre-development level, to meet stormwater quality Best Practice Environmental Management Guidelines (BPEMG) to the satisfaction of West Gippsland Catchment Management Authority (WGCMA), Wellington Shire Council (WSC) and other relevant authorities.

1.1 Site Overview

The proposed development plan is located in Wurruk, 1.3km west of Sale and predominantly bound by Settlement Road on the south east and Princes Highway on the north. There are currently two existing residential areas adjacent to the subject site, Sovereign Estate to the west and Park Ridge Estate on the eastern side. There is also an existing heritage site (Kilmany Park Heritage Estate) in the southern west corner of the development plan area. Refer to Figure 1 for the location plan and Figure 2 for the Site Analysis Plan.

The overall site is largely characterised by paddocks with scattered trees and plantings, and some flood prone land area to the south. There are some existing water bodies surrounding the site as shown in Figure 2.

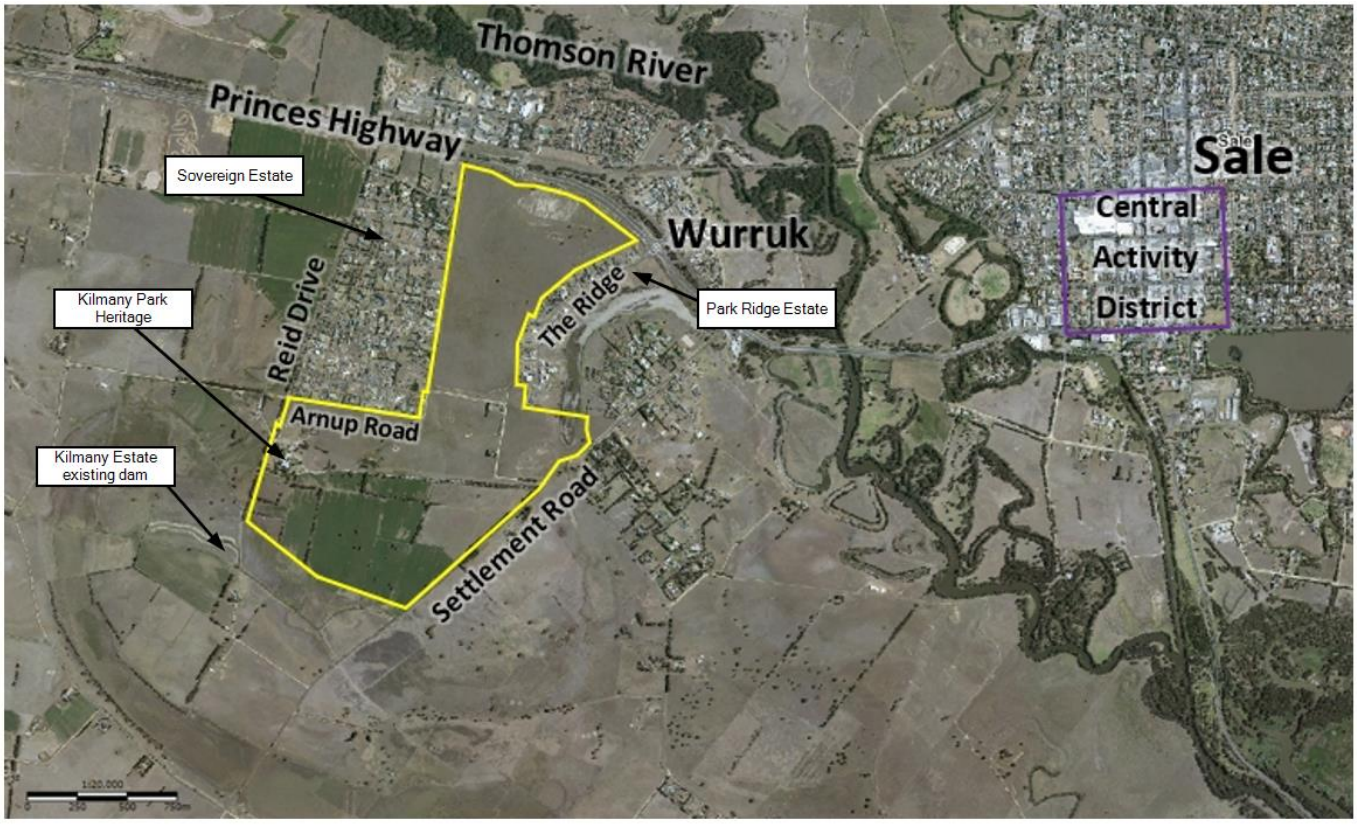


Figure 1: Site Aerial Plan (Not to Scale) (Source: NearMap)

The subject site is currently zoned Low Density Residential, however the Sale, Wurruk and Longford Structure Plan highlights for some higher density residential development to the northern half of the site.

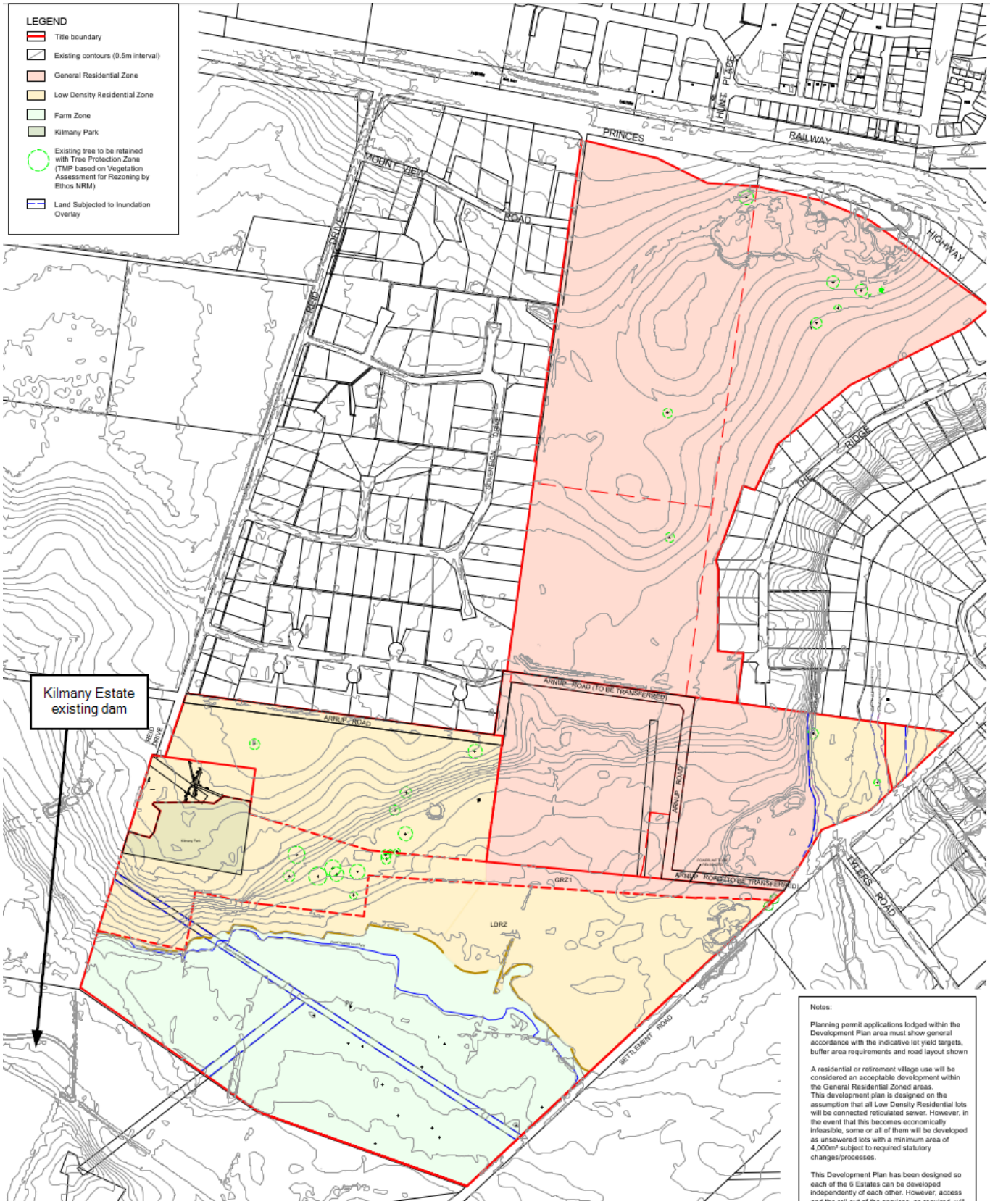


Figure 2: Site Analysis Plan (Not to Scale)

1.2 Topography

The overall subject site has varying topographical features throughout the area with plateaus and steep escarpments. The contours generally fall from north to south direction (Refer to Figure 3 below for Site Topography Plan).

On the northern part, a ridgeline extends through the centre of the site with several high points across the site. The land around this consists of undulating terrain, with areas of steep gradient as well as some flat open spaces further towards the middle section of the site.

The southern part of the site is much flatter with some low points and drainage basins, falling towards to the floodplains area further to the south, where the land is covered by a Land Subject to Inundation Overlay (LSIO).

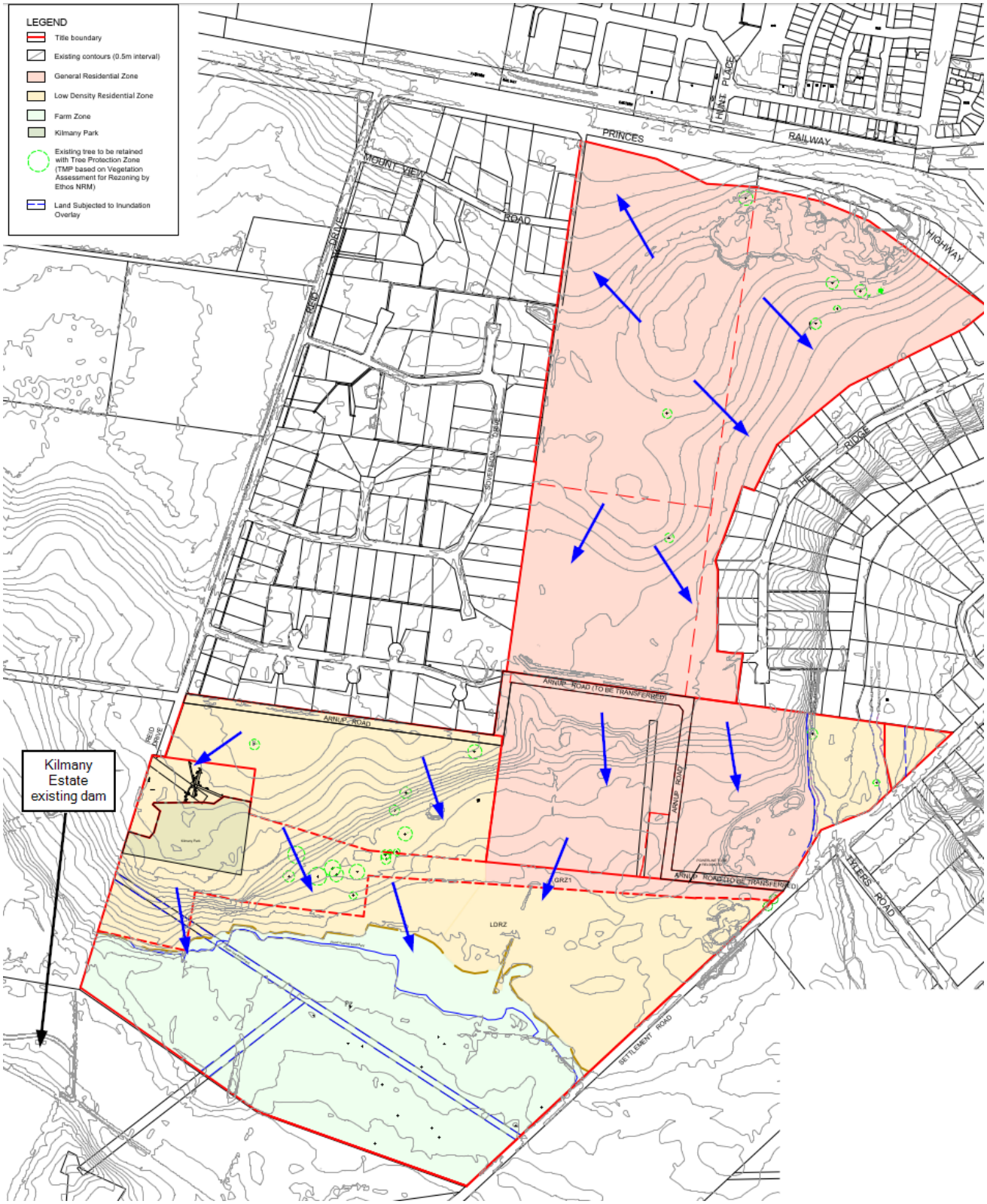


Figure 3: Site Topography Plan (Not to Scale)

1.3 Surface Water & Drainage

As previously mentioned, the site topographical map shows a series of highpoints that form a major ridge line through the middle of the northern part of the subject site. This resulting in two opposing drainage paths on either side of the ridge line. Surface drainage water on the western part of the ridgeline flows towards northwest direction while on the eastern part of the ridgeline flows towards east and south east directions (Refer to Figure 3 above).

Surface water on the middle part of the site generally flows in a southern direction where the low points are located. Drainage water on the southern part (south of Kilmany Park Mansion) generally runs towards to the south, where the floodplain (LSIO) area is located.

2 DESIGN INTENT

2.1 Proposed Development

The proposed indicative residential development plan, with total area of approximately 146 ha is to form 1,256 lots. This will comprise of standard (540m^2 net lot average), general (600-1,000m^2) and low (>2,000m^2) residential density lots (Refer to Figure 4 below and Appendix A). The standard and general lots are predominantly located on the northern and eastern half of the site. The low density lots are located in the south-western portion of the site.

This preliminary development layout will also include an oval and a few reserve and drainage reserve areas. The proposed road network will be designed to minimise traffic flow whilst maintaining simple and direct access for local residents.

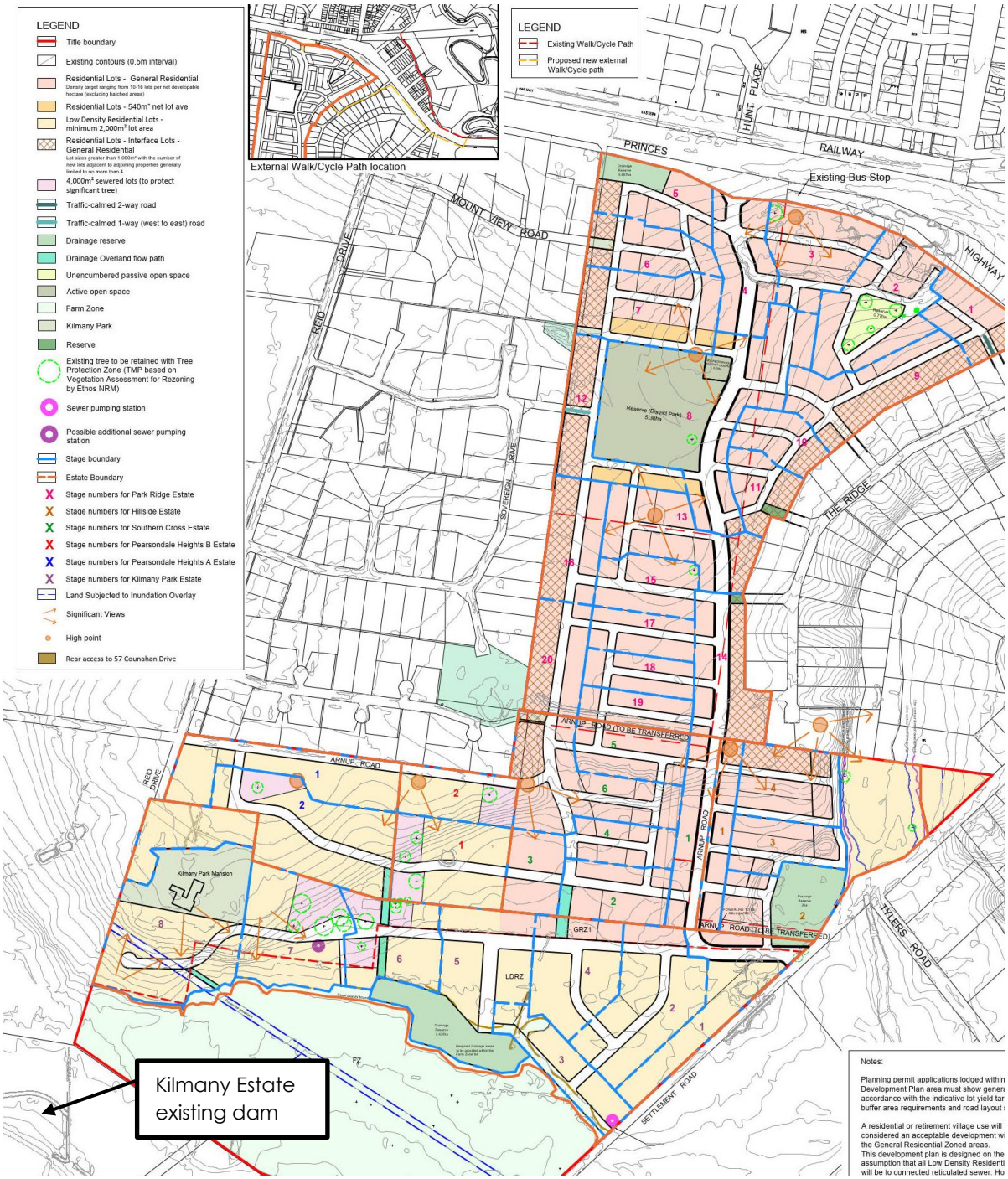


Figure 4: Indicative Subdivision Plan (Not to Scale)

2.2 Proposed Stormwater Management Strategy

The main objectives of this SWMS are to satisfy the requirements from Council and CMA, which include the following:

- Controlling the rate of the 1% AEP stormwater runoff for the post development peak flows to pre-development levels
- Providing stormwater treatment to meet the best practice management guidelines
- Ensuring there is no increased stormwater volume on the downstream lagoon and pumping costs, and a review of the proposed stormwater quality infrastructure to ensure the impacts of increase volume are addressed, as per the updated South Wurruk Stormwater Plan 2016

For stormwater quantity management, it is proposed to indicatively provide 3 stormwater detention basins throughout the subject site. Each of these basins will be located on the lowest point of each of the designated sub-catchment within the site.

For stormwater quality management, it is proposed to provide 3 sediment basins located within the stormwater retardation basins, rainwater storage tanks on each property, as well as benefits from the proposed stormwater harvesting scheme improving stormwater treatment results.

Details of both stormwater quantity and quality management are discussed in Sections 5 and 6.

Assessment of stormwater volume impact from the development was undertaken through a water balance model and this is further discussed in Section 7. A stormwater harvesting and re-use scheme is proposed for directing additional runoff volumes to neighbouring farm properties to reduce the impact on southern properties already experiencing flooding impacts.

3 HYDROLOGY

For the hydrology and overall catchment assessment of the proposed development sites, a runoff routing model was developed using the RORB program to determine the design flows for the pre-developed and post-developed scenarios. The internal flows of the site have been assessed for both the pre- and post-development conditions.

3.1 RORB Modelling

The pre-developed catchment of the site, including the contributing external catchment, was produced as shown in Figure 5. The corresponding catchments and fraction imperviousness are shown in Table 1. The post-developed catchment plan of the site, including the contributing external catchment, was produced as shown in Figure 6. The corresponding catchments and fraction imperviousness are as per Table 2.

Both pre- and post-developed catchments were updated from previous revisions to include the flow discharging from the lagoon. This was to produce a more accurate representation of the combined flows discharging from the lagoon and proposed development and ensure there were no negative impacts on downstream landowners.

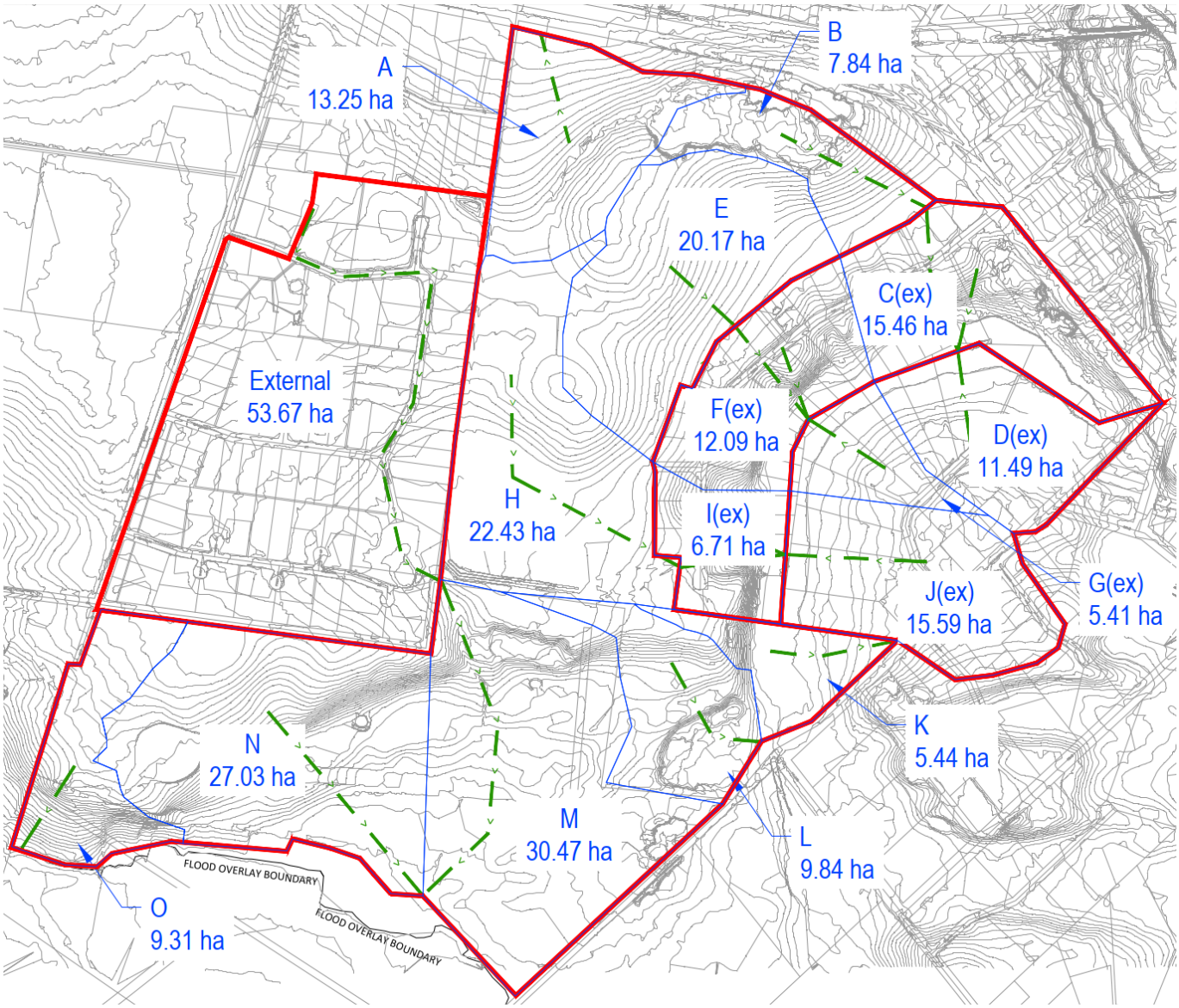


Figure 5: Pre-Developed Catchment Plan (Not to Scale)

Table 1: Pre-Developed Catchment Plan – Fraction Imperviousness

CATCHMENT	FRACTION IMPERVIOUSNESS
A – B	0.1
C(ex) – D(ex)	0.15
E	0.1
F(ex) – G(ex)	0.15
H	0.1
I(ex) – J(ex)	0.15
K – O	0.1
External	0.3

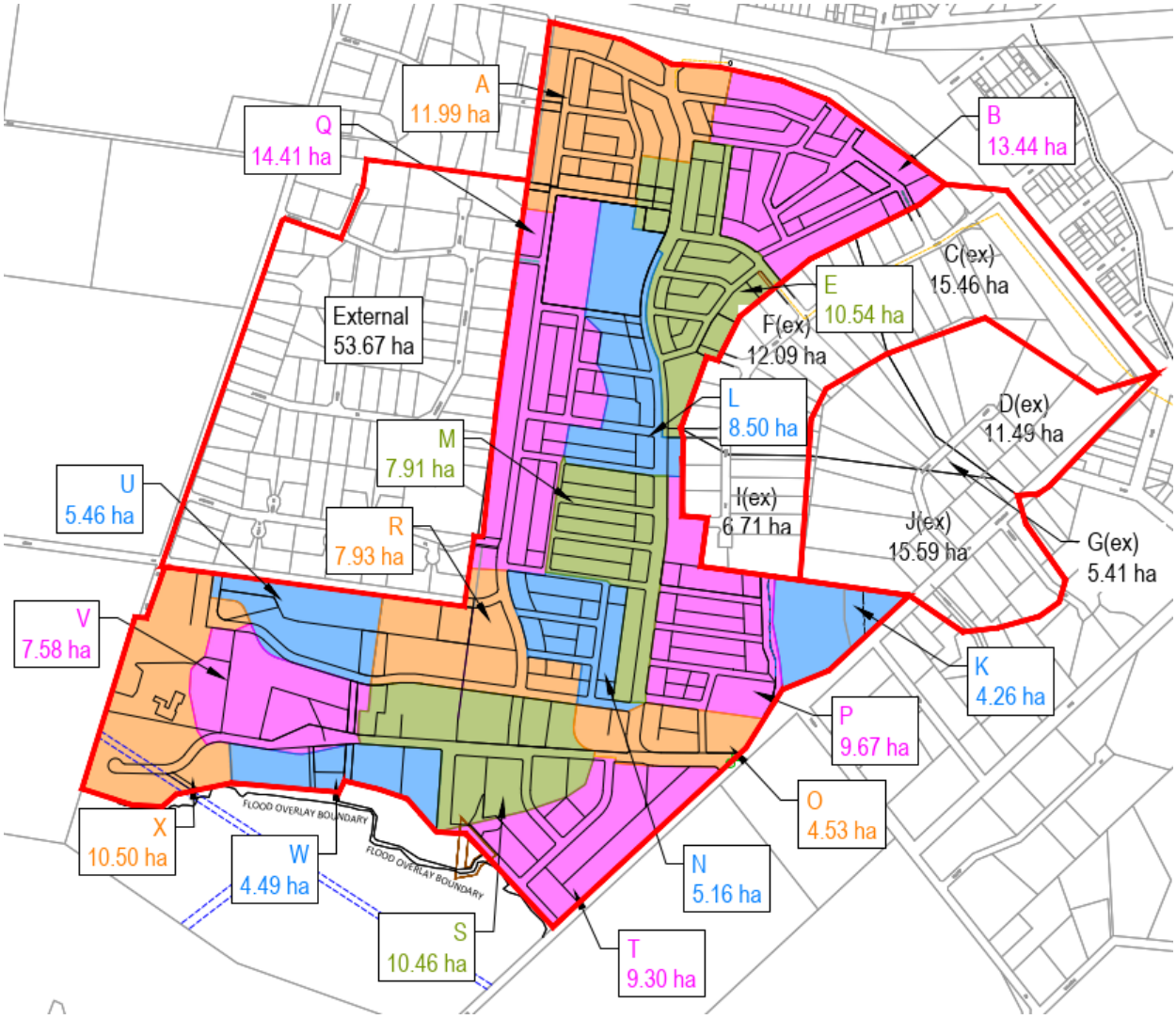


Figure 6: Post-Developed Catchment Plan (Not to Scale)

Table 2: Post-Developed Catchment Plan – Fraction Imperviousness

CATCHMENT	FRACTION IMPERVIOUSNESS
A – B	0.6
C(ex) – D(ex)	0.15
E	0.6
F(ex) – G(ex)	0.15
I(ex) – J(ex)	0.15
K	0.15
L – P	0.6
Q - R	0.6
S	0.5
T – X	0.3

The Rational Method was utilised to determine the existing flow conditions for the 1% AEP storm event. This is provided in Appendix B. This peak flow was then used to calibrate the RORB model using ARR2016, Ensemble Method. The temporal patterns, IFD data and losses were obtained from the ARR Data Hub website. The parameters for the RORB model are outlined in Table 2.

Table 3: RORB Input Parameters

PARAMETER	PRE-DEVELOPED	POST-DEVELOPED
k_c	2.14	2.72
d_{av}	0.92 km	1.17 km
m	0.8	0.8
IL	19.00 mm	19.00 mm
CL	3.00 mm/hr	3.00 mm/hr

The results of the 1% and 20% AEP pre-developed flow from the RORB model are shown in Table 3, and the results are provided in Appendix C.

Table 4: Pre-developed peak flows for varying AEP (m^3/s)

	OUTFALL NW (CATCH A)	OUTFALL LAGOON (CATCH B-G, I-K)	OUTFALL SE (CATCH B-L)	OUTFALL SOUTH (CATCH M-O, EXTERNAL)	TOTAL FLOW
18% AEP flow (6 hr storm event) (Temporal Pattern 8)	0.37 m^3/s	1.62 m^3/s	1.75 m^3/s	2.66 m^3/s	4.00 m^3/s
1% AEP flow (2hr storm event) (Temporal Pattern 25)	1.40 m^3/s	5.44 m^3/s	5.71 m^3/s	9.43 m^3/s	14.54 m^3/s

The results of the 1% and 20% AEP post-developed flow from the RORB model are shown in Table 4, and the results are provided in Appendix D.

Table 5: Post-developed peak flows for varying AEP - undetained (m^3/s)

	OUTFALL NW (CATCH A)	OUTFALL LAGOON (CATCH B-G, I-K)	OUTFALL RB SE (CATCH L-P)	OUTFALL SE (CATCH B-G, I-P)	OUTFALL SOUTH (CATCH Q-X, EXTERNAL)	TOTAL FLOW
18% AEP flow (1.5 hr storm event) (Temporal Pattern 9)	1.25 m^3/s	0.96 m^3/s	3.46 m^3/s	3.72 m^3/s	5.32 m^3/s	10.20 m^3/s
1% AEP flow (1 hr storm event) (Temporal Pattern 23)	2.62 m^3/s	3.66 m^3/s	7.56 m^3/s	8.42 m^3/s	15.87 m^3/s	26.31 m^3/s

3.2 Sub-surface Drainage (20% AEP)

The Legal Point of Discharges for the subject site will be to existing open channel on the east, existing floodplain area on the south and existing drainage system on the north-western corner (Refer to Figure 6).

The subsurface drainage networks for the development will convey all pipe flows to these discharge points, via the proposed water quality treatment facilities located within the proposed retarding basins throughout the site. The pipe networks will be adequately sized to convey the 20% AEP flows through the network.

3.3 Subject Site Overland Flow

The Q_{gap} post-developed overland flow from the proposed site will be discharged to the future development site to the east and south via the proposed subdivisional roads (Refer to Figure 7).

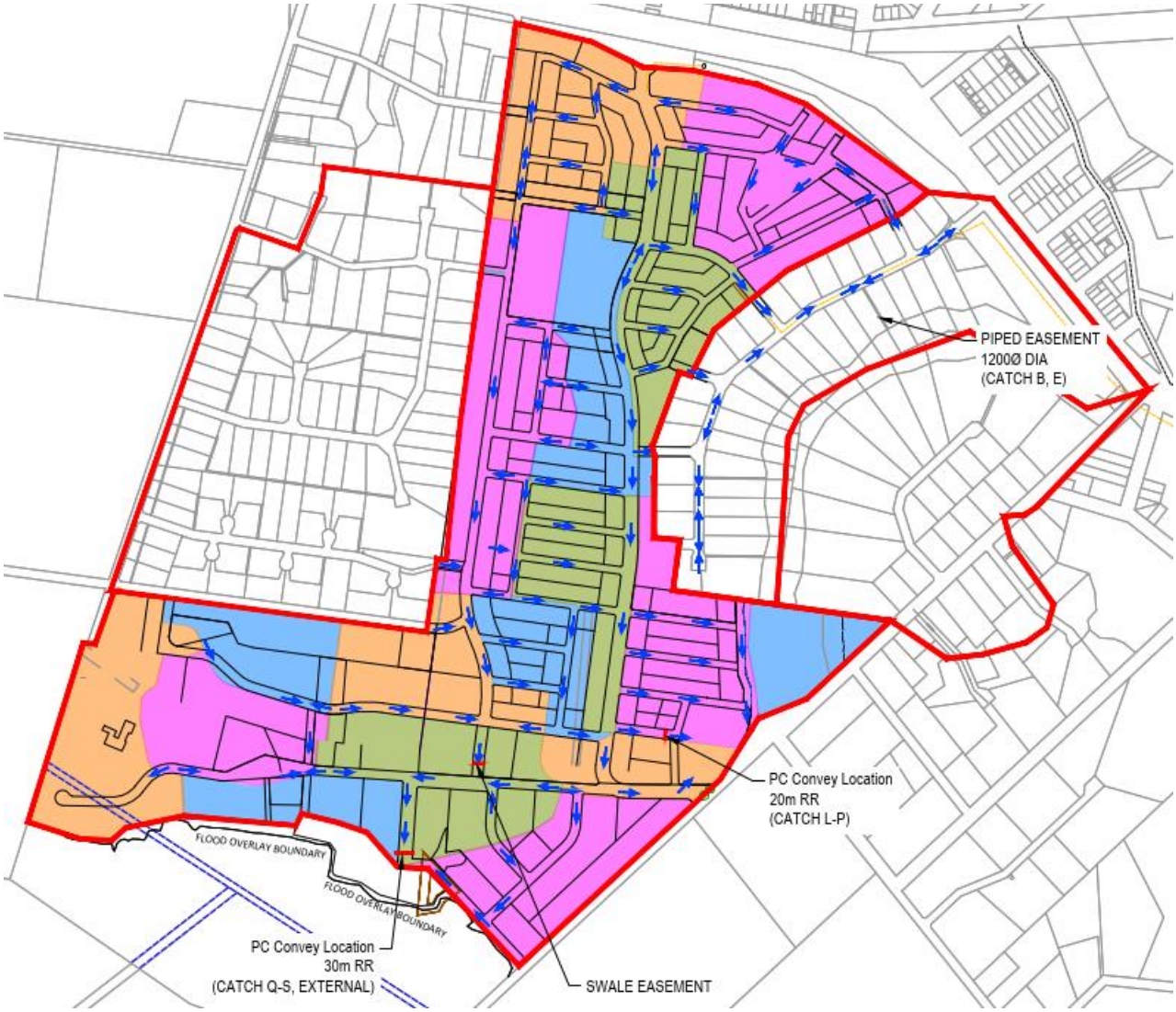


Figure 7: PC Convey Locations (Not to Scale)

Gap flow, which is the difference between the 1% AEP and 20% AEP post developed flows, was determined using the RORB calculations provided in Appendix D. The results are shown in Table 6.

Table 6: Peak flows within critical road reserves for varying AEP (m^3/s)

	20M RR (CATCH L-P)	30M RR (CATCH Q-S, EXTERNAL)	SWALE 2 (CATCH Q-R, EXTERNAL)
18% AEP flow (1.5 hr storm event) (Temporal Pattern 9)	2.05 m^3/s	3.72 m^3/s	4.53 m^3/s
1% AEP flow (1 hr storm event) (Temporal Pattern 23)	4.58 m^3/s	11.67 m^3/s	12.73 m^3/s
Gap Flow	2.53 m^3/s	7.95 m^3/s	8.20 m^3/s

The gap flow in the road reserve of 20m width, Catchment L-P (location shown in Figure 7), is expected to be 2.53 m^3/s.

The Q_{gap} overland flows through the site achieves 146mm freeboard with a minimum nature strip grade of 1 in 14. This is shown in a PC Convey check that was done for the site and is shown in Figure 8 and Appendix F. Therefore, a minimum 5 mm high batter is required at the front of lots.

The average velocity (V_{av}) of 0.94 m/s x average depth (D_{av}) of 0.20 m is 0.19 m^2/s, which is less than 0.35 m^2/s. The average depth of 0.20 m is less than 0.30 m. The gap flow is therefore within WGCMA flood safety criteria.

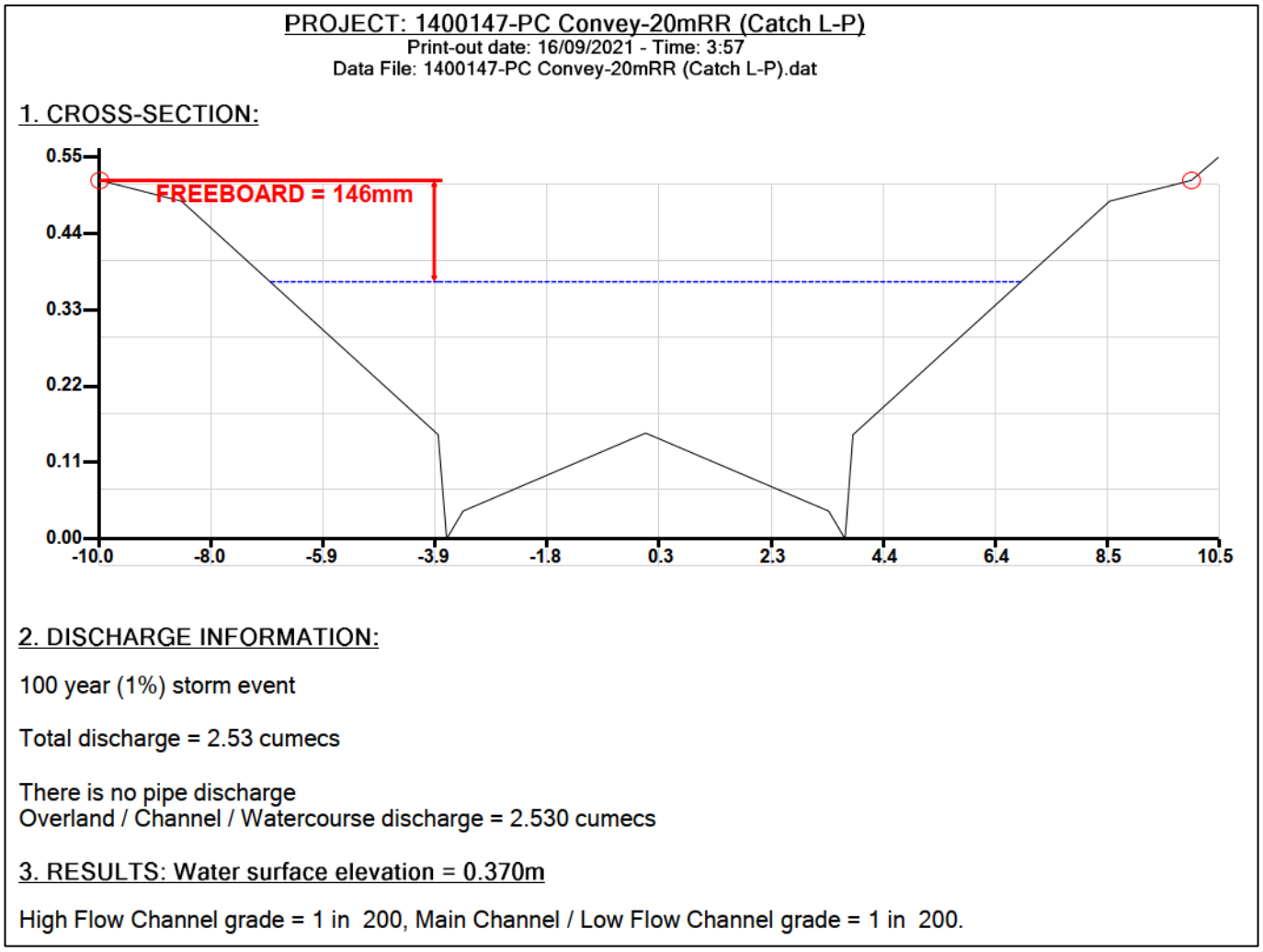


Figure 8: PC Convey Assessment for 20m Road Reserve (Not to Scale)

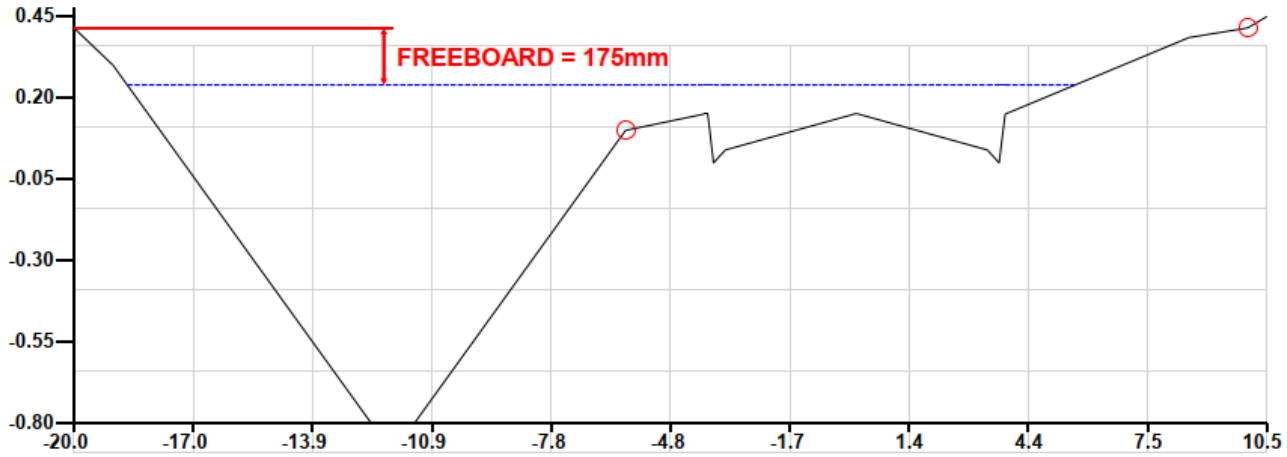
The flow in the road reserve of 30 m width, Catchment Q-S, External (location shown in Figure 7), is conservatively assumed to be 11.67 m^3/s. This the 1% AEP flow. This is because the overland flow upstream is conveyed via swales, and it is not confirmed whether the piped network will discharge into the swales located upstream or continue to be piped. This will be confirmed at Functional Design.

Due to the large flows being conveyed within the road reserve, and the road reserve being located within the low-density development, a 13 m wide swale was included to ensure lots achieve freeboard. The swale was designed as per the swale properties outlined in Table 7, and the nature strip grade to achieve freeboard was 1 in 20. This is shown in a PC Convey check that was done for the site and is shown in Figure 9 and Appendix F. The location of the swale is not fixed and can be placed on either side of the road, or alternatively within a median splitting the road into a dual carriageway. There will be a handful of driveways that will be crossing the swale on one side, which will have culverts sized to convey the 20% AEP flow underneath. The indicative sizing for each crossover is 1500 mm W x 750 mm box culvert. If for structural or cover reasons the culverts cannot be built, then an alternative of potentially splitting the road with a central swale may be looked at. The exact arrangement of the road reserve will be determined from further engineering design and considerations during the stage design.

The maximum depth within the road reserve component is 0.24 m, therefore the average depth is less than 0.30 m. The flow within the road reserve is therefore within WGCMA flood safety criteria.

PROJECT: 1400147-PC Convey-30mRR with Swale
Print-out date: 06/04/2022 - Time: 12:51
Data File: 1400147-PC Convey-30mRR with Swale.dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 11.67 cumecs

There is no pipe discharge
Overland / Channel / Watercourse discharge = 11.67 cumecs

3. RESULTS: Water surface elevation = 0.240m

High Flow Channel grade = 1 in 200, Main Channel / Low Flow Channel grade = 1 in 200.

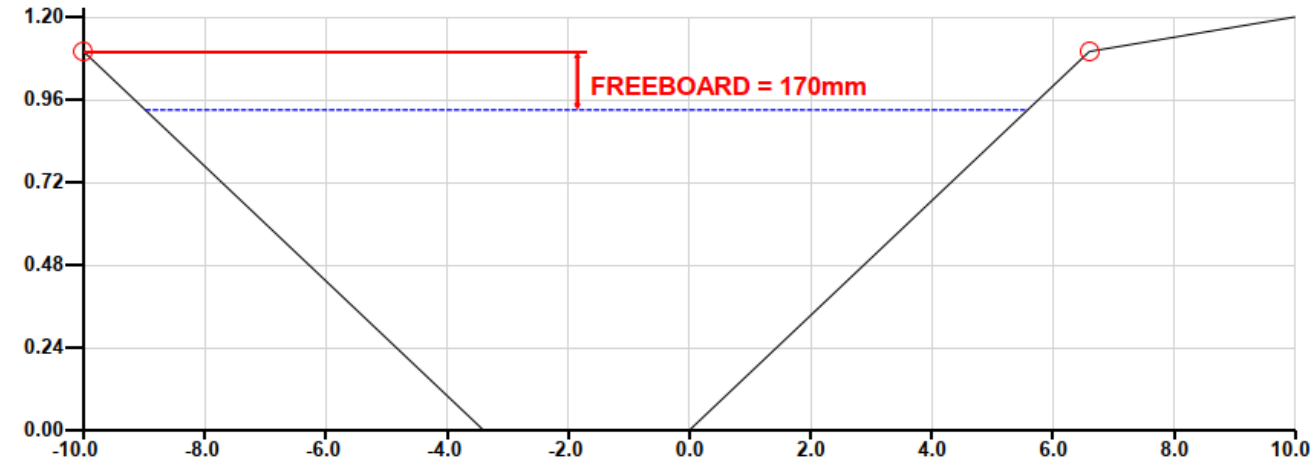
Figure 9: PC Convey Assessment for 30m Road Reserve (Not to Scale)

The flow in the Swale (Catchment Q-R, External – location shown in Figure 7), is conservatively assumed to be 12.73 m^3/s. This is the 1% AEP flow, as it is not confirmed whether the External catchment will discharge directly into the swales or low flow will be conveyed in the underground drainage network. This will be confirmed at Functional Design.

The overland flow achieves 170mm freeboard with a swale that has a depth of 1.1 m and top width of 14.6 m. The overall drainage reserve width is also 20 m to allow for maintenance access adjacent to the swale. This is shown in a PC Convey check that was done for the site and is shown in Figure 10 and Appendix F. The swale properties are provided in Table 7.

PROJECT: 1400147-PC Convey-Swale
Comment
Print-out date: 05/04/2022 - Time: 5:12
Data File: 1400147-PC Convey-Swale.dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 12.73 cumecs

There is no pipe discharge
Overland / Channel / Watercourse discharge = 12.73 cumecs

3. RESULTS: Water surface elevation = 0.930m

High Flow Channel grade = 1 in 160, Main Channel / Low Flow Channel grade = 1 in 160.

Figure 10: PC Convey Assessment for Swale 2 (Not to Scale)

The swale within drainage reserve / easement has been sized accordingly to convey the gap flow with 170 mm freeboard. The swale within the road reserve has been sized to convey the gap flow with 175 mm freeboard. Their properties are shown in Table 7.

Table 7: Swale properties

	DEPTH	SIDE SLOPE	CHANNEL BED SLOPE	TOP WIDTH	BASE WIDTH	FREEBOARD
30m RR Swale	0.9 m	1 in 6	1 in 200	11.5 m	1.1 m	0.175 m
Swale	1.1 m	1 in 6	1 in 160	16.6 m	3.40 m	0.17 m

Catchment B & E discharge through The Ridge Estate, which is located east of the proposed development. An easement is located within Lot 30 to convey the overland flow from The Ridge, which also includes the flow from Catchment B & E within the proposed development. The design plans and location of the easement are shown in Figure 11 and Figure 12, and the design plans are included in Appendix G.

The flow that is to be conveyed with the easement is combined flow from Catchment B and Catchment E, which is 4.66 m^3/s. This can be conveyed completely within a 1200 dia. drainage pipe with a grade of 1 in 30. 1 in 30 is the existing slope within Lot 30. Inlet pits at the low point (CH305.79) will be adequately sized to capture the gap flow.

The current drain is a 450 dia. RCP, which will need to be replaced and upgraded to the required 1200 dia. RCP. The pipe will also require an easement for maintenance purposes, which will be 2 m as per the Infrastructure Design Manual (IDM).

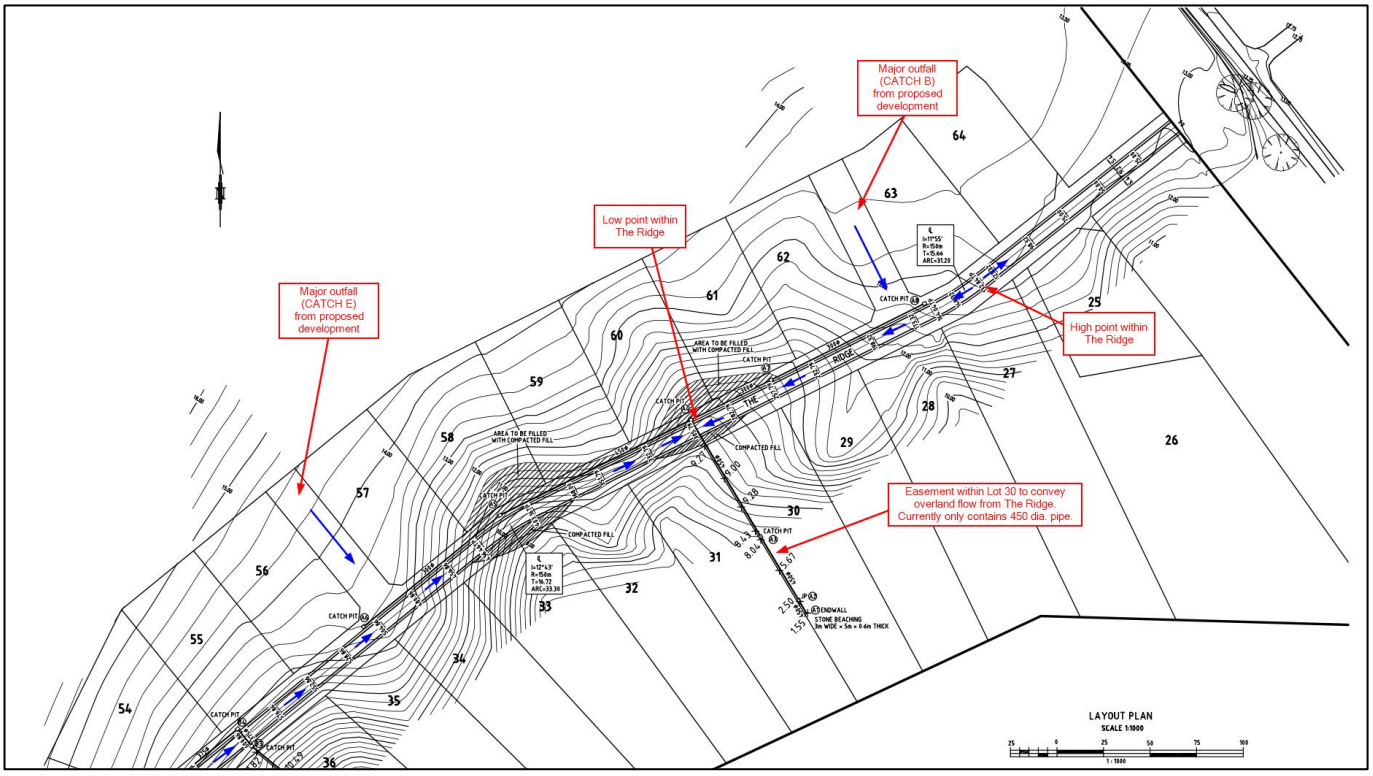


Figure 11: The Ridge Estate located east of proposed development (1 of 2) (Not to Scale)

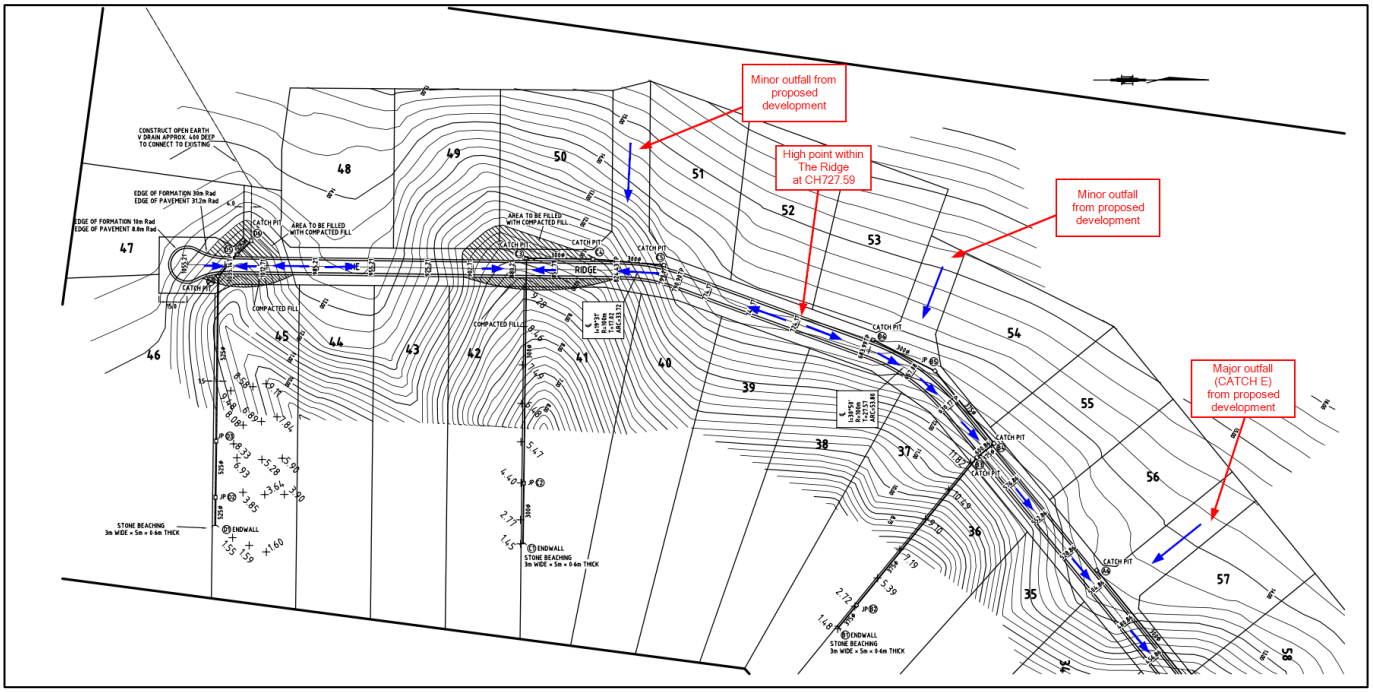


Figure 12: The Ridge Estate located east of proposed development (2 of 2) (Not to Scale)

3.4 Sizing of Detention Storages

The sizing of the sediment basin retarding basins (SBRB's) has been governed by the storage required to retard the flows back to predeveloped. Each of the SBRB's have been sized with 1 in 6 batter slopes to the NTWL. The detained

peak flows are provided in Table 8, and the indicative retarding basin properties of the SBRB's have been provided in Table 9. The indicative locations are shown in Figure 13.

Table 8: Detained peak flows for varying AEP (m^3/s)

	OUTFALL NW (CATCH A)	OUTFALL LAGOON (CATCH B-G, I-K)	OUTFALL SE (CATCH B-G, I-P)	OUTFALL SOUTH (CATCH Q-X, EXTERNAL)	TOTAL FLOW
18% AEP flow (4.5 hr storm event) (Temporal Pattern 5)	0.27 m^3/s	1.34 m^3/s	1.89 m^3/s	1.96 m^3/s	3.99 m^3/s
1% AEP flow (2 hr storm event) (Temporal Pattern 28)	0.95 m^3/s	4.70 m^3/s	5.86 m^3/s	7.53 m^3/s	13.65 m^3/s

Table 9: Indicative Retarding Basin properties of SBRB's

LOCATION	STORAGE REQ'D (1% AEP FLOOD LEVEL)	SURFACE AREA (TOP OF BANK)	DEPTH (TOP OF BANK)	BATTER SLOPES	OUTFALL ARRANGEMENT
SBRB NW	2,670 m^3	3,510 m^2	1.2 m	1 in 6	2 x 525mm Ø pipe (subject to detail design)
SBRB SE	14,700 m^3	14,220 m^2	1.8 m	1 in 6	2 x 525mm Ø pipe (subject to detail design)
SBRB South	27,000 m^3	18,570 m^2	1.7 m	1 in 6	2 x 900mm (W) x 2100mm (H) BC (subject to detail design)
TOTAL	**44,370 m^3**				

The above peak flows and detention storage volumes results indicate that the 1% AEP post development peak flows can be detained to the pre-development level by providing a total detention storage of 43,370 m^3.

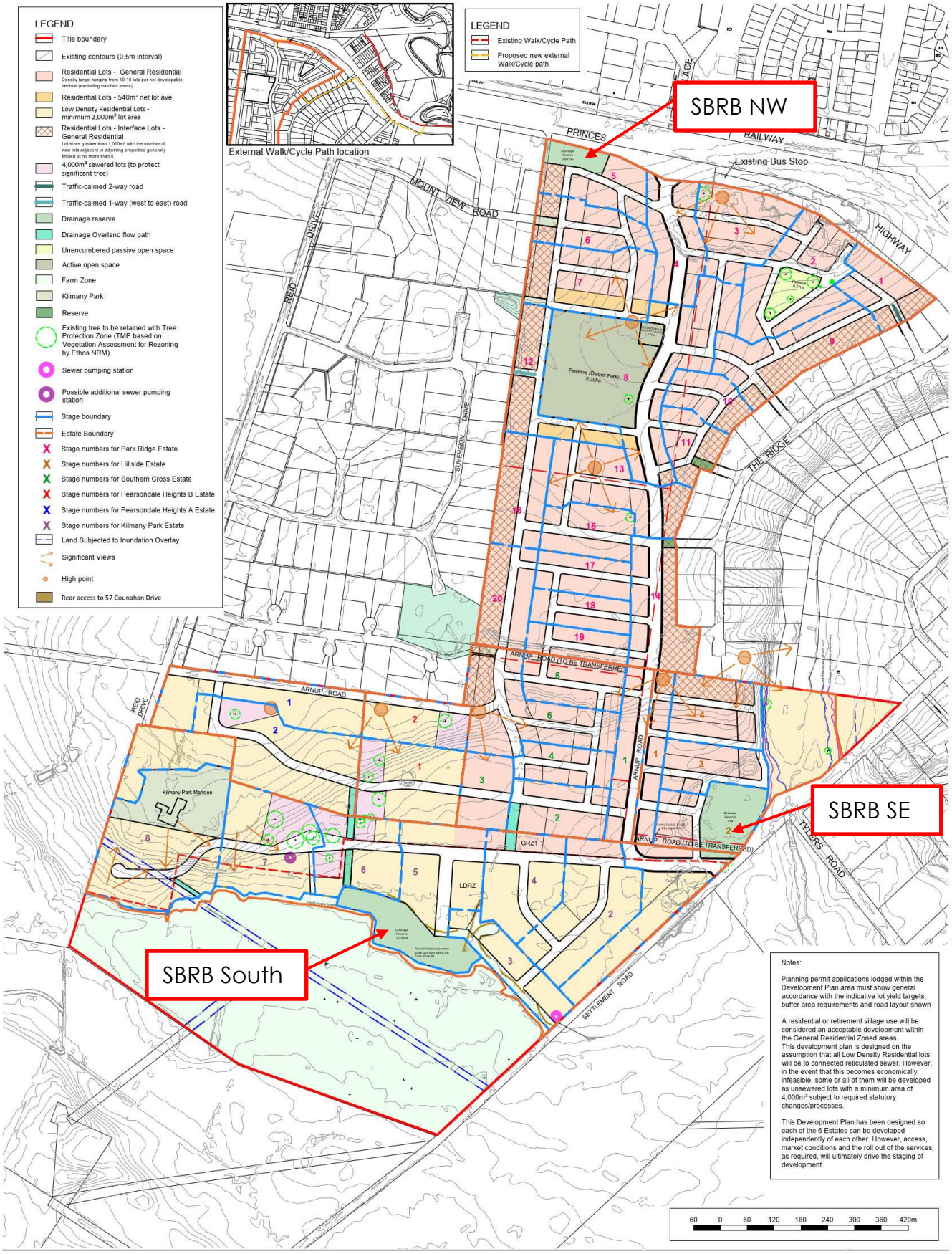


Figure 13: Location of SBRB's (Not to Scale)

4 STORMWATER QUALITY MANAGEMENT

Stormwater quality treatment objects requires all developments to provide minimum best-practice water quality treatment. The current standard according to the Urban Stormwater Best Practice Environmental Management Guidelines (BPEMG) are:

- 70% removal of the Total Gross Pollutant Load (Litter);
- 80% removal of Total Suspended Solids (TSS);
- 45% removal of Total Phosphorous (TP); and
- 45% removal of Total Nitrogen (TN).

Stormwater quality modelling was conducted using MUSIC (Model for Urban Stormwater Improvement Conceptualisation) for the proposed development site.

The layout of the MUSIC Model is shown in Figure 14 below and results of the MUSIC model are shown in Table 10. The proposed treatment will be 3 sedimentation basins located within the base of retarding basins, 2-kL rainwater tanks installed at each lot for re-use, as well as utilizing the existing 40 ML Kilmaney Park dam as part of a stormwater harvesting system to irrigate surrounding farm land. The proposed stormwater harvesting scheme (Section 5.2) will receive flows from the SBRB South and is included in the model to assess the benefit to the overall treatment train.

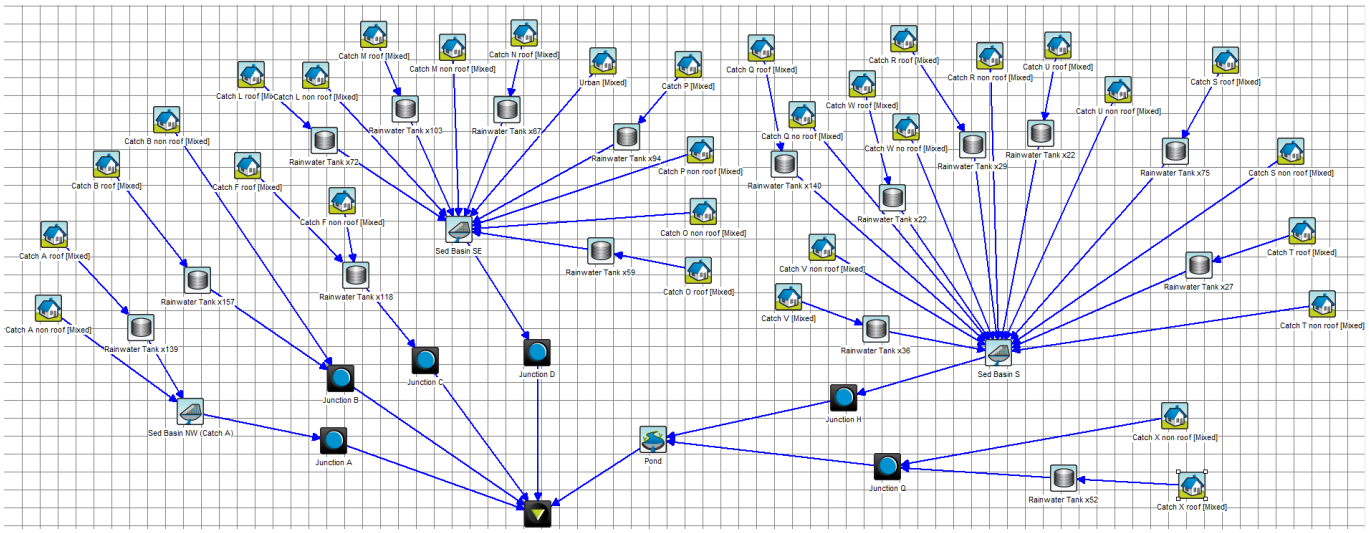


Figure 14: MUSIC Model Layout

Table 10: MUSIC Model Results

SITE TREATMENT	% REMOVAL	BPEMG TARGET % REMOVAL
Total Suspended Solids	86.2	80
Total Phosphorous	70.9	45
Total Nitrogen	49.5	45
Gross Pollutants	96.3	70

As shown in Table 10, the proposed treatment train can meet the best practice BPEMG standard. Details of the sedimentation basins are shown in Table 11. Location of the sediment basins are shown in the previous Figure 13.

Table 11: Indicative Sediment Basin Properties of SBRB's

LOCATION	SEDIMENTATION BASIN AREA	TOTAL DRAINAGE RESERVE AREA
SBRB NW	200 m^2	6,900 m^2
SBRB SE	400 m^2	20,000 m^2
SBRB South	200 m^2	24,300 m^2
TOTAL	800 m^2	51,200 m^2

A total drainage reserve area of approximately 51,200 m^2 for the proposed SBRB's, and 2-kL rainwater tanks for each Lot will be required to provide stormwater treatment for the development site, as well as the conversion of the existing dam to the south-west into a stormwater harvesting and irrigation treatment as supplementary treatment. Please note the drainage reserve area is dictated by the retarding basin storage volume required.

The design of the sedimentation basins will be in accordance with the specific technical details contained in the design and construction sections within the WSUD Technical Manual. The detailed designs of these WSUD assets have not yet been completed and these will be submitted to Council and CMA during the detailed design phase of the project.

5 STORMWATER VOLUME/WATER BALANCE ASSESSMENT

A Water Balance model was undertaken to assess the increase in the volume of runoff to the existing dam located to the external south of proposed SBRB south. This was to ensure that is no increase in the volume offsite as the downstream receiving waterway is constrained by a levee downstream of Bristows Lane.

5.1 Water Balance

A MUSIC model was created using the proposed development site (excluding Catchment A which discharges to the NW), and 2-kL rainwater tanks provided for each Lot within those catchments. Rainfall data for this catchment was available from 1954-2010. The period 1991-2000 was chosen as this was the period that had a 10-year average closest to the total average of 1954-2010 (ensuring that no excessively wet / dry period were selected).

The re-use requirements of the lots were:

- New residential (>735 m^2) = 0.275 kL/house/day
- New residential (350 – 735 m^2) = 0.22 kL/house/day

(Source: DELWP IWMS Preliminary Assessment Method_Oct 15)

The results of the flux files are shown in Table 12. The calculations are provided in Appendix H.

Table 12: Flux calculations for Development Site

LOCATION	PRE-DEVELOPED	POST-DEVELOPED
Rainfall	77.6 ML/year	328 ML/year
Water usage	-	66.3 ML/year
Volume discharging from site	77.6 ML/year	261.7 ML/year
Difference post-developed volume to pre-developed volume	**184.1 ML/year**	

As shown in Table 12, the increase in rainwater volume discharging to the south is 184.1 ML/year. In order to ensure no negative impacts on the downstream landowners, this excess volume will be potentially diverted to the existing dam located adjacent to the Kilmany Park Heritage site and be pumped and used for irrigation. The location of the existing dam is shown in Figure 15.

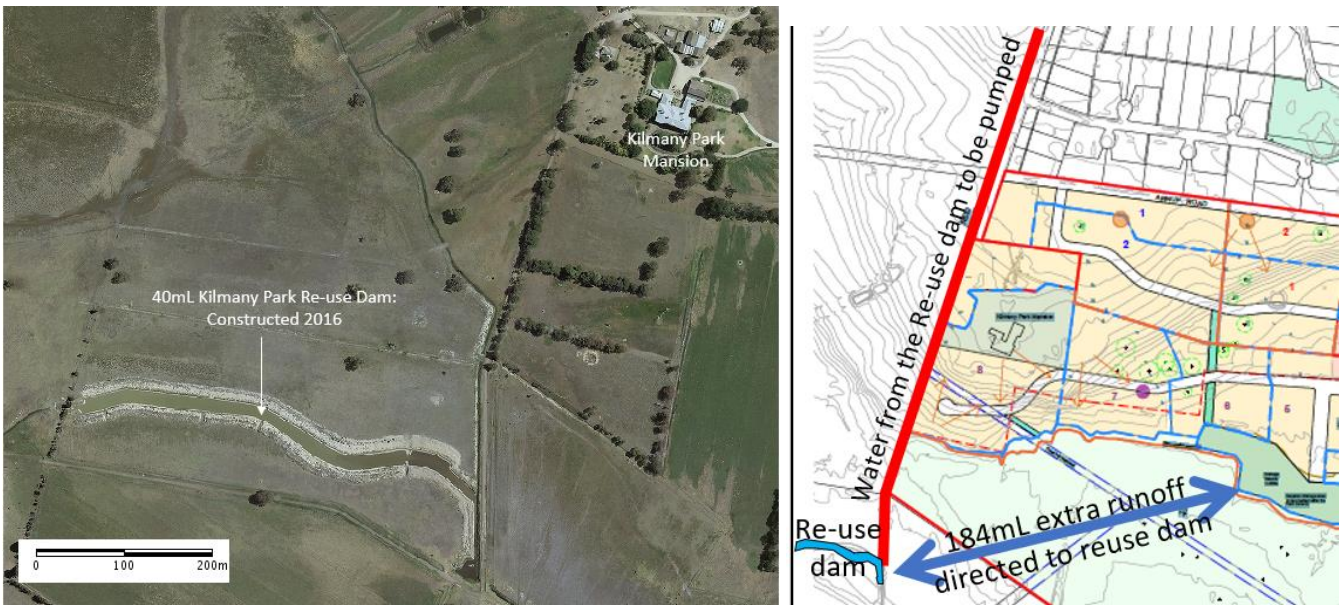


Figure 15: Existing dam located adjacent to Kilmany Park Heritage site

5.2 Stormwater Harvesting System

Kilmany Park is a working dairy farm that utilises significant amounts of water irrigating a 56 hectare laser graded area on the west side of Reid Drive and paddocks on the south side of the development plan area. It also supplies numerous cattle troughs spread across the overall farm. The proposed development plan will only lead the loss of a small part of the farm to residential lots.

The current sources of irrigation supply for the farm are:

- stormwater runoff from farmland within the development plan area the adjoining estates to its west. This stormwater is presently collected and directed to a 40ML reuse dam to the south of Kilmany Park via open channels in the southern portion of the farm adjacent to Settlement Road. The location and nature of this dam can be seen in ***Figures 16*** & ***17***;
- water taken from the Thomson River under a 555 ML/year right. This water is pumped to a dam at the southwest corner of Reid Drive and the Princes Highway via a 250mm pipe running through existing easements. This dam and the pumping station that feeds water to the series of irrigation channels running through the 56 hectares of laser graded paddocks can be seen in ***Figures 18*** & ***19***. The pumping station at the Thomson River that feeds the Kilmany Park Farm can be seen in ***Figure 20***; and,
- a 422.4 ML/year groundwater licence.

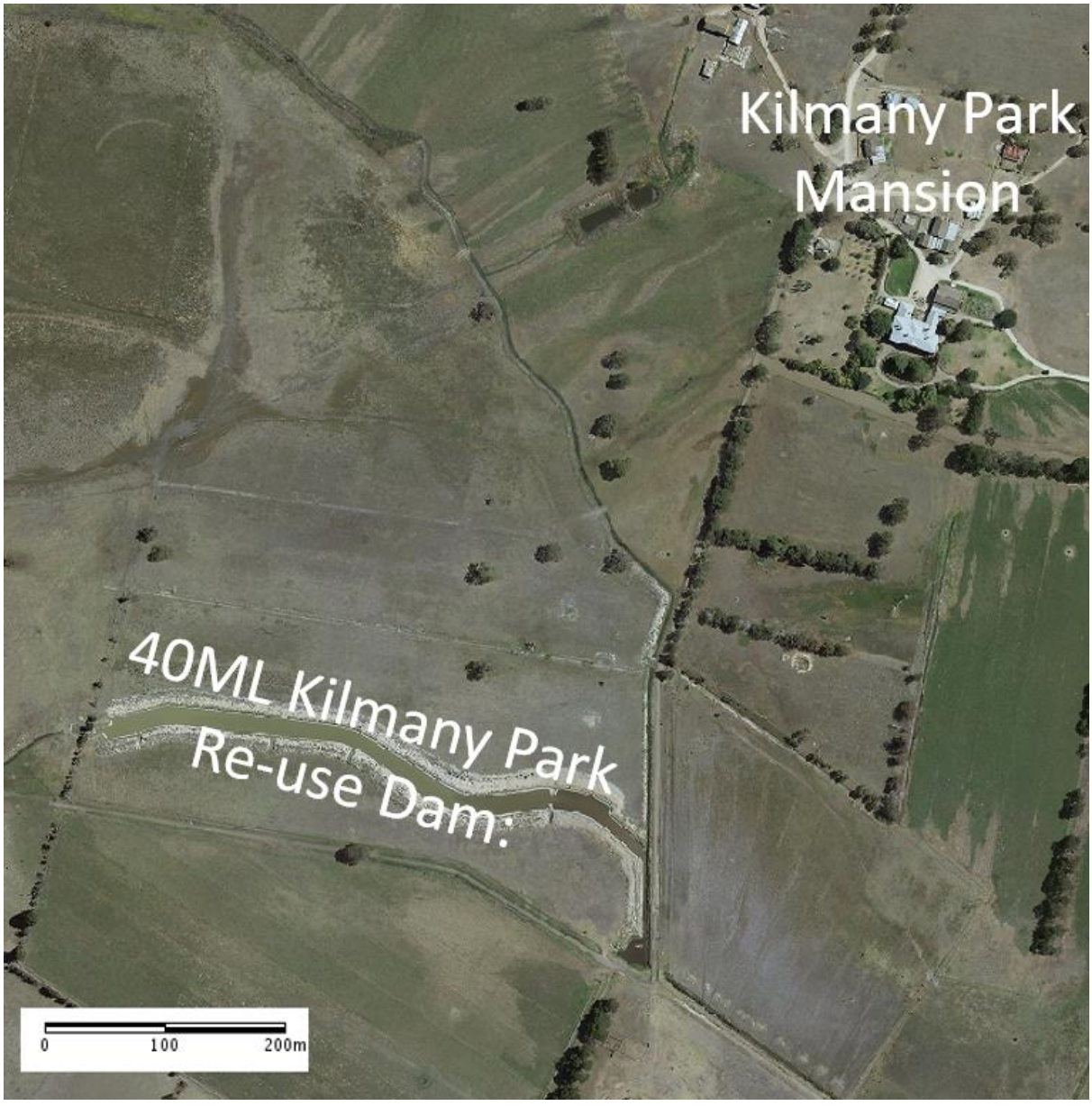


Figure 16: Aerial photo showing the location of the existing farm re-use dam located to the south of the Kilmany Park Mansion



Figure 17: Photo showing the existing southern Kilmany Park reuse dam to the south of the Kilmany Park Mansion and the pumping system that presently sends water to sprinkle irrigators in the southern portion of the farm



Figure 18: Aerial photo showing the location of the existing farm re-use dam located at the southwest corner of Reid Drive and the Princes Highway



Figure 19: Photo showing the the existing farm re-use dam located at the southwest corner of Reid Drive and the Princes Highway and the pumping station that sends water from it to the irrigation channels



Figure 20: Photo of the pumping station at the Thomson River via which the 550ML water right allows the pumping of water to Kilmany Park Farm via a 250mm underground pipe



Figure 21: Photo of the connection of the existing 250mm transfer pipe to the pumping station at the Thompson River

In order to ensure that there are no negative impacts on the downstream landowners as a result of the proposed development, the excess 184.1ML/year volume created by it will be diverted to the existing reuse dam located to the south of the Kilmany Park Homestead via existing channels in the southern portion of the farm. From there it will be pumped north to allow its use for irrigation across both the 56 hectare site on the west side of Reid Drive that is used for grazing as part of the Kilmany Park dairy farm and other parts of the farm.

This outcome has the potential to reduce the amount of water extracted from the Thomson River under the 555ML water license, allowing that water to be returned as environmental flow. It will also be feasible for excess water from the estate to be returned to the Thomson River through the irrigation pipe if there is excess by modifying it to allow water to flow back to the river via a gravity feed. The alignment along which water will be pumped between the southern reuse dam and the dam at the southwest corner of the Princes Highway and Reid Drive is shown in ***Figure 22***.

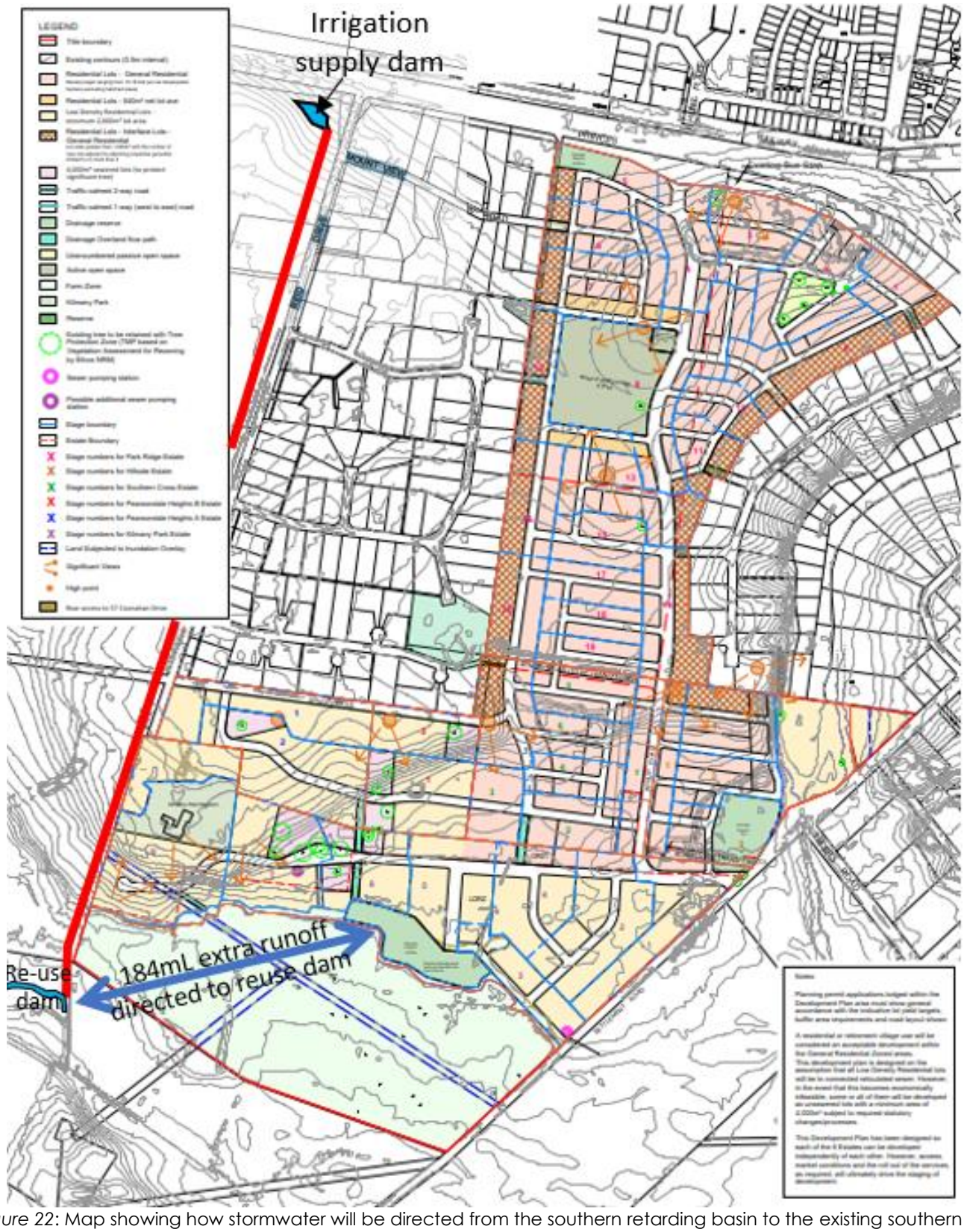


Figure 22: Map showing how stormwater will be directed from the southern retarding basin to the existing southern re-use dam and then pumped north to allow irrigation on the Kilmany Park dairy farm

Figure 23 shows how the full stormwater harvesting system will operate with respect to the location of floodplains, irrigated paddocks, adjoining developments and the existing infrastructure on the Thomson River.

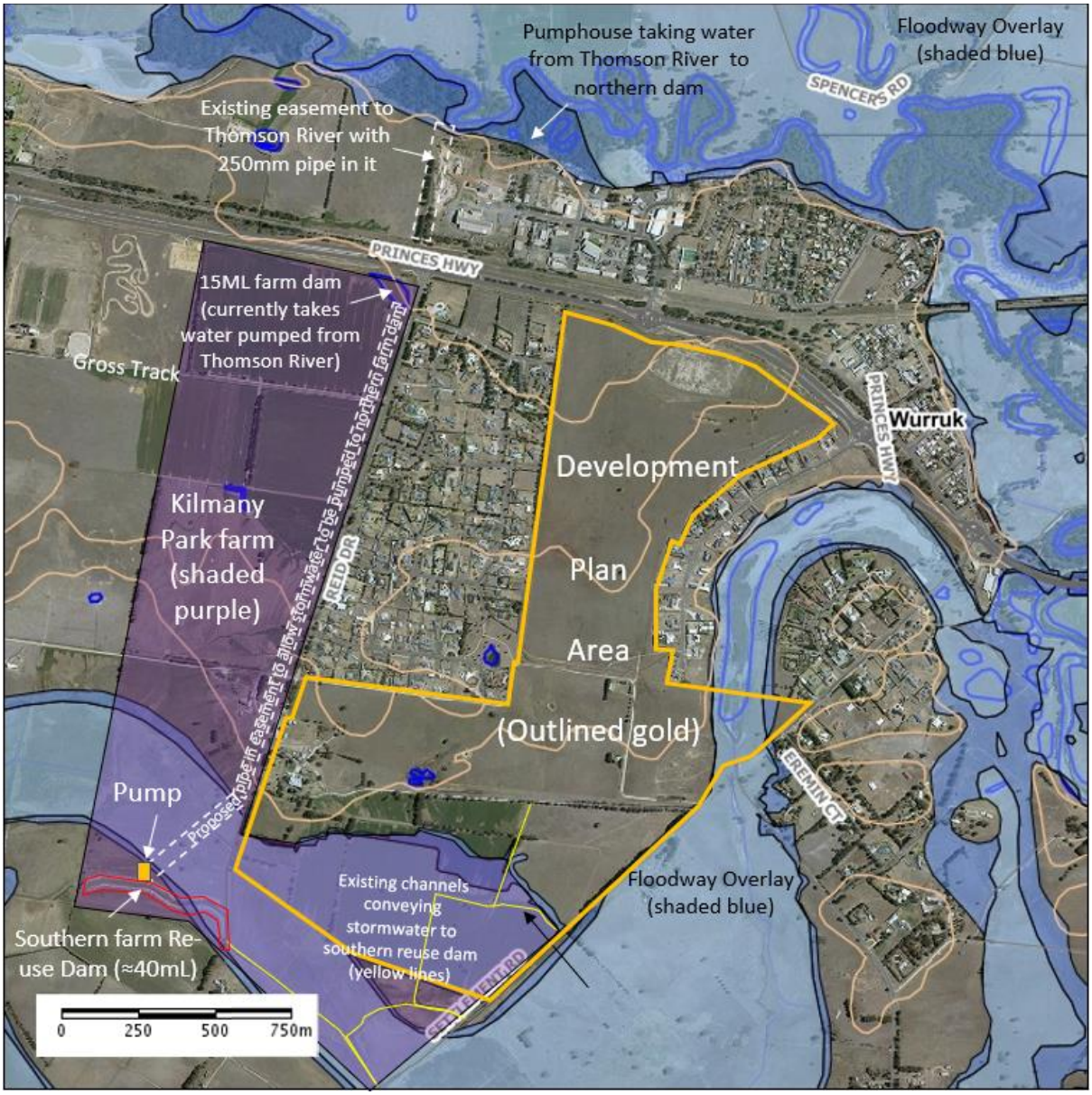


Figure 23: Map showing how the stormwater harvesting system will operate within the existing irrigation system on the Kilmany Park dairy farm

Discussions were also had with Council regarding the potential integrated water management benefits to the proposed sports fields if the harvested stormwater is used for irrigation there as well. However, Council expressed that they do not wish to implement a stormwater re-use scheme for the fields, and to exclude them from any stormwater harvesting scheme. Hence, all of the excess runoff will be used by the Kilmany Park farm.

The following works will be required to facilitate this stormwater harvesting system:

- The pump at the southern reuse dam be modified and relocated the location shown in **Figure 23**;
- 2 kilometres of pipe be laid along the alignment shown in ***Figure 23*** to allow water to be pumped between the 40ML reuse dam and the 15ML dam at the southwest corner of Reid Drive and Princes Highway;
- Modifications be made to the supply pipe from the Thomson River to allow it to also act as an outlet pipe to take excess flow back to the river when storage is at capacity on the Kilmany Park farm.

These materials and works will become an item in the Developer Contribution Plan to ensure fair distribution of costs amongst the estates benefitting from the capacity to harvest and reuse excess stormwater.

The result of the modifications to the irrigation system to allow the use of the excess runoff from the proposed development plan area will be:

- A reduction in the amount of water pumped from the Thomson River under licence by an average of 184 ML/year; and,
- Prevention of external properties to the south of the development plan area from being negatively impacted by additional stormwater outfall volumes from the proposed development; and,
- A reduction in the extent of stormwater treatment required in Council assets.

To ensure that the proposed Stormwater Re-use System is operational in perpetuity, it is understood that a Section 173 agreement will be required through any permit granted for the Kilmany Park Estate. This agreement will require that the southern re-use dam and all related stormwater re-use infrastructure as set out in this strategy must be maintained to the satisfaction of Council in perpetuity.

Any infrastructure to direct stormwater to the proposed re-use dam will be designed in such a manner that in the event that re-use dam is no longer required or is unable to take additional stormwater flows, stormwater is directed through the SBRB South basin to existing overland flow paths in accordance with the pre-developed rate of flow, planning scheme provisions and EPA's BPEMG. Operation and management of this stormwater infrastructure will be subject to design and a section 173 agreement.

6 CONCLUSION

This report has provided a drainage management strategy for the proposed South Wurruk Development Plan. The strategy provides a methodology for the management of stormwater on the subject site, which would result in:

- Construction of drainage assets to meet the likely requirements of West Gippsland CMA and Council, including 1% AEP capacity road reserves and underground drainage for the 20% AEP storm event as required;
- Volumes of stormwater detention requirements of 45,780 m^3 will be required to detain the proposed development site. This volume will be contained within the proposed 3 retarding basins located throughout the site, to cater for the designated sub-catchment areas;
- Stormwater quality treatment system required to meet BPMEG standard will be 3 sedimentation basins, 2-kL rainwater tanks to service each Lot, and a stormwater harvesting scheme including a 40 ML storage to irrigate neighbouring farm land. The sediment basins will be located within the proposed retarding basins;
- Installation of a pump & irrigation to remove the excess volume that is discharged into the existing dam (located to the external south of proposed SBRB south), to negate any negative impacts to native flora and fauna and neihbouring properties with additional volume runoff generated by future development.

The above strategy can be implemented and all WGCMA and Council's development requirements can be achieved, with no net effect on the downstream properties.

BEVERIDGE WILLIAMS & CO PTY LTD

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Approved for issue by

Chris Curnow
Project Manager

APPENDIX A: INDICATIVE SUBDIVISION PLAN

LEGEND

- Title boundary
- Existing contours (0.5m interval)
- Residential Lots - General Residential
  Density target ranging from 10-16 lots per net developable hectare (excluding hatched areas)
- Residential Lots - 540m² net lot ave
- Low Density Residential Lots - minimum 2,000m² lot area
- Residential Lots - Interface Lots - General Residential
  Lot sizes greater than 1,000m² with the number of new lots adjacent to adjoining properties generally limited to no more than 4
- 4,000m² sewered lots (to protect significant tree)
- Traffic-calmed 2-way road
- Traffic-calmed 1-way (west to east) road
- Drainage reserve
- Drainage Overland flow path
- Unencumbered passive open space
- Active open space
- Farm Zone
- Kilmany Park
- Reserve
- Existing tree to be retained with Tree Protection Zone (TMP based on Vegetation Assessment for Rezoning by Ethos NRM)
- Sewer pumping station
- Possible additional sewer pumping station
- Stage boundary
- Estate Boundary
- X Stage numbers for Park Ridge Estate
- X Stage numbers for Hillside Estate
- X Stage numbers for Southern Cross Estate
- X Stage numbers for Pearsondale Heights B Estate
- X Stage numbers for Pearsondale Heights A Estate
- X Stage numbers for Kilmany Park Estate
- Land Subjected to Inundation Overlay
- Significant Views
- High point
- Rear access to 57 Counahan Drive



External Walk/Cycle Path location

LEGEND

- Existing Walk/Cycle Path
- Proposed new external Walk/Cycle path

PRINCES HIGHWAY
HUNT PLACE
RAILWAY
Existing Bus Stop
MOUNT VIEW ROAD
REID DRIVE
SOVEREIGN DRIVE
THE RIDGE
ARNUP ROAD
ARNUP ROAD (TO BE TRANSFERRED)
TYLERS ROAD
SETTLEMENT ROAD
Kilmany Park Mansion
Reserve (District Park) 5.30ha
Drainage Reserve 0.68ha
Reserve 0.77ha
Drainage Reserve 2ha
Drainage Reserve 2.430ha
GRZ1
LDRZ
FZ
Required drainage areas to be provided within the Farm Zone lot
POWERLINE TO BE RELOCATED

Notes:

Planning permit applications lodged within the Development Plan area must show general accordance with the indicative lot yield targets, buffer area requirements and road layout shown

A residential or retirement village use will be considered an acceptable development within the General Residential Zoned areas.
This development plan is designed on the assumption that all Low Density Residential lots will be to connected reticulated sewer. However, in the event that this becomes economically infeasible, some or all of them will be developed as unsewered lots with a minimum area of 4,000m² subject to required statutory changes/processes.

This Development Plan has been designed so each of the 6 Estates can be developed independently of each other. However, access, market conditions and the roll out of the services, as required, will ultimately drive the staging of development.

60 0 60 120 180 240 300 360 420m

Development Plan

Wurruk Growth Area

Jelaryl, Barry Hollonds, Pearsonsdale Heights, and Park Ridge Investment

Beveridge Williams
development & environment consultants
Melbourne ph : 03 9524 8888
www.beveridgewilliams.com.au

Version	Date	Description	Drafted	Approved
05	13.10.21	Amedments as per Council comments	MJ	WEB
06	19.10.21	Amedments as per Council comments	MJ	WEB
07	15.03.22	Amedments as per Council comments	MJ	WEB
08	18.03.22	Amedments as per Council comments	MJ	WEB
09	13.04.22	Amedments as per Council comments	WEB	WEB

Date: 13.04.22
Version No: 09
Job No: 1400147
Scale (A1): 1:3750
(A3): 1:7500

K:\JOBS DATA\1400147 - WURRUK REZONING APPLICATION_LAN\00\CAD\1400147_UD_BASE01.DWG

APPENDIX B: RATIONAL METHOD CALCULATION

Pre-Developed Flow Calculations

Client:	Goldmate	Date:	10/02/2015
Project:	2175 Smiths Lane & 2125 Thompson Road, Clyde North (WEST)		
Subject:	PRE-DEVELOPMENT FLOW CALCULATIONS		
Job No:	1800297	By:	AH

Location : Sale

ARI Year : 100

Coefficients						
a	b	c	d	e	f	g
3.88505	-0.64157	-0.01684	0.00598	-0.00016	0.00020	-0.00007

INPUT 1 2 3 4A 5A 6

Catchment	Area	Catchment Category	Catchment Type (For Fp)	Calculated Tc	Manual Input Tc	Selected Tc	Selected f_p	Weighted f_p	Calculated C 100	Manual Input C	Selected C 100	Ae	SAe	I 100	Q 100
	ha			mins	mins	mins						ha	ha	mm/hr	m^3/s
Site Catchment	266.380	RURAL1	Rural - Environmental	66.17		66.17	0.15	0.150	0.331		0.331	88.28	88.284	45.70	11.207
TOTAL	266.380	RURAL1		66.17		66.17		0.150	0.331				88.284	45.70	11.207

Tc Calculated using :

$$t_c = 0.76 \times A^{0.38}$$

Equation 5.4 AR&R

Weighted Frac Imperv using :

$$f = \sum \left(f_{area\ 1} \times \frac{A_{area\ 1}}{A_{total}} \right) + \left(f_{area\ 2} \times \frac{A_{area\ 2}}{A_{total}} \right)$$

Go to Fraction Impervious Table

C10 Calculated using :

$$C^1_{10} = 0.1 + 0.0133\left({}^{10}I_1 - 25\right)$$

$$C_{10} = 0.9 \times f + C^1_{10} \times (1 - f)$$

Equation 14.11 and 14.12 AR&R

Q Calculated using :

$$Q = \frac{A_e \times i}{360}$$

Rational Method

Directions:

1 Enter longest length of Catchment
2 Enter average slope of Catchment (Metre/Metre)
3 Choose surface type of catchment from drop down list (See n value table)
4 Enter Area of Catchment (Ha)
5 Choose Catchment category to determine fraction impervious
6 Sum effective areas of catchments to determine Q

APPENDIX C: PRE-DEVELOPED RORB RESULTS

RORBWin Batch Run Summary
****

Program version 6.45 (last updated 20th March 2019)
Copyright Monash University and Hydrology and Risk Consulting

Date run: 26 Apr 2021 10:32

Catchment file : K:\Jobs Data\1400147 - Wurruk rezoning application_Wat\Models\RORB\Pre Dev\SWMS REV E\1400147-RORB-PreDev_SWMS REV E.catg
Rainfall location: User defined
Temporal pattern : ARR2016 point temporal patterns
Spatial pattern : Uniform
Areal Red. Fact. : Based on ARR 2016 (Book 2 Chapter 4)
Loss factors : Constant with ARI

Parameters: kc = 2.14 m = 0.80

Loss parameters	Initial loss (mm)	Cont. loss (mm/h)
	19.00	3.00

Peak	Description
01	Calculated hydrograph, Catch B
02	Calculated hydrograph, Catch E
03	Calculated hydrograph, Catch H
04	Calculated hydrograph, Lagoon outfall (Catch B-K)
05	Calculated hydrograph, Catch L
06	Calculated hydrograph, SE corner site discharge
07	Special storage : Ex. U/S RB - Outflow
08	Special storage : Ex. U/S RB - Inflow
09	Calculated hydrograph, Catch M-N, External
10	Calculated hydrograph, Catch M-O,External (South)
11	Calculated hydrograph, Catch A
12	Calculated hydrograph, Entire Site

Run	Duration	AEP	TPat	Rain(mm)	ARF	Peak0001	Peak0002	Peak0003	Peak0004	Peak0005	Peak0006	Peak0007	Peak0008	Peak0009	Peak0010	Peak0011	Peak0012

1	10 min	20%	1	11.60	0.94	0.0091	0.0596	0.0166	0.0697	0.0143		
0.0724	0.7543	2.0702	0.2239	0.2334	0.0271	0.2819						
1	10 min	20%	2	11.60	0.94	0.0091	0.0596	0.0166	0.0697	0.0143		
0.0724	0.7543	2.0702	0.2239	0.2334	0.0271	0.2819						
1	10 min	20%	3	11.60	0.94	0.0091	0.0596	0.0166	0.0697	0.0143		
0.0724	0.7543	2.0702	0.2239	0.2334	0.0271	0.2819						
1	10 min	20%	4	11.60	0.94	0.0091	0.0596	0.0166	0.0697	0.0143		
0.0724	0.7543	2.0702	0.2239	0.2334	0.0271	0.2819						
1	10 min	20%	5	11.60	0.94	0.0091	0.0596	0.0166	0.0697	0.0143		
0.0724	0.7543	2.0702	0.2239	0.2334	0.0271	0.2819						
1	10 min	20%	6	11.60	0.94	0.0091	0.0596	0.0166	0.0697	0.0143		
0.0724	0.7543	2.0702	0.2239	0.2334	0.0271	0.2819						
1	10 min	20%	7	11.60	0.94	0.0091	0.0596	0.0166	0.0697	0.0143		
0.0724	0.7543	2.0702	0.2239	0.2334	0.0271	0.2819						
1	10 min	20%	8	11.60	0.94	0.0091	0.0596	0.0166	0.0697	0.0143		
0.0724	0.7543	2.0702	0.2239	0.2334	0.0271	0.2819						
1	10 min	20%	9	11.60	0.94	0.0091	0.0596	0.0166	0.0697	0.0143		
0.0724	0.7543	2.0702	0.2239	0.2334	0.0271	0.2819						
1	10 min	20%	10	11.60	0.94	0.0091	0.0596	0.0166	0.0697	0.0143		
0.0724	0.7543	2.0702	0.2239	0.2334	0.0271	0.2819						
2	15 min	20%	1	14.30	0.95	0.0126	0.0827	0.0232	0.0956	0.0199		
0.0994	1.1487	2.2360	0.2868	0.3007	0.0376	0.3670						
2	15 min	20%	2	14.30	0.95	0.0126	0.0827	0.0232	0.0956	0.0199		
0.0994	1.1442	2.1761	0.2869	0.3008	0.0376	0.3671						
2	15 min	20%	3	14.30	0.95	0.0126	0.0827	0.0232	0.0956	0.0199		
0.0994	1.1648	2.3723	0.2873	0.3012	0.0376	0.3676						
2	15 min	20%	4	14.30	0.95	0.0126	0.0827	0.0232	0.0956	0.0199		
0.0994	1.2945	2.6761	0.3005	0.3144	0.0376	0.3807						
2	15 min	20%	5	14.30	0.95	0.0126	0.0827	0.0232	0.0956	0.0199		
0.0994	1.1519	2.2501	0.2870	0.3009	0.0376	0.3672						
2	15 min	20%	6	14.30	0.95	0.0126	0.0827	0.0232	0.0956	0.0199		
0.0994	1.1806	2.5377	0.2881	0.3020	0.0376	0.3683						
2	15 min	20%	7	14.30	0.95	0.0126	0.0827	0.0232	0.0956	0.0199		
0.0994	1.2945	2.6761	0.3005	0.3144	0.0376	0.3807						
2	15 min	20%	8	14.30	0.95	0.0126	0.0827	0.0232	0.0956	0.0199		
0.0994	1.2945	2.6761	0.3005	0.3144	0.0376	0.3807						
2	15 min	20%	9	14.30	0.95	0.0126	0.0827	0.0232	0.0956	0.0199		
0.0994	1.2945	2.6761	0.3005	0.3144	0.0376	0.3807						

2	15 min	20%	10	14.30	0.95	0.0126	0.0827	0.0232	0.0956	0.0199		
0.0994	1.2945	2.6761	0.3005	0.3144	0.0376	0.3807						
3	20 min	20%	1	16.30	0.96	0.0155	0.1008	0.0284	0.1160	0.0243		
0.1207	1.4043	2.4376	0.3514	0.3696	0.0460	0.4494						
3	20 min	20%	2	16.30	0.96	0.0155	0.1008	0.0284	0.1160	0.0243		
0.1207	1.4341	2.4555	0.3413	0.3587	0.0460	0.4392						
3	20 min	20%	3	16.30	0.96	0.0155	0.1008	0.0284	0.1160	0.0243		
0.1207	1.4766	2.4826	0.3497	0.3676	0.0460	0.4476						
3	20 min	20%	4	16.30	0.96	0.0155	0.1008	0.0284	0.1160	0.0243		
0.1207	1.6233	3.0939	0.3517	0.3682	0.0460	0.4496						
3	20 min	20%	5	16.30	0.96	0.0155	0.1008	0.0284	0.1160	0.0243		
0.1207	1.4160	2.4037	0.3511	0.3693	0.0460	0.4491						
3	20 min	20%	6	16.30	0.96	0.0155	0.1008	0.0284	0.1160	0.0243		
0.1207	1.5373	2.8909	0.3433	0.3598	0.0460	0.4412						
3	20 min	20%	7	16.30	0.96	0.0155	0.1008	0.0284	0.1160	0.0243		
0.1207	1.6571	3.1385	0.3565	0.3732	0.0460	0.4544						
3	20 min	20%	8	16.30	0.96	0.0155	0.1008	0.0284	0.1160	0.0243		
0.1207	1.5320	2.8543	0.3434	0.3599	0.0460	0.4413						
3	20 min	20%	9	16.30	0.96	0.0155	0.1008	0.0284	0.1160	0.0243		
0.1207	1.5198	2.7909	0.3443	0.3610	0.0460	0.4422						
3	20 min	20%	10	16.30	0.96	0.0155	0.1008	0.0284	0.1160	0.0243		
0.1207	1.6571	3.1385	0.3565	0.3732	0.0460	0.4544						
4	25 min	20%	1	17.80	0.96	0.0176	0.1149	0.0325	0.1318	0.0277		
0.1372	1.7619	3.0142	0.3978	0.4183	0.0524	0.5094						
4	25 min	20%	2	17.80	0.96	0.0176	0.1149	0.0325	0.1207	0.0277		
0.1259	1.6206	2.9245	0.3982	0.4186	0.0524	0.5065						
4	25 min	20%	3	17.80	0.96	0.0176	0.1149	0.0325	0.1293	0.0277		
0.1346	1.5943	2.7701	0.4005	0.4209	0.0524	0.5111						
4	25 min	20%	4	17.80	0.96	0.0176	0.1149	0.0325	0.1318	0.0277		
0.1372	1.6877	2.7409	0.3997	0.4201	0.0524	0.5113						
4	25 min	20%	5	17.80	0.96	0.0176	0.1149	0.0325	0.1318	0.0277		
0.1372	1.6771	2.6958	0.4000	0.4204	0.0524	0.5116						
4	25 min	20%	6	17.80	0.96	0.0176	0.1149	0.0325	0.1318	0.0277		
0.1372	1.7187	2.8762	0.3986	0.4190	0.0524	0.5101						
4	25 min	20%	7	17.80	0.96	0.0176	0.1149	0.0325	0.1206	0.0277		
0.1258	1.6462	2.9468	0.3989	0.4193	0.0524	0.5076						
4	25 min	20%	8	17.80	0.96	0.0176	0.1149	0.0325	0.1270	0.0277		
0.1322	1.5889	2.7823	0.4004	0.4208	0.0524	0.5100						

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   4          25 min             20%      9     17.80    0.96    0.0176    0.1149    0.0325    0.1318    0.0277
0.1372    1.8035    3.2925    0.3930    0.4134    0.0524    0.5045
   4          25 min             20%     10     17.80    0.96    0.0176    0.1149    0.0325    0.1318    0.0277
0.1372    1.6376    2.6645    0.4004    0.4208    0.0524    0.5119
   5          30 min             20%      1     19.10    0.97    0.0196    0.1272    0.0361    0.1459    0.0307
0.1518    1.9573    3.3086    0.4409    0.4632    0.0581    0.5645
   5          30 min             20%      2     19.10    0.97    0.0161    0.1040    0.0298    0.1276    0.0253
0.1326    1.7118    2.5262    0.4076    0.4283    0.0477    0.5161
   5          30 min             20%      3     19.10    0.97    0.0196    0.1272    0.0361    0.1350    0.0307
0.1407    1.6692    2.5567    0.4304    0.4542    0.0581    0.5511
   5          30 min             20%      4     19.10    0.97    0.0196    0.1272    0.0361    0.1459    0.0307
0.1518    1.8419    2.8579    0.4428    0.4657    0.0581    0.5665
   5          30 min             20%      5     19.10    0.97    0.0196    0.1272    0.0361    0.1459    0.0307
0.1518    1.8493    2.8792    0.4427    0.4654    0.0581    0.5663
   5          30 min             20%      6     19.10    0.97    0.0196    0.1272    0.0361    0.1347    0.0307
0.1405    1.8399    3.1230    0.4407    0.4648    0.0581    0.5621
   5          30 min             20%      7     19.10    0.97    0.0196    0.1272    0.0361    0.1459    0.0307
0.1518    1.8821    3.0046    0.4423    0.4647    0.0581    0.5660
   5          30 min             20%      8     19.10    0.97    0.0182    0.1183    0.0335    0.1314    0.0285
0.1370    1.9015    3.2773    0.4302    0.4529    0.0540    0.5471
   5          30 min             20%      9     19.10    0.97    0.0196    0.1272    0.0361    0.1459    0.0307
0.1518    2.0283    3.5505    0.4410    0.4634    0.0581    0.5647
   5          30 min             20%     10     19.10    0.97    0.0196    0.1272    0.0361    0.1459    0.0307
0.1518    2.0918    3.7170    0.4472    0.4695    0.0581    0.5708
   6          45 min             20%      1     22.00    0.97    0.0493    0.2834    0.0934    0.3264    0.0756
0.3410    2.4378    3.0175    0.8025    0.8770    0.1379    1.1451
   6          45 min             20%      2     22.00    0.97    0.0491    0.2811    0.0932    0.3253    0.0753
0.3398    2.5432    3.0898    0.8198    0.8959    0.1371    1.1630
   6          45 min             20%      3     22.00    0.97    0.0456    0.2643    0.0864    0.3048    0.0701
0.3184    1.9530    2.2846    0.7715    0.8430    0.1281    1.0975
   6          45 min             20%      4     22.00    0.97    0.0552    0.3383    0.1032    0.3391    0.0857
0.3545    2.6594    3.3752    0.8286    0.9065    0.1594    1.1940
   6          45 min             20%      5     22.00    0.97    0.0477    0.2761    0.0915    0.3267    0.0724
0.3413    2.7702    3.8054    0.8179    0.8907    0.1313    1.1552
   6          45 min             20%      6     22.00    0.97    0.0556    0.3443    0.1037    0.3479    0.0865
0.3635    2.9073    3.6387    0.8488    0.9276    0.1613    1.2162
   6          45 min             20%      7     22.00    0.97    0.0500    0.2946    0.0943    0.3264    0.0771
0.3409    2.7154    3.6105    0.8305    0.9018    0.1416    1.1736
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6	45 min	20%	8	22.00	0.97	0.0455	0.2628	0.0862	0.3048	0.0698	
0.3184	2.0979	2.9718	0.7648	0.8342	0.1275	1.0870					
6	45 min	20%	9	22.00	0.97	0.0499	0.2927	0.0942	0.3265	0.0769	
0.3410	3.0060	4.0810	0.8370	0.9086	0.1410	1.1795					
6	45 min	20%	10	22.00	0.97	0.0545	0.3268	0.1023	0.3345	0.0843	
0.3497	2.7212	3.4870	0.8372	0.9133	0.1556	1.2019					
7	1 hour	20%	1	24.20	0.98	0.0747	0.3939	0.1458	0.4894	0.1119	
0.5125	2.1584	2.3950	1.1232	1.2468	0.1965	1.7017					
7	1 hour	20%	2	24.20	0.98	0.0763	0.4259	0.1458	0.4791	0.1164	
0.5018	2.4815	3.0080	1.1449	1.2661	0.2104	1.7109					
7	1 hour	20%	3	24.20	0.98	0.0758	0.4197	0.1472	0.4920	0.1140	
0.5151	2.2771	2.4143	1.1291	1.2553	0.2041	1.7064					
7	1 hour	20%	4	24.20	0.98	0.0793	0.4162	0.1544	0.5153	0.1191	
0.5394	2.8948	3.5704	1.2035	1.3354	0.2101	1.8050					
7	1 hour	20%	5	24.20	0.98	0.0837	0.4674	0.1598	0.5297	0.1277	
0.5541	3.1575	3.3351	1.2358	1.3613	0.2308	1.8326					
7	1 hour	20%	6	24.20	0.98	0.0753	0.4060	0.1477	0.5120	0.1141	
0.5356	3.1191	4.0055	1.1888	1.3099	0.2041	1.7706					
7	1 hour	20%	7	24.20	0.98	0.0811	0.4321	0.1567	0.5295	0.1226	
0.5541	3.0492	3.6457	1.2379	1.3633	0.2185	1.8310					
7	1 hour	20%	8	24.20	0.98	0.0799	0.4349	0.1538	0.5102	0.1213	
0.5340	2.3737	2.7624	1.1801	1.2986	0.2174	1.7627					
7	1 hour	20%	9	24.20	0.98	0.1041	0.6542	0.1935	0.6033	0.1624	
0.6316	4.9928	7.2442	1.4335	1.5745	0.3040	2.0888					
7	1 hour	20%	10	24.20	0.98	0.0959	0.5691	0.1806	0.5780	0.1481	
0.6042	4.3567	5.6634	1.3362	1.4829	0.2725	1.9802					
8	1.5 hour	20%	1	27.60	0.98	0.0890	0.4258	0.1894	0.7373	0.1293	
0.7728	2.0941	2.5544	1.4403	1.5808	0.2241	2.2320					
8	1.5 hour	20%	2	27.60	0.98	0.1054	0.5221	0.2120	0.7335	0.1553	
0.7695	2.4979	3.4933	1.3877	1.5319	0.2693	2.3000					
8	1.5 hour	20%	3	27.60	0.98	0.1090	0.5527	0.2150	0.7137	0.1625	
0.7482	2.5012	3.1900	1.4923	1.6620	0.2846	2.3625					
8	1.5 hour	20%	4	27.60	0.98	0.1304	0.6452	0.2570	0.8521	0.1940	
0.8926	2.9259	3.1186	1.8220	2.0307	0.3378	2.8462					
8	1.5 hour	20%	5	27.60	0.98	0.0877	0.3744	0.1884	0.7465	0.1223	
0.7827	2.9302	3.4617	1.4077	1.5465	0.1942	2.2316					
8	1.5 hour	20%	6	27.60	0.98	0.1254	0.6150	0.2476	0.8176	0.1863	
0.8569	2.6407	2.7284	1.7337	1.9338	0.3234	2.7241					

8	1.5 hour	20%	7	27.60	0.98	0.0934	0.3935	0.1936	0.7477	0.1339	
0.7834	2.8707	3.7699	1.4543	1.6022	0.2211	2.2825					
8	1.5 hour	20%	8	27.60	0.98	0.1289	0.6354	0.2549	0.8446	0.1915	
0.8847	2.6861	3.2560	1.7691	1.9748	0.3326	2.7842					
8	1.5 hour	20%	9	27.60	0.98	0.1435	0.7978	0.2769	0.9027	0.2171	
0.9450	4.9097	5.3701	1.9647	2.2033	0.3869	3.0349					
8	1.5 hour	20%	10	27.60	0.98	0.1609	0.9606	0.3079	0.9567	0.2450	
1.0014	6.3643	7.8327	2.1100	2.3546	0.4465	3.2456					
9	2 hour	20%	1	30.30	0.98	0.1104	0.4540	0.2339	0.8823	0.1562	
0.9264	1.6906	2.3717	1.5952	1.7779	0.2543	2.6580					
9	2 hour	20%	2	30.30	0.98	0.0930	0.3414	0.2062	0.8393	0.1279	
0.8812	1.6065	2.3165	1.4287	1.5698	0.2021	2.4128					
9	2 hour	20%	3	30.30	0.98	0.1068	0.4459	0.2271	0.9133	0.1506	
0.9574	1.6982	1.7300	1.6467	1.8092	0.2473	2.6150					
9	2 hour	20%	4	30.30	0.98	0.1327	0.5814	0.2735	1.0158	0.1908	
1.0653	2.3720	2.5257	1.9661	2.1727	0.3171	3.0778					
9	2 hour	20%	5	30.30	0.98	0.1663	0.8758	0.3303	1.1041	0.2461	
1.1566	3.8263	4.4480	2.2577	2.5182	0.4381	3.5839					
9	2 hour	20%	6	30.30	0.98	0.1387	0.6709	0.2839	0.9893	0.2018	
1.0380	2.6727	3.2279	1.8854	2.0984	0.3492	3.0712					
9	2 hour	20%	7	30.30	0.98	0.1240	0.5652	0.2580	1.0073	0.1791	
1.0561	2.2774	2.6045	1.8733	2.0633	0.3033	2.9460					
9	2 hour	20%	8	30.30	0.98	0.1478	0.6912	0.2961	1.0429	0.2172	
1.0933	2.7020	2.9273	2.0251	2.2692	0.3715	3.2032					
9	2 hour	20%	9	30.30	0.98	0.1394	0.6569	0.2928	1.0994	0.1998	
1.1520	3.4199	3.5135	2.1418	2.3655	0.3343	3.3366					
9	2 hour	20%	10	30.30	0.98	0.1568	0.7081	0.3205	1.1268	0.2270	
1.1808	3.4775	3.7113	2.2261	2.5001	0.3796	3.5454					
10	3 hour	20%	1	34.50	0.98	0.1162	0.4929	0.2560	1.0017	0.1608	
1.0507	1.9385	2.3307	1.6536	1.8365	0.2613	2.8995					
10	3 hour	20%	2	34.50	0.98	0.0922	0.3285	0.2122	1.0133	0.1254	
1.0850	1.6008	1.8818	1.4499	1.5791	0.1932	2.5667					
10	3 hour	20%	3	34.50	0.98	0.0917	0.4014	0.2210	1.0889	0.1285	
1.1456	1.7553	2.1447	1.5132	1.6598	0.2171	2.7591					
10	3 hour	20%	4	34.50	0.98	0.1022	0.4709	0.2322	1.1201	0.1414	
1.1863	2.2619	2.8440	1.6392	1.7971	0.2381	2.8075					
10	3 hour	20%	5	34.50	0.98	0.1287	0.5001	0.2793	1.2198	0.1807	
1.2747	1.5879	1.6235	1.9087	2.0851	0.2905	3.2349					

10	3 hour	20%	6	34.50	0.98	0.1363	0.5323	0.2932	1.2228	0.1908	
1.2885	1.7663	1.8602	1.9321	2.1262	0.3068	3.3340					
10	3 hour	20%	7	34.50	0.98	0.1033	0.3436	0.2403	1.1093	0.1383	
1.1634	1.2083	1.5445	1.5715	1.7196	0.2096	2.9199					
10	3 hour	20%	8	34.50	0.98	0.1345	0.6941	0.2666	1.1857	0.2015	
1.2603	3.0490	3.5729	2.0185	2.2223	0.3551	3.0474					
10	3 hour	20%	9	34.50	0.98	0.1801	0.7508	0.3794	1.5084	0.2552	
1.5876	2.8809	2.8863	2.5125	2.8091	0.4133	4.0735					
10	3 hour	20%	10	34.50	0.98	0.1592	0.6386	0.3419	1.4239	0.2222	
1.4977	2.2693	2.4370	2.3555	2.6080	0.3533	3.8325					
11	4.5 hour	20%	1	39.70	0.99	0.0926	0.2953	0.2227	1.1560	0.1210	
1.2375	0.9540	1.2607	1.4169	1.5418	0.1822	2.8146					
11	4.5 hour	20%	2	39.70	0.99	0.1252	0.4323	0.2956	1.3345	0.1694	
1.4082	1.4164	1.6093	1.8264	1.9993	0.2619	3.4055					
11	4.5 hour	20%	3	39.70	0.99	0.1067	0.3833	0.2604	1.2858	0.1403	
1.3675	1.5868	1.7698	1.6083	1.7473	0.2220	3.1616					
11	4.5 hour	20%	4	39.70	0.99	0.1108	0.3887	0.2496	1.2483	0.1506	
1.3272	1.2874	1.5007	1.6118	1.7742	0.2337	3.0258					
11	4.5 hour	20%	5	39.70	0.99	0.1248	0.3883	0.3041	1.3766	0.1624	
1.4628	1.2892	1.6121	1.8260	1.9967	0.2409	3.6644					
11	4.5 hour	20%	6	39.70	0.99	0.1638	0.6542	0.3668	1.5192	0.2264	
1.5955	2.3896	2.6742	2.1779	2.3874	0.3648	4.0788					
11	4.5 hour	20%	7	39.70	0.99	0.1431	0.4613	0.3416	1.4806	0.1883	
1.5539	1.5389	1.7843	2.0590	2.2594	0.2824	3.9769					
11	4.5 hour	20%	8	39.70	0.99	0.1099	0.3197	0.2707	1.3322	0.1410	
1.4102	1.0022	1.0466	1.6537	1.7979	0.2044	3.3124					
11	4.5 hour	20%	9	39.70	0.99	0.1597	0.5485	0.3767	1.6937	0.2145	
1.7798	1.6786	1.7917	2.3634	2.5840	0.3314	4.3888					
11	4.5 hour	20%	10	39.70	0.99	0.1927	0.7453	0.4194	1.7349	0.2687	
1.8249	2.4314	2.6037	2.6557	2.9113	0.4304	4.6525					
12	6 hour	20%	1	44.00	0.99	0.1077	0.3860	0.2630	1.3177	0.1415	
1.3972	1.6011	1.8012	1.6209	1.7609	0.2238	3.1942					
12	6 hour	20%	2	44.00	0.99	0.1025	0.3943	0.2410	0.9714	0.1386	
1.0226	1.4100	1.6678	1.4589	1.6092	0.2236	2.6812					
12	6 hour	20%	3	44.00	0.99	0.0770	0.2280	0.2008	1.0130	0.0972	
1.1014	0.9363	1.0533	1.1495	1.2490	0.1408	2.4790					
12	6 hour	20%	4	44.00	0.99	0.1024	0.3485	0.2367	1.1450	0.1361	
1.2442	1.5933	1.8725	1.5406	1.6855	0.2095	2.7899					

12	6 hour	20%	5	44.00	0.99	0.0929	0.2897	0.2336	1.2638	0.1201	
1.3731	0.9510	1.2043	1.4116	1.5312	0.1765	2.9441					
12	6 hour	20%	6	44.00	0.99	0.1112	0.3511	0.2729	1.4724	0.1458	
1.5786	1.3230	1.5886	1.6845	1.8293	0.2156	3.3692					
12	6 hour	20%	7	44.00	0.99	0.1001	0.3523	0.2535	1.3700	0.1327	
1.4752	1.2148	1.2718	1.5062	1.6342	0.2097	3.1795					
12	6 hour	20%	8	44.00	0.99	0.1674	0.6634	0.3624	1.6175	0.2330	
1.7519	2.4331	2.7297	2.3955	2.6605	0.3705	3.9953					
12	6 hour	20%	9	44.00	0.99	0.1906	0.6528	0.4418	1.8403	0.2547	
1.9356	2.1290	2.4324	2.6927	2.9680	0.3877	4.9746					
12	6 hour	20%	10	44.00	0.99	0.2070	0.7939	0.4619	1.9370	0.2851	
2.0282	2.8184	2.9880	2.7962	3.0527	0.4541	5.1507					
13	9 hour	20%	1	51.10	0.99	0.0904	0.3926	0.2017	0.8677	0.1301	
0.9055	1.3532	1.4020	1.3384	1.4600	0.2169	2.2675					
13	9 hour	20%	2	51.10	0.99	0.0823	0.3487	0.2080	0.9066	0.1160	
0.9625	1.1940	1.3812	1.2111	1.3227	0.1934	2.3781					
13	9 hour	20%	3	51.10	0.99	0.0954	0.3096	0.2416	1.2164	0.1223	
1.3250	1.1168	1.3648	1.3604	1.4756	0.1852	2.9429					
13	9 hour	20%	4	51.10	0.99	0.1281	0.4217	0.3059	1.4653	0.1690	
1.5579	1.4830	1.6038	1.8558	2.0355	0.2534	3.5231					
13	9 hour	20%	5	51.10	0.99	0.1019	0.3260	0.2501	1.1700	0.1335	
1.2280	0.9931	1.0101	1.4611	1.6039	0.2011	2.8939					
13	9 hour	20%	6	51.10	0.99	0.1197	0.3689	0.3047	1.5530	0.1556	
1.6567	1.1177	1.1239	1.7827	1.9313	0.2307	3.7392					
13	9 hour	20%	7	51.10	0.99	0.1028	0.3953	0.2446	1.0790	0.1411	
1.1328	1.3551	1.4255	1.4856	1.6147	0.2256	2.8306					
13	9 hour	20%	8	51.10	0.99	0.1654	0.5218	0.4149	2.0885	0.2161	
2.2415	1.5509	1.6307	2.4715	2.6829	0.3250	5.0154					
13	9 hour	20%	9	51.10	0.99	0.1566	0.4820	0.3940	1.8486	0.2021	
1.9931	1.6999	1.7621	2.2359	2.4483	0.2996	4.6471					
13	9 hour	20%	10	51.10	0.99	0.1725	0.6013	0.4123	1.9099	0.2257	
1.9917	1.8811	1.9224	2.5059	2.7413	0.3490	4.6973					
14	12 hour	20%	1	57.00	0.99	0.0824	0.2877	0.1917	0.9800	0.1107	
1.0386	0.9291	0.9846	1.1547	1.2615	0.1710	2.2811					
14	12 hour	20%	2	57.00	0.99	0.1137	0.4935	0.2604	1.2734	0.1618	
1.3501	1.6313	1.6295	1.7855	1.9450	0.2710	3.0323					
14	12 hour	20%	3	57.00	0.99	0.0489	0.1915	0.1192	0.5142	0.0660	
0.5371	0.6450	0.7797	0.7888	0.8602	0.1063	1.3751					

14	12 hour	20%	4	57.00	0.99	0.0900	0.2918	0.2158	1.0615	0.1193	
1.1274	0.9034	0.9111	1.3255	1.4324	0.1802	2.6500					
14	12 hour	20%	5	57.00	0.99	0.1069	0.3436	0.2664	1.4600	0.1408	
1.5632	1.0901	1.1862	1.5810	1.7115	0.2114	3.3393					
14	12 hour	20%	6	57.00	0.99	0.0462	0.1431	0.1273	0.7245	0.0590	
0.7803	0.5454	0.5789	0.7499	0.8057	0.0894	1.6577					
14	12 hour	20%	7	57.00	0.99	0.1041	0.3395	0.2506	1.3896	0.1360	
1.4913	1.1765	1.2623	1.5583	1.7006	0.2011	3.1071					
14	12 hour	20%	8	57.00	0.99	0.1322	0.4225	0.3160	1.6821	0.1746	
1.8095	1.3513	1.4402	1.8797	2.0663	0.2629	3.8575					
14	12 hour	20%	9	57.00	0.99	0.1872	0.6105	0.4607	2.2099	0.2474	
2.3228	1.8996	2.0006	2.6634	2.8880	0.3736	5.5049					
14	12 hour	20%	10	57.00	0.99	0.1499	0.4965	0.3586	1.4801	0.1993	
1.5363	1.7366	1.9622	2.1164	2.3326	0.3040	4.0264					
15	18 hour	20%	1	66.50	1.00	0.0534	0.1798	0.1355	0.7599	0.0686	
0.8221	0.5612	0.6520	0.8734	0.9428	0.1047	1.8024					
15	18 hour	20%	2	66.50	1.00	0.1095	0.3917	0.2448	1.2068	0.1497	
1.3047	1.2968	1.2998	1.6769	1.8439	0.2341	2.9833					
15	18 hour	20%	3	66.50	1.00	0.0512	0.1690	0.1210	0.6025	0.0673	
0.6312	0.9139	0.9366	0.9664	1.0365	0.0994	1.6582					
15	18 hour	20%	4	66.50	1.00	0.0542	0.1659	0.1432	0.8143	0.0694	
0.8699	0.5504	0.6024	0.8594	0.9238	0.1010	1.8503					
15	18 hour	20%	5	66.50	1.00	0.0608	0.2119	0.1463	0.7247	0.0829	
0.7557	0.7804	1.0427	0.9864	1.0781	0.1286	1.7455					
15	18 hour	20%	6	66.50	1.00	0.0466	0.1623	0.1116	0.6022	0.0633	
0.6321	0.5406	0.5922	0.7457	0.8065	0.0980	1.4549					
15	18 hour	20%	7	66.50	1.00	0.0417	0.1183	0.1100	0.6005	0.0522	
0.6425	0.4092	0.4249	0.6671	0.7202	0.0752	1.4219					
15	18 hour	20%	8	66.50	1.00	0.0818	0.2591	0.2199	1.0986	0.1051	
1.2000	0.8385	0.9031	1.2748	1.3744	0.1581	2.7165					
15	18 hour	20%	9	66.50	1.00	0.0559	0.1528	0.1544	0.8214	0.0691	
0.8905	0.5012	0.5174	0.8717	0.9411	0.0984	1.9300					
15	18 hour	20%	10	66.50	1.00	0.1703	0.5957	0.3903	2.0724	0.2309	
2.1683	1.6944	1.7210	2.3691	2.6244	0.3581	4.8454					
16	24 hour	20%	1	73.90	1.00	0.0485	0.1639	0.1227	0.6017	0.0637	
0.6504	0.5745	0.6936	0.7657	0.8320	0.0948	1.5186					
16	24 hour	20%	2	73.90	1.00	0.0461	0.1649	0.1172	0.6997	0.0615	
0.7511	0.5711	0.6480	0.7768	0.8349	0.0973	1.5643					

```
  16         24 hour             20%      3     73.90    1.00    0.0767    0.2380    0.1846    0.7634    0.1013
0.7930    0.7559    1.0385    1.1124    1.2199    0.1517    2.0439
  16         24 hour             20%      4     73.90    1.00    0.0409    0.1372    0.1011    0.5062    0.0538
0.5452    0.4712    0.5173    0.6028    0.6613    0.0821    1.2431
  16         24 hour             20%      5     73.90    1.00    0.0256    0.0818    0.0626    0.3498    0.0337
0.3667    0.3116    0.3206    0.4344    0.4703    0.0506    0.8660
  16         24 hour             20%      6     73.90    1.00    0.0224    0.0656    0.0587    0.3294    0.0287
0.3539    0.2764    0.3488    0.4054    0.4320    0.0418    0.8239
  16         24 hour             20%      7     73.90    1.00    0.0952    0.3099    0.2247    1.0567    0.1267
1.1278    0.8586    0.9886    1.3194    1.4559    0.1922    2.4903
  16         24 hour             20%      8     73.90    1.00    0.0843    0.2669    0.2123    1.0900    0.1074
1.1551    0.8615    0.9081    1.2698    1.3785    0.1560    2.5134
  16         24 hour             20%      9     73.90    1.00    0.0967    0.2743    0.2535    1.3469    0.1219
1.4403    0.9079    0.9384    1.4372    1.5611    0.1756    3.0875
  16         24 hour             20%     10     73.90    1.00    0.0525    0.1596    0.1406    0.7529    0.0666
0.7962    0.5316    0.5821    0.8383    0.9025    0.0985    1.7862
  17         30 hour             20%      1     79.80    1.00    0.0527    0.1729    0.1378    0.7234    0.0650
0.7566    0.6257    0.7189    0.8194    0.8817    0.0978    1.6927
  17         30 hour             20%      2     79.80    1.00    0.0520    0.1572    0.1265    0.7631    0.0676
0.8131    0.4690    0.4690    0.7988    0.8694    0.0999    1.6387
  17         30 hour             20%      3     79.80    1.00    0.0602    0.1973    0.1487    0.8880    0.0798
0.9508    0.6278    0.6695    0.8943    0.9802    0.1209    1.9641
  17         30 hour             20%      4     79.80    1.00    0.0180    0.0508    0.0475    0.2849    0.0225
0.3013    0.2430    0.2606    0.3483    0.3706    0.0318    0.6806
  17         30 hour             20%      5     79.80    1.00    0.0669    0.2483    0.1826    0.9921    0.0916
1.0724    0.8895    0.9360    1.0772    1.1513    0.1446    2.3305
  17         30 hour             20%      6     79.80    1.00    0.0272    0.0796    0.0695    0.3800    0.0347
0.4012    0.3127    0.3258    0.4639    0.4997    0.0506    0.9212
  17         30 hour             20%      7     79.80    1.00    0.0544    0.1788    0.1432    0.6892    0.0669
0.7561    0.6298    0.7280    0.8411    0.9052    0.1014    1.7536
  17         30 hour             20%      8     79.80    1.00    0.0432    0.1186    0.1181    0.6629    0.0529
0.7125    0.4029    0.4150    0.7044    0.7561    0.0752    1.5424
  17         30 hour             20%      9     79.80    1.00    0.0318    0.0921    0.0813    0.5068    0.0399
0.5401    0.3776    0.4219    0.5425    0.5819    0.0562    1.1045
  17         30 hour             20%     10     79.80    1.00    0.0622    0.1838    0.1529    0.8268    0.0804
0.8686    0.5393    0.5404    0.9424    1.0256    0.1179    1.8419
 Run,    Representative hydrograph
  1     dur10min_aep20tp2.out
```

```
 Run,    Representative hydrograph
  2     dur15min_aep20tp7.out
 Run,    Representative hydrograph
  3     dur20min_aep20tp5.out
 Run,    Representative hydrograph
  4     dur25min_aep20tp6.out
 Run,    Representative hydrograph
  5     dur30min_aep20tp9.out
 Run,    Representative hydrograph
  6     dur45min_aep20tp7.out
 Run,    Representative hydrograph
  7     dur1hour_aep20tp4.out
 Run,    Representative hydrograph
  8     dur1_5hour_aep20tp6.out
 Run,    Representative hydrograph
  9     dur2hour_aep20tp4.out
 Run,    Representative hydrograph
 10     dur3hour_aep20tp8.out
 Run,    Representative hydrograph
 11     dur4_5hour_aep20tp5.out
 Run,    Representative hydrograph
 12     dur6hour_aep20tp1.out
 Run,    Representative hydrograph
 13     dur9hour_aep20tp4.out
 Run,    Representative hydrograph
 14     dur12hour_aep20tp7.out
 Run,    Representative hydrograph
 15     dur18hour_aep20tp4.out
 Run,    Representative hydrograph
 16     dur24hour_aep20tp10.out
 Run,    Representative hydrograph
 17     dur30hour_aep20tp1.out

Elapsed Run Time (hh:mm:ss) = 00:00:04
```

```
 RORBWin Batch Run Summary
 *************************

 Program version 6.45 (last updated 20th March 2019)
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 Date run: 26 Apr 2021 10:21

 Catchment file   : K:\Jobs Data\1400147 - Wurruk rezoning application\_Wat\Models\RORB\Pre Dev\SWMS REV
E\1400147-RORB-PreDev_SWMS REV E.catg
 Rainfall location: User defined
 Temporal pattern : ARR2016 point temporal patterns
 Spatial pattern  : Uniform
 Areal Red. Fact. : Based on ARR 2016 (Book 2 Chapter 4)
 Loss factors     : Constant with ARI


 Parameters:  kc =     2.14    m = 0.80

 Loss parameters     Initial loss (mm)   Cont. loss (mm/h)
                           19.00              3.00

 Peak  Description
   01  Calculated hydrograph,  Catch B
   02  Calculated hydrograph,  Catch E
   03  Calculated hydrograph,  Catch H
   04  Calculated hydrograph,  Lagoon outfall (Catch B-K)
   05  Calculated hydrograph,  Catch L
   06  Calculated hydrograph,  SE corner site discharge
   07  Special storage :   Ex. U/S RB - Outflow
   08  Special storage :   Ex. U/S RB - Inflow
   09  Calculated hydrograph,  Catch M-N, External
   10  Calculated hydrograph,  Catch M-O,External (South)
   11  Calculated hydrograph,  Catch A
   12  Calculated hydrograph,  Entire Site
```

Run	Duration		AEP	TPat	Rain(mm)	ARF	Peak0001	Peak0002	Peak0003	Peak0004	Peak0005	Peak0006
Peak0007	Peak0008	Peak0009	Peak0010	Peak0011	Peak0012							
1	10 min		1%	21	25.10	0.94	0.1025	0.6441	0.1904	0.5946	0.1599	0.6224
4.9898	7.5393	1.3892	1.5282	0.2993	2.0308							
1	10 min		1%	22	25.10	0.94	0.1025	0.6441	0.1904	0.5946	0.1599	0.6224
4.9500	6.9791	1.3676	1.5066	0.2993	2.0138							
1	10 min		1%	23	25.10	0.94	0.1025	0.6441	0.1904	0.5946	0.1599	0.6224
5.0194	7.5707	1.3933	1.5323	0.2993	2.0349							
1	10 min		1%	24	25.10	0.94	0.1025	0.6441	0.1904	0.5946	0.1599	0.6224
5.0194	7.5707	1.3933	1.5323	0.2993	2.0349							
1	10 min		1%	25	25.10	0.94	0.1025	0.6441	0.1904	0.5946	0.1599	0.6224
4.9015	7.3433	1.3735	1.5125	0.2993	2.0161							
1	10 min		1%	26	25.10	0.94	0.1025	0.6441	0.1904	0.5946	0.1599	0.6224
5.0194	7.5707	1.3933	1.5323	0.2993	2.0349							
1	10 min		1%	27	25.10	0.94	0.1025	0.6441	0.1904	0.5946	0.1599	0.6224
4.9311	7.1792	1.4156	1.5546	0.2993	2.0598							
1	10 min		1%	28	25.10	0.94	0.1025	0.6441	0.1904	0.5946	0.1599	0.6224
5.0194	7.5707	1.3933	1.5323	0.2993	2.0349							
1	10 min		1%	29	25.10	0.94	0.1025	0.6441	0.1904	0.5946	0.1599	0.6224
5.0194	7.5707	1.3933	1.5323	0.2993	2.0349							
1	10 min		1%	30	25.10	0.94	0.1025	0.6441	0.1904	0.5946	0.1599	0.6224
5.0194	7.5707	1.3933	1.5323	0.2993	2.0349							
2	15 min		1%	21	30.80	0.95	0.2119	1.2161	0.4022	1.2345	0.3249	1.2932
7.4725	9.5587	2.6953	2.9991	0.5920	4.1525							
2	15 min		1%	22	30.80	0.95	0.2120	1.2179	0.4023	1.2345	0.3251	1.2932
7.9536	10.5836	2.7134	3.0175	0.5926	4.1596							
2	15 min		1%	23	30.80	0.95	0.2151	1.2654	0.4057	1.2348	0.3315	1.2938
8.1489	10.0031	2.7198	3.0319	0.6084	4.1732							
2	15 min		1%	24	30.80	0.95	0.2147	1.2604	0.4053	1.2347	0.3309	1.2937
8.4057	10.5101	2.7515	3.0627	0.6068	4.2012							
2	15 min		1%	25	30.80	0.95	0.2191	1.3253	0.4109	1.2355	0.3393	1.2938
8.7068	9.8853	2.7572	3.0791	0.6280	4.2063							
2	15 min		1%	26	30.80	0.95	0.2144	1.2531	0.4048	1.2346	0.3299	1.2937
8.3660	10.5758	2.7512	3.0612	0.6044	4.2002							
2	15 min		1%	27	30.80	0.95	0.2144	1.2531	0.4048	1.2346	0.3299	1.2937
8.3660	10.5758	2.7512	3.0612	0.6044	4.2002							

2	15 min		1%	28	30.80	0.95	0.2153	1.2692	0.4060	1.2349	0.3318	1.2938
8.3970	10.4295	2.7487	3.0614	0.6097	4.1991							
2	15 min		1%	29	30.80	0.95	0.2271	1.4000	0.4242	1.2661	0.3530	1.3258
9.2039	11.8427	2.7422	3.0782	0.6571	4.1993							
2	15 min		1%	30	30.80	0.95	0.2271	1.4000	0.4242	1.2661	0.3530	1.3258
9.3679	12.2858	2.7632	3.0993	0.6571	4.2203							
3	20 min		1%	21	35.00	0.95	0.2908	1.5499	0.5616	1.7531	0.4397	1.8359
9.4527	10.1912	3.7676	4.2397	0.7834	5.8958							
3	20 min		1%	22	35.00	0.95	0.2880	1.5153	0.5583	1.7521	0.4341	1.8354
8.9427	10.1341	3.7384	4.2027	0.7704	5.8685							
3	20 min		1%	23	35.00	0.95	0.2895	1.5309	0.5599	1.7528	0.4370	1.8359
9.4419	10.1265	3.7654	4.2335	0.7770	5.8917							
3	20 min		1%	24	35.00	0.95	0.3160	1.8597	0.5965	1.7838	0.4868	1.8696
10.8902	12.2710	3.8598	4.3055	0.8935	5.9974							
3	20 min		1%	25	35.00	0.95	0.3065	1.7196	0.5850	1.7847	0.4680	1.8682
9.8494	13.0347	3.7960	4.2635	0.8469	5.9355							
3	20 min		1%	26	35.00	0.95	0.2951	1.6588	0.5673	1.7552	0.4477	1.8371
10.2615	12.3979	3.7886	4.2721	0.8022	5.9088							
3	20 min		1%	27	35.00	0.95	0.3066	1.7207	0.5851	1.7847	0.4681	1.8682
9.8250	12.9599	3.7963	4.2642	0.8472	5.9367							
3	20 min		1%	28	35.00	0.95	0.3058	1.7086	0.5841	1.7849	0.4665	1.8682
9.9395	13.4593	3.7964	4.2649	0.8432	5.9317							
3	20 min		1%	29	35.00	0.95	0.3133	1.8218	0.5928	1.7844	0.4818	1.8696
11.0491	13.4601	3.8819	4.3216	0.8811	6.0125							
3	20 min		1%	30	35.00	0.95	0.3132	1.8206	0.5927	1.7844	0.4817	1.8696
11.0413	13.4698	3.8812	4.3207	0.8807	6.0118							
4	25 min		1%	21	38.40	0.96	0.3655	1.9391	0.7101	2.2238	0.5496	2.3274
10.7197	11.4728	4.6696	5.2492	0.9714	7.4003							
4	25 min		1%	22	38.40	0.96	0.3433	1.7708	0.6786	2.1882	0.5094	2.2938
9.1990	9.9523	4.5794	5.1293	0.8825	7.2581							
4	25 min		1%	23	38.40	0.96	0.3728	1.9992	0.7194	2.2224	0.5641	2.3277
10.6119	11.8477	4.6767	5.2777	1.0067	7.4099							
4	25 min		1%	24	38.40	0.96	0.3542	1.8106	0.6924	2.1883	0.5308	2.2915
8.6100	9.3813	4.5771	5.1344	0.9333	7.2734							
4	25 min		1%	25	38.40	0.96	0.3601	1.8783	0.6999	2.1894	0.5417	2.2916
9.4206	10.3815	4.6022	5.1749	0.9590	7.3101							

4	25 min		1%	26	38.40	0.96	0.3583	1.9480	0.7017	2.2054	0.5358	2.3096
10.5995	11.7538	4.6624	5.2221	0.9474	7.3798							
4	25 min		1%	27	38.40	0.96	0.3450	1.8988	0.6815	2.1903	0.5197	2.2957
10.0943	12.3903	4.6247	5.1852	0.9386	7.3103							
4	25 min		1%	28	38.40	0.96	0.3621	1.9702	0.7062	2.2075	0.5430	2.3110
10.8035	11.2890	4.6754	5.2455	0.9551	7.3970							
4	25 min		1%	29	38.40	0.96	0.3886	2.1622	0.7432	2.2557	0.5923	2.3647
12.3918	16.8372	4.7788	5.3854	1.0692	7.4872							
4	25 min		1%	30	38.40	0.96	0.3840	2.1486	0.7336	2.2221	0.5859	2.3302
11.3391	13.9378	4.7278	5.3398	1.0593	7.4480							
5	30 min		1%	21	41.20	0.96	0.4085	2.1030	0.8071	2.5898	0.6063	2.7128
10.2443	10.6875	5.3719	6.0122	1.0502	8.5472							
5	30 min		1%	22	41.20	0.96	0.3854	1.9265	0.7778	2.5697	0.5698	2.6934
10.3932	12.3961	5.2574	5.9436	0.9992	8.3160							
5	30 min		1%	23	41.20	0.96	0.3778	1.8841	0.7645	2.5536	0.5605	2.6772
9.7211	11.4891	5.2252	5.8954	0.9806	8.2386							
5	30 min		1%	24	41.20	0.96	0.3881	1.9920	0.7778	2.5658	0.5821	2.6890
9.9537	11.2316	5.2521	5.9425	1.0259	8.3217							
5	30 min		1%	25	41.20	0.96	0.4053	2.1323	0.8032	2.5913	0.6000	2.7133
10.4818	11.6625	5.3811	6.0508	1.0631	8.5548							
5	30 min		1%	26	41.20	0.96	0.4146	2.1852	0.8151	2.5902	0.6177	2.7148
11.0433	11.3910	5.4130	6.0514	1.0766	8.6006							
5	30 min		1%	27	41.20	0.96	0.3952	2.0334	0.7905	2.5898	0.5819	2.7120
10.1579	10.9843	5.2529	5.9644	1.0327	8.4035							
5	30 min		1%	28	41.20	0.96	0.3975	2.0826	0.7855	2.5903	0.5985	2.7135
10.7946	12.0852	5.2882	5.9929	1.0601	8.3980							
5	30 min		1%	29	41.20	0.96	0.4325	2.2422	0.8416	2.6245	0.6498	2.7521
12.7888	13.4601	5.5226	6.2024	1.1470	8.7443							
5	30 min		1%	30	41.20	0.96	0.4414	2.3602	0.8528	2.6259	0.6679	2.7515
12.0524	13.9041	5.4944	6.2003	1.1907	8.7388							
6	45 min		1%	21	47.60	0.96	0.5202	2.5901	1.0354	3.4757	0.7752	3.6431
11.6645	12.3357	6.9873	7.8753	1.3521	11.0425							
6	45 min		1%	22	47.60	0.96	0.5025	2.5086	1.0122	3.5109	0.7345	3.6778
12.6276	13.4172	6.9055	7.7022	1.2925	10.7567							
6	45 min		1%	23	47.60	0.96	0.4944	2.1793	1.0179	3.4765	0.7119	3.6486
8.2853	8.7810	6.6125	7.4643	1.1825	10.7174							

6	45 min		1%	24	47.60	0.96	0.4830	2.2962	0.9950	3.4031	0.7027	3.5722
8.8154	9.7961	6.4429	7.2761	1.2111	10.4753							
6	45 min		1%	25	47.60	0.96	0.4662	2.0425	0.9531	3.4107	0.6751	3.5744
7.9690	9.5657	6.4154	7.1522	1.1300	10.2120							
6	45 min		1%	26	47.60	0.96	0.5175	2.5559	1.0466	3.4719	0.7545	3.6364
10.0382	10.4962	6.8099	7.7309	1.3189	10.9893							
6	45 min		1%	27	47.60	0.96	0.4839	2.2183	1.0015	3.4605	0.7037	3.6292
8.9126	9.2418	6.6836	7.5037	1.1989	10.6352							
6	45 min		1%	28	47.60	0.96	0.4976	2.3010	0.9996	3.4363	0.7295	3.6021
8.5578	8.7881	6.6869	7.4818	1.2432	10.5464							
6	45 min		1%	29	47.60	0.96	0.5299	2.7120	1.0621	3.5163	0.7943	3.6821
12.7891	13.3426	7.1196	8.0531	1.3983	11.2980							
6	45 min		1%	30	47.60	0.96	0.5466	2.7688	1.0849	3.4762	0.8090	3.6453
12.1864	13.5674	7.0234	7.8804	1.3969	11.3028							
7	1 hour		1%	21	52.30	0.97	0.6247	3.1500	1.2536	4.1751	0.9166	4.3763
13.4186	14.0523	8.2593	9.2358	1.5992	13.1292							
7	1 hour		1%	22	52.30	0.97	0.4562	1.8925	1.0022	3.9668	0.6331	4.1666
8.5171	9.1816	6.5698	7.2450	1.0327	10.8633							
7	1 hour		1%	23	52.30	0.97	0.5503	2.6707	1.0940	4.1062	0.8153	4.3094
10.9041	11.5891	7.4841	8.3118	1.4104	11.7511							
7	1 hour		1%	24	52.30	0.97	0.5170	2.1618	1.0866	3.9957	0.7332	4.1911
7.8166	8.5555	7.1139	7.9329	1.1959	11.5123							
7	1 hour		1%	25	52.30	0.97	0.5202	2.2886	1.1011	3.9328	0.7497	4.1304
8.8153	9.8399	7.1760	8.0299	1.2555	11.7470							
7	1 hour		1%	26	52.30	0.97	0.5395	2.3392	1.1273	3.9243	0.7715	4.1198
9.1690	11.2821	6.9167	7.7941	1.2773	11.7502							
7	1 hour		1%	27	52.30	0.97	0.5224	2.4115	1.0902	4.0758	0.7660	4.2773
9.4302	10.1330	7.3511	8.1589	1.3046	11.6609							
7	1 hour		1%	28	52.30	0.97	0.5741	2.5919	1.1848	4.0916	0.8248	4.2868
8.9281	9.6167	7.6591	8.6415	1.3890	12.3859							
7	1 hour		1%	29	52.30	0.97	0.5494	2.3906	1.1556	4.0892	0.7871	4.2930
8.2063	8.4546	7.5257	8.4313	1.3191	12.1825							
7	1 hour		1%	30	52.30	0.97	0.6168	3.0739	1.2392	4.2092	0.9044	4.4113
13.1128	14.1225	8.3038	9.2628	1.5664	13.0071							
8	1.5 hour		1%	21	59.30	0.97	0.4855	2.2491	1.1229	4.8193	0.6889	5.0653
9.0241	9.5726	6.9510	7.6267	1.1677	12.4142							

8	1.5 hour		1%	22	59.30	0.97	0.6288	2.5036	1.3377	5.0099	0.8887	5.2581
7.7467	7.8940	8.6139	9.5618	1.4412	14.2478							
8	1.5 hour		1%	23	59.30	0.97	0.5193	1.9523	1.1367	4.7804	0.7159	5.0220
7.0377	7.2896	7.2391	8.0389	1.1424	12.2377							
8	1.5 hour		1%	24	59.30	0.97	0.5709	2.3375	1.2276	4.6652	0.8044	4.8976
8.3633	8.6443	7.6713	8.5348	1.3116	13.3052							
8	1.5 hour		1%	25	59.30	0.97	0.4386	2.2271	0.9357	4.4785	0.6436	4.7336
9.5667	9.8472	6.0923	6.7730	1.1352	11.0023							
8	1.5 hour		1%	26	59.30	0.97	0.5852	2.4182	1.2638	5.0206	0.8277	5.2762
8.2259	8.5000	8.2764	9.1549	1.3655	13.5625							
8	1.5 hour		1%	27	59.30	0.97	0.5928	2.2960	1.2845	4.9552	0.8231	5.2059
7.4275	7.8665	8.2171	9.1470	1.3224	13.7076							
8	1.5 hour		1%	28	59.30	0.97	0.5977	2.3662	1.2796	4.9029	0.8381	5.1415
7.7280	9.0502	8.1197	8.9784	1.3471	13.5995							
8	1.5 hour		1%	29	59.30	0.97	0.5854	2.8127	1.2089	5.0556	0.8601	5.3091
11.5349	11.6884	8.1158	9.0119	1.4687	13.2314							
8	1.5 hour		1%	30	59.30	0.97	0.6990	3.1593	1.4311	5.0132	1.0180	5.2566
12.8205	14.0871	9.3942	10.5182	1.7199	15.0714							
9	2 hour		1%	21	64.70	0.97	0.4815	2.2456	1.1167	5.2028	0.6905	5.5060
8.8528	9.3913	6.8998	7.5664	1.1665	12.5626							
9	2 hour		1%	22	64.70	0.97	0.5440	2.1760	1.1950	5.3200	0.7567	5.6328
9.6068	10.4801	7.7623	8.5555	1.2181	12.9751							
9	2 hour		1%	23	64.70	0.97	0.4709	2.4180	1.1176	4.6497	0.7063	4.9277
12.2826	12.8208	6.2582	7.0749	1.2446	12.7093							
9	2 hour		1%	24	64.70	0.97	0.5399	2.1226	1.2017	5.1653	0.7500	5.4648
8.4199	9.6300	7.2857	8.1127	1.2062	12.9963							
9	2 hour		1%	25	64.70	0.97	0.6099	2.4697	1.3357	5.4398	0.8532	5.7118
8.3217	8.6865	8.5344	9.4320	1.3952	14.5443							
9	2 hour		1%	26	64.70	0.97	0.4795	1.5739	1.1179	5.0720	0.6379	5.3547
5.7467	6.3944	6.7758	7.4505	0.9704	12.6703							
9	2 hour		1%	27	64.70	0.97	0.5921	2.0666	1.3282	5.4143	0.8051	5.6978
7.0243	7.2454	8.1960	9.0827	1.2452	14.5698							
9	2 hour		1%	28	64.70	0.97	0.5119	2.6216	1.1667	5.4227	0.7620	5.7106
11.9050	14.1067	7.3013	8.0528	1.3404	13.4350							
9	2 hour		1%	29	64.70	0.97	0.6141	2.4143	1.3465	5.6141	0.8591	5.8920
7.4707	7.6881	8.6495	9.5444	1.3925	14.7965							

9	2 hour		1%	30	64.70	0.97	0.7044	2.7527	1.5136	5.6517	0.9838	5.9381
8.5533	8.7069	9.5070	10.6291	1.5695	15.8154							
10	3 hour		1%	21	73.00	0.97	0.6994	2.6237	1.5226	6.4079	0.9710	6.7543
7.7355	7.8151	9.2970	10.4009	1.5430	16.5786							
10	3 hour		1%	22	73.00	0.97	0.4651	1.5775	1.0545	4.6739	0.6283	4.9473
5.1398	5.3321	6.5088	7.1950	0.9646	11.6204							
10	3 hour		1%	23	73.00	0.97	0.3747	1.1903	0.9519	4.4488	0.4804	4.7325
4.6140	5.0064	5.3874	5.8807	0.7226	11.2070							
10	3 hour		1%	24	73.00	0.97	0.4360	1.5208	0.9937	4.7098	0.5927	5.0186
4.5111	4.5570	6.1183	6.6842	0.9175	11.4226							
10	3 hour		1%	25	73.00	0.97	0.4760	1.5847	1.1473	5.2702	0.6265	5.6406
5.2533	5.9710	6.4249	7.1007	0.9496	13.1993							
10	3 hour		1%	26	73.00	0.97	0.5277	2.1409	1.2248	6.0361	0.7291	6.4362
7.3227	7.3722	7.4626	8.2789	1.1613	14.4501							
10	3 hour		1%	27	73.00	0.97	0.4603	1.5271	1.1235	5.2438	0.6062	5.5130
5.1498	5.5913	6.5108	7.0923	0.9175	13.3341							
10	3 hour		1%	28	73.00	0.97	0.4965	1.7061	1.1866	5.8290	0.6585	6.2186
5.0690	5.3867	7.1259	7.8232	1.0185	13.8253							
10	3 hour		1%	29	73.00	0.97	0.4826	1.6936	1.1459	5.0284	0.6432	5.2894
5.6466	5.7886	6.4332	7.1420	0.9928	13.0376							
10	3 hour		1%	30	73.00	0.97	0.6422	2.5764	1.4479	6.6516	0.8902	7.0159
9.1427	10.0632	9.2160	10.1518	1.4630	16.4677							
11	4.5 hour		1%	21	82.50	0.98	0.2790	0.9434	0.7517	3.7497	0.3541	4.1003
3.8946	3.9879	3.9291	4.2909	0.5433	8.9024							
11	4.5 hour		1%	22	82.50	0.98	0.4466	1.4407	1.1052	5.3079	0.5801	5.6824
5.2270	5.8967	6.0213	6.6391	0.8694	12.8871							
11	4.5 hour		1%	23	82.50	0.98	0.3191	1.3921	0.7465	4.0481	0.4612	4.3581
5.3381	5.7961	4.6069	5.0666	0.7713	9.0340							
11	4.5 hour		1%	24	82.50	0.98	0.4364	1.6853	0.9351	4.0282	0.6118	4.2594
5.2791	5.7249	6.0330	6.7369	0.9820	10.0511							
11	4.5 hour		1%	25	82.50	0.98	0.3131	0.9887	0.8404	4.5616	0.3996	4.9046
3.1880	3.2788	4.5217	4.9268	0.5949	10.3387							
11	4.5 hour		1%	26	82.50	0.98	0.4223	1.6087	1.0039	5.5575	0.5892	5.9865
4.8393	5.1566	6.0677	6.6541	0.9409	12.4214							
11	4.5 hour		1%	27	82.50	0.98	0.4855	1.6324	1.1715	5.3378	0.6420	5.5991
5.3922	5.3988	6.7860	7.4795	0.9755	13.5161							

11	4.5 hour		1%	28	82.50	0.98	0.3973	1.4721	0.9423	5.1428	0.5381	5.5569
4.8918	4.9779	5.7253	6.2791	0.8504	11.4081							
11	4.5 hour		1%	29	82.50	0.98	0.6126	2.0464	1.4750	6.6784	0.7992	7.0884
6.2786	6.5533	8.7146	9.5495	1.2263	16.8451							
11	4.5 hour		1%	30	82.50	0.98	0.5486	1.8246	1.3542	6.4817	0.7081	6.9402
5.7371	6.3146	7.5441	8.2835	1.0443	15.8401							
12	6 hour		1%	21	90.10	0.98	0.6746	2.4305	1.5658	7.1250	0.9016	7.5044
7.3909	7.8016	9.4465	10.4172	1.3981	17.1356							
12	6 hour		1%	22	90.10	0.98	0.4203	1.5079	0.9991	4.6822	0.5678	4.9455
5.0071	5.3219	6.0767	6.6544	0.8877	11.3933							
12	6 hour		1%	23	90.10	0.98	0.4568	1.6582	1.1001	4.4714	0.6134	4.6930
5.4460	5.5407	6.0290	6.7165	0.9608	12.1076							
12	6 hour		1%	24	90.10	0.98	0.3554	1.2395	0.7954	3.4854	0.4841	3.6995
4.0858	4.0985	4.9714	5.5060	0.7504	8.6641							
12	6 hour		1%	25	90.10	0.98	0.3689	1.1890	0.8560	3.8961	0.4910	4.1130
3.6451	4.0355	5.2274	5.7531	0.7410	9.6397							
12	6 hour		1%	26	90.10	0.98	0.4559	2.0642	1.0301	3.9076	0.6625	4.1164
7.4250	8.0922	6.0460	6.7506	1.1191	10.7094							
12	6 hour		1%	27	90.10	0.98	0.2912	0.8675	0.7672	4.2150	0.3697	4.5282
2.6331	2.6677	4.1890	4.5670	0.5389	9.3565							
12	6 hour		1%	28	90.10	0.98	0.3745	1.1276	0.9018	4.6585	0.4871	4.9923
3.4636	3.6125	5.2907	5.7970	0.7164	10.5352							
12	6 hour		1%	29	90.10	0.98	0.2995	0.9278	0.7323	3.9886	0.3857	4.3110
2.8140	2.8792	4.3368	4.7316	0.5603	8.8246							
12	6 hour		1%	30	90.10	0.98	0.4449	1.4358	1.0991	5.9784	0.5869	6.4057
4.0789	4.2409	6.4183	7.0080	0.8881	13.2983							
13	9 hour		1%	21	102.00	0.99	0.2148	0.6232	0.5966	3.1426	0.2660	3.4086
2.1896	2.3630	3.0861	3.3550	0.3810	7.1445							
13	9 hour		1%	22	102.00	0.99	0.2549	0.8565	0.5865	3.1702	0.3425	3.3886
2.4792	2.4998	3.6034	3.9759	0.5238	7.0874							
13	9 hour		1%	23	102.00	0.99	0.4672	1.9399	1.1156	5.0960	0.6641	5.4180
6.0260	6.1526	6.9853	7.5970	1.0902	12.7140							
13	9 hour		1%	24	102.00	0.99	0.3061	0.9403	0.7258	4.1206	0.4021	4.4367
2.7067	2.7435	4.3740	4.7965	0.5970	9.0291							
13	9 hour		1%	25	102.00	0.99	0.4628	1.8291	0.9892	4.4413	0.6511	4.6561
5.6715	6.1612	6.4202	7.1758	1.0529	10.6995							

13	9 hour		1%	26	102.00	0.99	0.2312	0.7416	0.6218	3.2762	0.2978	3.4907
2.2739	2.3687	3.3840	3.6777	0.4505	7.4824							
13	9 hour		1%	27	102.00	0.99	0.3610	1.1209	0.8998	4.1138	0.4701	4.4435
3.1219	3.1716	5.0502	5.5471	0.7009	10.1646							
13	9 hour		1%	28	102.00	0.99	0.3360	0.9588	0.8873	4.4167	0.4235	4.7261
2.9282	3.0683	4.8212	5.2532	0.6124	10.4969							
13	9 hour		1%	29	102.00	0.99	0.3955	1.3057	1.0224	5.5397	0.5231	5.9189
3.8244	3.8757	5.7346	6.2283	0.7948	12.4758							
13	9 hour		1%	30	102.00	0.99	0.5601	2.0427	1.3150	6.1385	0.7573	6.3940
6.3114	6.4695	7.5192	8.3696	1.1886	14.9625							
14	12 hour		1%	21	112.00	0.99	0.4159	1.2391	1.0414	5.2318	0.5320	5.6526
3.6781	3.7480	5.9381	6.4817	0.7708	12.1084							
14	12 hour		1%	22	112.00	0.99	0.3318	1.0189	0.8490	3.9302	0.4253	4.1931
3.5005	3.6860	4.7856	5.2259	0.6235	9.7959							
14	12 hour		1%	23	112.00	0.99	0.2061	0.6872	0.5133	2.8683	0.2705	3.0679
2.4484	2.6200	3.0306	3.3126	0.4065	6.3432							
14	12 hour		1%	24	112.00	0.99	0.2728	0.8570	0.6617	3.7214	0.3572	4.0039
2.5244	2.5490	3.9415	4.3142	0.5274	8.2340							
14	12 hour		1%	25	112.00	0.99	0.5476	1.9424	1.2960	5.9008	0.7365	6.1357
5.7081	5.7754	7.4063	8.2249	1.1461	14.3148							
14	12 hour		1%	26	112.00	0.99	0.2144	0.6008	0.5932	3.1557	0.2660	3.4163
1.8126	1.8743	3.1340	3.3913	0.3812	7.1737							
14	12 hour		1%	27	112.00	0.99	0.2936	0.8426	0.7322	3.7500	0.3754	4.0690
2.4108	2.4417	4.2156	4.5991	0.5438	8.7311							
14	12 hour		1%	28	112.00	0.99	0.4458	1.4882	1.0698	5.7472	0.5826	6.1181
4.5151	4.5964	6.3841	6.9903	0.8591	12.9430							
14	12 hour		1%	29	112.00	0.99	0.2416	0.6928	0.6295	3.4403	0.3058	3.6914
1.9856	2.0020	3.4646	3.7769	0.4424	7.6964							
14	12 hour		1%	30	112.00	0.99	0.3259	1.0549	0.7483	3.4216	0.4363	3.6259
3.4619	3.5823	4.6325	5.1015	0.6609	8.5534							
15	18 hour		1%	21	127.00	0.99	0.1227	0.3766	0.3287	1.7891	0.1586	1.9195
1.3336	1.3770	1.8563	2.0244	0.2374	3.9449							
15	18 hour		1%	22	127.00	0.99	0.1746	0.4971	0.4457	2.4668	0.2241	2.6658
1.4669	1.5021	2.5315	2.7601	0.3243	5.5721							
15	18 hour		1%	23	127.00	0.99	0.1827	0.5341	0.4737	2.6014	0.2324	2.8064
1.5408	1.5561	2.6316	2.8710	0.3388	5.8230							

15 18 hour 1% 24 127.00 0.99 0.2533 0.7903 0.6780 3.6474 0.3305 3.8656
2.2024 2.2272 3.7207 4.0228 0.4944 8.2632
15 18 hour 1% 25 127.00 0.99 0.2814 0.8344 0.7107 3.7446 0.3614 4.0014
2.2711 2.2800 3.9991 4.3737 0.5299 8.2636
15 18 hour 1% 26 127.00 0.99 0.1366 0.4746 0.3478 2.0096 0.1854 2.1499
1.3282 1.4177 2.0742 2.2455 0.2871 4.2715
15 18 hour 1% 27 127.00 0.99 0.2546 0.7144 0.6912 3.8114 0.3227 4.1204
1.9819 2.0093 3.7066 4.0128 0.4617 8.5571
15 18 hour 1% 28 127.00 0.99 0.2336 0.7002 0.5822 2.5380 0.3013 2.6661
2.7454 2.9053 3.4467 3.7551 0.4378 6.5990
15 18 hour 1% 29 127.00 0.99 0.1962 0.5889 0.4719 2.4648 0.2560 2.6640
1.7642 1.8661 2.8064 3.0734 0.3777 5.5456
15 18 hour 1% 30 127.00 0.99 0.1777 0.4770 0.4805 2.6417 0.2203 2.8339
1.3725 1.3913 2.6053 2.8247 0.3119 5.8151
16 24 hour 1% 21 139.00 1.00 0.1862 0.5112 0.5091 2.8030 0.2291 3.0022
1.4618 1.4707 2.7406 2.9661 0.3276 6.2049
16 24 hour 1% 22 139.00 1.00 0.1234 0.3739 0.3419 1.8428 0.1550 1.9939
1.2308 1.2778 1.8490 1.9969 0.2248 4.2015
16 24 hour 1% 23 139.00 1.00 0.2205 0.7248 0.5712 2.9615 0.2802 3.1094
2.2315 2.3168 3.2715 3.5403 0.4340 6.8817
16 24 hour 1% 24 139.00 1.00 0.2013 0.6697 0.4993 2.5697 0.2684 2.7971
1.9380 1.9777 2.8053 3.0877 0.4093 6.1286
16 24 hour 1% 25 139.00 1.00 0.2436 0.7593 0.6205 3.0123 0.3086 3.1360
2.5957 2.7150 3.5856 3.8942 0.4391 7.2724
16 24 hour 1% 26 139.00 1.00 0.2091 0.5972 0.5419 2.8798 0.2635 3.0612
1.8825 1.9571 3.0602 3.3242 0.3753 6.4425
16 24 hour 1% 27 139.00 1.00 0.2207 0.7870 0.5555 3.0767 0.2994 3.2564
2.4029 2.4915 3.1743 3.4197 0.4670 6.7477
16 24 hour 1% 28 139.00 1.00 0.1063 0.3502 0.2869 1.6015 0.1428 1.7197
1.3680 1.4508 1.6679 1.8224 0.2175 3.4918
16 24 hour 1% 29 139.00 1.00 0.2038 0.6917 0.5178 2.6545 0.2678 2.8820
2.2872 2.4095 2.8458 3.0825 0.4098 6.2539
16 24 hour 1% 30 139.00 1.00 0.2155 0.7599 0.5378 2.7122 0.2923 2.8866
2.3221 2.4113 2.9917 3.3157 0.4542 6.4642
17 30 hour 1% 21 148.00 1.00 0.1188 0.3362 0.3302 1.8137 0.1446 1.9584
1.0372 1.0554 1.7966 1.9364 0.2096 4.0945

```
 17         30 hour              1%     22    148.00    1.00    0.2171    0.6387    0.5499    3.3041    0.2779    3.5281
  1.8081    1.8314    3.1112    3.3980    0.4059    6.8797
 17         30 hour              1%     23    148.00    1.00    0.1492    0.4921    0.3577    2.0544    0.1975    2.1778
  1.5446    1.5834    2.0873    2.3004    0.2998    4.1919
 17         30 hour              1%     24    148.00    1.00    0.1407    0.4340    0.3751    2.1958    0.1826    2.3532
  1.2605    1.2804    2.0033    2.1956    0.2713    4.7146
 17         30 hour              1%     25    148.00    1.00    0.2480    0.7556    0.6125    3.2050    0.3214    3.3565
  2.1888    2.2190    3.6848    4.0212    0.4752    7.3237
 17         30 hour              1%     26    148.00    1.00    0.1050    0.3066    0.2818    1.5432    0.1286    1.6367
  1.1167    1.1406    1.6467    1.7707    0.1821    3.5760
 17         30 hour              1%     27    148.00    1.00    0.0913    0.2603    0.2497    1.2999    0.1129    1.4128
  0.9015    0.9347    1.3686    1.4811    0.1599    3.0537
 17         30 hour              1%     28    148.00    1.00    0.0941    0.2576    0.2513    1.4325    0.1179    1.5295
  0.7475    0.7502    1.4024    1.5208    0.1682    3.0360
 17         30 hour              1%     29    148.00    1.00    0.1568    0.4025    0.4278    2.2569    0.1926    2.4422
  1.2181    1.2435    2.3253    2.5139    0.2689    5.2251
 17         30 hour              1%     30    148.00    1.00    0.0984    0.2768    0.2678    1.4685    0.1231    1.5684
  0.8161    0.8209    1.4645    1.5895    0.1772    3.2182
Run,    Representative hydrograph
 1     dur10min_aep1tp26.out
Run,    Representative hydrograph
 2     dur15min_aep1tp26.out
Run,    Representative hydrograph
 3     dur20min_aep1tp25.out
Run,    Representative hydrograph
 4     dur25min_aep1tp28.out
Run,    Representative hydrograph
 5     dur30min_aep1tp21.out
Run,    Representative hydrograph
 6     dur45min_aep1tp22.out
Run,    Representative hydrograph
 7     dur1hour_aep1tp23.out
Run,    Representative hydrograph
 8     dur1_5hour_aep1tp26.out
Run,    Representative hydrograph
 9     dur2hour_aep1tp28.out
```

```
 Run,    Representative hydrograph
 10     dur3hour_aep1tp27.out
 Run,    Representative hydrograph
 11     dur4_5hour_aep1tp26.out
 Run,    Representative hydrograph
 12     dur6hour_aep1tp26.out
 Run,    Representative hydrograph
 13     dur9hour_aep1tp28.out
 Run,    Representative hydrograph
 14     dur12hour_aep1tp27.out
 Run,    Representative hydrograph
 15     dur18hour_aep1tp23.out
 Run,    Representative hydrograph
 16     dur24hour_aep1tp26.out
 Run,    Representative hydrograph
 17     dur30hour_aep1tp23.out

Elapsed Run Time (hh:mm:ss) = 00:00:06
```

APPENDIX D: POST-DEVELOPED RORB RESULTS (NO RB)

```
 RORBWin Batch Run Summary
 *************************

 Program version 6.45 (last updated 20th March 2019)
 Copyright Monash University and Hydrology and Risk Consulting

 Date run: 26 Apr 2021 17:51

 Catchment file   : K:\Jobs Data\1400147 - Wurruk rezoning application\_Wat\Models\RORB\Post Dev\SWMS REV E\No
RB\1400147-RORB-PostDev-NoRB_SWMS REV E.catg
 Rainfall location: User defined
 Temporal pattern : ARR2016 point temporal patterns
 Spatial pattern  : Uniform
 Areal Red. Fact. : Based on ARR 2016 (Book 2 Chapter 4)
 Loss factors     : Constant with ARI


 Parameters:  kc =     2.63    m = 0.80

 Loss parameters     Initial loss (mm)   Cont. loss (mm/h)
                           19.00              3.00

 Peak  Description
   01  Special storage :   Ex. U/S RB - Outflow
   02  Special storage :   Ex. U/S RB - Inflow
   03  Calculated hydrograph,  External
   04  Calculated hydrograph,  20m RR PC Convey (Catch R)
   05  Calculated hydrograph,  OverlandFlowEasement(CatchS)
   06  Calculated hydrograph,  30m RR PC Convey (Catch S)
   07  Calculated hydrograph,  Catch Q-W, External
   08  Calculated hydrograph,  Catch X
   09  Calculated hydrograph,  Outfall S(Catch Q-X,External
   10  Calculated hydrograph,  Catch B
   11  Calculated hydrograph,  Catch E
   12  Calculated hydrograph,  OutfallLagoon(Catch B-G,I-K)
   13  Calculated hydrograph,  20m RR PC Convey (Catch P)
   14  Calculated hydrograph,  Outfall RB SE(Catch L-P)
   15  Calculated hydrograph,  Outfall SE (Catch B-G, I-P)
```

16 Calculated hydrograph, Outfall NW - Catch A
17 Calculated hydrograph, Entire Catchment

Run	Duration	AEP	TPat	Rain(mm)	ARF	Peak0001	Peak0002	Peak0003	Peak0004	Peak0005	Peak0006	Peak0007	Peak0008	Peak0009	Peak0010	Peak0011	Peak0012	Peak0013	Peak0014	Peak0015	Peak0016	Peak0017
1	10 min	20%	1	11.60	0.94	0.7472	2.0507	0.7472	1.2450	1.3453	1.1163	1.7280	0.5733	2.2672	0.5579	0.8009	0.1481	1.4672	2.4089	2.4402	0.9171	5.6245
1	10 min	20%	2	11.60	0.94	0.7472	2.0507	0.7472	1.2195	1.3076	1.1024	1.7343	0.5733	2.2735	0.5420	0.7445	0.1482	1.3948	2.3239	2.3553	0.8515	5.4803
1	10 min	20%	3	11.60	0.94	0.7472	2.0507	0.7472	1.2179	1.3043	1.1012	1.7348	0.5733	2.2739	0.5406	0.7397	0.1482	1.3889	2.3170	2.3484	0.8461	5.4684
1	10 min	20%	4	11.60	0.94	0.7472	2.0507	0.7472	1.1918	1.2492	1.0801	1.7420	0.5733	2.2812	0.5171	0.7187	0.1483	1.2859	2.1923	2.2237	0.8261	5.2594
1	10 min	20%	5	11.60	0.94	0.7472	2.0507	0.7472	1.2249	1.3190	1.1067	1.7327	0.5733	2.2719	0.5465	0.7611	0.1481	1.4163	2.3492	2.3806	0.8709	5.5234
1	10 min	20%	6	11.60	0.94	0.7472	2.0507	0.7472	1.1917	1.2490	1.0800	1.7420	0.5733	2.2812	0.5170	0.7189	0.1483	1.2856	2.1919	2.2233	0.8262	5.2587
1	10 min	20%	7	11.60	0.94	0.7472	2.0507	0.7472	1.3080	1.4264	1.1433	1.7097	0.5733	2.2489	0.5936	0.9066	0.1500	1.6084	2.5804	2.6117	1.0396	5.9002
1	10 min	20%	8	11.60	0.94	0.7472	2.0507	0.7472	1.1919	1.2494	1.0802	1.7420	0.5733	2.2811	0.5172	0.7186	0.1483	1.2864	2.1930	2.2243	0.8259	5.2605
1	10 min	20%	9	11.60	0.94	0.7472	2.0507	0.7472	1.2679	1.3738	1.1268	1.7236	0.5733	2.2627	0.5698	0.8432	0.1481	1.5213	2.4713	2.5026	0.9662	5.7315
1	10 min	20%	10	11.60	0.94	0.7472	2.0507	0.7472	1.2802	1.3887	1.1292	1.7134	0.5733	2.2525	0.5761	0.8663	0.1481	1.5500	2.5029	2.5343	0.9930	5.7798
2	15 min	20%	1	14.30	0.95	1.1384	2.2232	1.1384	1.6384	1.5524	1.4174	2.1425	0.7191	2.6129	0.6115	0.9266	0.1973	1.6133	2.5345	2.5542	1.0633	5.9290

2	15 min	20%	2	14.30	0.95	1.1328	2.1632	1.1328	1.6100	1.5222		
1.3959	2.1160	0.7180	2.5541	0.5885	0.8426	0.1974	1.5145	2.4323	2.4520	0.9655	5.7763	
2	15 min	20%	3	14.30	0.95	1.1499	2.3555	1.1499	1.6367	1.5139		
1.3843	2.1642	0.7186	2.7077	0.5964	0.7869	0.1974	1.4186	2.3088	2.3512	0.9017	5.8165	
2	15 min	20%	4	14.30	0.95	1.2785	2.6548	1.2785	1.8480	1.6927		
1.5010	2.2938	0.7397	2.9694	0.6807	0.9128	0.1989	1.6829	2.8638	2.9062	1.0498	6.8630	
2	15 min	20%	5	14.30	0.95	1.1395	2.2358	1.1395	1.6572	1.5930		
1.4377	2.1532	0.7192	2.6304	0.6323	1.0024	0.1992	1.7137	2.6551	2.6748	1.1513	6.1114	
2	15 min	20%	6	14.30	0.95	1.1666	2.5174	1.1666	1.7078	1.5882		
1.4371	2.2385	0.7056	2.8801	0.6541	0.9629	0.1990	1.6244	2.7166	2.7590	1.1066	6.5272	
2	15 min	20%	7	14.30	0.95	1.2785	2.6548	1.2785	1.8634	1.7170		
1.5148	2.2910	0.7397	2.9666	0.6948	0.9111	0.1988	1.7446	2.9411	2.9836	1.0400	6.9902	
2	15 min	20%	8	14.30	0.95	1.2785	2.6548	1.2785	1.8351	1.6722		
1.4895	2.2966	0.7397	2.9722	0.6683	0.9362	0.1989	1.6298	2.7961	2.8385	1.0762	6.7524	
2	15 min	20%	9	14.30	0.95	1.2785	2.6548	1.2785	1.8927	1.7632		
1.5401	2.2827	0.7397	2.9583	0.7218	1.0027	0.1986	1.8648	3.0888	3.1312	1.1473	7.2368	
2	15 min	20%	10	14.30	0.95	1.2785	2.6548	1.2785	1.9261	1.8315		
1.5629	2.2576	0.7397	2.9332	0.7528	1.1105	0.1987	2.0045	3.2545	3.2968	1.2724	7.5025	
3	20 min	20%	1	16.30	0.96	1.3974	2.4115	1.3974	1.9629	1.9052		
1.7061	2.4071	0.8247	2.9769	0.6724	0.8855	0.2355	1.6811	2.7940	2.8178	1.0122	6.8069	
3	20 min	20%	2	16.30	0.96	1.4244	2.4422	1.4244	1.9249	1.7914		
1.6337	2.4464	0.8218	2.9169	0.6390	0.7754	0.2376	1.5069	2.5325	2.5563	0.8902	6.2466	
3	20 min	20%	3	16.30	0.96	1.4673	2.4697	1.4673	1.9741	1.8642		
1.6807	2.4777	0.8396	2.9423	0.6461	0.8073	0.2376	1.5524	2.5925	2.6163	0.9221	6.3954	
3	20 min	20%	4	16.30	0.96	1.6088	3.0699	1.6088	2.2181	1.9511		

1.7529 2.7011 0.8540 3.4681 0.7502 1.0253 0.2366 1.7663 3.0316 3.0826 1.1780 7.5561

3 20 min 20% 5 16.30 0.96 1.4090 2.3786 1.4090 2.0626 2.0180
1.8008 2.4814 0.8278 2.9124 0.7786 1.2221 0.2391 2.1289 3.3525 3.3762 1.4025 7.6911

3 20 min 20% 6 16.30 0.96 1.5239 2.8698 1.5239 2.1401 1.9336
1.7456 2.6340 0.8425 3.3124 0.7614 1.1423 0.2387 1.9433 3.1243 3.1753 1.3122 7.4858

3 20 min 20% 7 16.30 0.96 1.6433 3.1142 1.6433 2.2808 2.0182
1.7963 2.7218 0.8662 3.4984 0.7804 1.0952 0.2377 1.8827 3.2397 3.2907 1.2588 7.8680

3 20 min 20% 8 16.30 0.96 1.5187 2.8340 1.5187 2.1046 1.8856
1.7142 2.6195 0.8440 3.2776 0.7272 1.0141 0.2368 1.7791 2.8848 2.9358 1.1634 7.1482

3 20 min 20% 9 16.30 0.96 1.5093 2.7720 1.5093 2.1172 1.9357
1.7483 2.6061 0.8453 3.2298 0.7537 1.1553 0.2388 1.9733 3.0814 3.1324 1.3270 7.3325

3 20 min 20% 10 16.30 0.96 1.6433 3.1142 1.6433 2.2960 2.0429
1.8133 2.7257 0.8662 3.5023 0.7962 1.0807 0.2385 1.9437 3.3234 3.3744 1.2417 8.0036

4 25 min 20% 1 17.80 0.96 1.7509 2.9956 1.7509 2.3217 2.1627
1.9174 2.8370 0.9408 3.4716 0.7265 0.8815 0.2660 1.6240 2.6674 2.7251 1.0088 7.0741

4 25 min 20% 2 17.80 0.96 1.6167 2.8972 1.6167 2.3557 2.1468
1.8980 2.5809 0.8908 3.4662 0.7161 0.8448 0.2541 1.6553 2.7481 2.7776 0.9640 7.2078

4 25 min 20% 3 17.80 0.96 1.5891 2.7425 1.5891 2.3278 2.1791
1.9281 2.6757 0.9100 3.3787 0.7166 0.8844 0.2635 1.7084 2.8323 2.8586 1.0099 7.2472

4 25 min 20% 4 17.80 0.96 1.6791 2.7275 1.6791 2.2702 2.2247
1.9684 2.8012 0.9320 3.3004 0.7333 1.0032 0.2660 1.8539 3.0158 3.0427 1.1479 7.3874

4 25 min 20% 5 17.80 0.96 1.6688 2.6833 1.6688 2.3153 2.2552
1.9975 2.8158 0.9298 3.2925 0.7646 1.0714 0.2679 1.9695 3.2078 3.2347 1.2265 7.6845

4 25 min 20% 6 17.80 0.96 1.7089 2.8602 1.7089 2.2520 2.1449
1.9019 2.7935 0.9375 3.3587 0.6987 0.8044 0.2662 1.5494 2.5491 2.5760 0.9187 6.6747

4	25 min	20%	7	17.80	0.96	1.6129	2.9195	1.6129	2.3982	2.1868	1.9459	2.6282	0.8878
3.5027	0.7750	1.0301	0.2559	1.8636	3.1766	3.2071	1.1832	7.7856					
4	25 min	20%	8	17.80	0.96	1.5838	2.7547	1.5838	2.3707	2.2170	1.9643	2.7029	0.9087
3.3864	0.7595	0.9621	0.2628	1.8611	3.1281	3.1537	1.0987	7.6387					
4	25 min	20%	9	17.80	0.96	1.7901	3.2682	1.7901	2.4557	2.2479	2.0012	2.9840	0.9346
3.7676	0.8325	1.1781	0.2674	2.0336	3.3515	3.4092	1.3525	8.2635					
4	25 min	20%	10	17.80	0.96	1.6303	2.6367	1.6303	2.4238	2.3168	2.0470	2.8017	0.9210
3.2639	0.8353	1.2689	0.2679	2.2460	3.5766	3.6034	1.4552	8.3225					
5	30 min	20%	1	19.10	0.97	1.9464	3.2883	1.9464	2.5598	2.4391	2.1296	3.0958	1.0245
3.7915	0.7828	0.9853	0.2912	1.7501	2.9391	3.0029	1.1291	7.7622					
5	30 min	20%	2	19.10	0.97	1.7010	2.5130	1.7010	2.3613	2.2105	2.0034	2.6787	0.7154
3.2079	0.7095	0.8877	0.2792	1.6867	2.8509	2.8622	1.0196	6.6315					
5	30 min	20%	3	19.10	0.97	1.6251	2.5358	1.6251	2.3617	2.1820	1.9457	2.7423	0.7289
3.2163	0.6658	0.7114	0.2801	1.4223	2.3606	2.3875	0.8107	6.4145					
5	30 min	20%	4	19.10	0.97	1.8345	2.8385	1.8345	2.6085	2.4695	2.1674	3.0268	1.0058
3.5731	0.7778	1.0034	0.2934	1.8981	3.1108	3.1405	1.1470	7.8605					
5	30 min	20%	5	19.10	0.97	1.8414	2.8662	1.8414	2.6311	2.4991	2.1940	3.0557	1.0076
3.5544	0.8022	1.0928	0.2932	2.0152	3.2577	3.2874	1.2507	8.0926					
5	30 min	20%	6	19.10	0.97	1.8192	3.0933	1.8192	2.6395	2.4017	2.1103	2.8706	0.9756
3.7454	0.7723	0.9090	0.2813	1.7825	2.9628	2.9920	1.0372	7.7746					
5	30 min	20%	7	19.10	0.97	1.8731	2.9901	1.8731	2.5874	2.4912	2.1861	3.0804	1.0142
3.6276	0.7928	1.0547	0.2931	1.9655	3.2052	3.2349	1.2065	7.9342					
5	30 min	20%	8	19.10	0.97	1.8824	3.2481	1.8824	2.6803	2.3891	2.1039	2.8741	0.9533
3.8274	0.8062	0.9929	0.2788	1.8998	3.1223	3.1594	1.1343	8.1211					
5	30 min	20%	9	19.10	0.97	2.0148	3.5253	2.0148	2.7060	2.5278	2.2269	3.2661	1.0216
4.0883	0.8783	1.1594	0.2947	2.0647	3.4062	3.4697	1.3301	8.6717					

5	30 min	20%	10	19.10	0.97	2.0787	3.6892	2.0787	2.8107	2.6137		
2.2857	3.3336	1.0243	4.2314	0.9222	1.3015	0.2944	2.2298	3.7355	3.7990	1.4947	9.2455	
6	45 min	20%	1	22.00	0.97	2.4231	3.0006	2.4231	3.2352	3.1440		
2.7843	3.6066	0.7241	4.0892	0.7134	0.7247	0.4715	1.4064	2.3118	2.3824	0.8311	7.0413	
6	45 min	20%	2	22.00	0.97	2.5239	3.0759	2.5239	3.3343	3.2176		
2.8652	3.7001	0.8718	4.1561	0.7345	0.7927	0.4702	1.5231	2.4898	2.5629	0.9052	7.1495	
6	45 min	20%	3	22.00	0.97	1.9489	2.2628	1.9489	2.6050	2.7369		
2.6274	3.4074	0.7057	3.8376	0.6838	0.8332	0.4579	1.5540	2.6183	2.6290	0.9544	6.4687	
6	45 min	20%	4	22.00	0.97	2.6448	3.3558	2.6448	3.4036	3.2104		
2.7472	3.6613	0.8675	4.2424	0.7147	0.7314	0.4747	1.4135	2.2858	2.3821	0.8346	7.4591	
6	45 min	20%	5	22.00	0.97	2.7600	3.7860	2.7600	3.6123	3.5447		
3.0869	3.8674	1.1229	4.5023	0.9052	1.0879	0.4697	2.0387	3.3235	3.3731	1.2440	8.9460	
6	45 min	20%	6	22.00	0.97	2.8894	3.6168	2.8894	3.7377	3.4426		
2.9281	3.9115	0.9408	4.4637	0.7809	0.8127	0.4882	1.5854	2.5717	2.6666	0.9270	8.0573	
6	45 min	20%	7	22.00	0.97	2.6841	3.5810	2.6841	3.7047	3.6307		
3.1102	3.9519	1.0037	4.4075	0.8749	0.9983	0.4749	1.9753	3.3012	3.3591	1.1427	8.7715	
6	45 min	20%	8	22.00	0.97	2.0926	2.9495	2.0926	2.8222	2.9634		
2.7822	3.5951	0.7505	3.9300	0.8137	1.0770	0.4591	1.9439	3.1299	3.1604	1.2339	7.8023	
6	45 min	20%	9	22.00	0.97	2.9738	4.0438	2.9738	4.1676	3.8930		
3.3083	4.1858	1.2321	4.7028	1.0319	1.3862	0.4761	2.6020	4.2987	4.3578	1.5853	10.6460	
6	45 min	20%	10	22.00	0.97	2.7140	3.4750	2.7140	3.5515	3.6344		
3.1064	4.0292	1.0412	4.4087	0.8967	1.1735	0.4747	2.1176	3.6121	3.6555	1.3475	8.9846	
7	1 hour	20%	1	24.20	0.98	2.1520	2.3855	2.1520	2.8040	2.9794		
2.9017	3.7581	0.6158	4.0590	0.6355	0.8125	0.6194	1.5569	2.5936	2.5936	0.9282	6.3520	
7	1 hour	20%	2	24.20	0.98	2.4419	2.9986	2.4419	3.1979	3.2601		

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3.0051    3.8866    0.7752    4.4983    0.6588    0.7252    0.6084    1.3898    2.3362    2.3364    0.8313    7.3643

   7         1 hour             20%      3     24.20    0.98    2.2737    2.4097    2.2737    2.9359    3.1214
3.0100    4.0017    0.5545    4.4409    0.6075    0.7987    0.6246    1.4738    2.4148    2.4148    0.9142    6.8380

   7         1 hour             20%      4     24.20    0.98    2.8869    3.5375    2.8869    3.7628    3.8173
3.6162    4.6595    1.0820    5.0427    0.8579    1.0278    0.6417    2.0014    3.3210    3.3632    1.1731    8.7265

   7         1 hour             20%      5     24.20    0.98    3.1469    3.3312    3.1469    4.0558    3.9995
3.6110    4.7475    0.7293    5.2664    0.7914    0.7229    0.6532    1.4495    2.4105    2.5392    0.8238    8.6015

   7         1 hour             20%      6     24.20    0.98    3.1142    3.9683    3.1142    4.1902    4.2077
3.6972    4.6918    1.2392    4.9254    0.9234    1.0667    0.6390    2.0565    3.3738    3.4351    1.2180    9.2964

   7         1 hour             20%      7     24.20    0.98    3.0278    3.6231    3.0278    4.0400    4.2171
3.8345    4.8385    0.8858    5.2755    0.8874    1.0313    0.6563    1.9533    3.2355    3.3074    1.1789    8.7748

   7         1 hour             20%      8     24.20    0.98    2.3716    2.7423    2.3716    3.1010    3.3983
3.3455    4.3602    0.6929    4.7572    0.7302    0.8375    0.6399    1.5958    2.6341    2.6596    0.9570    7.2676

   7         1 hour             20%      9     24.20    0.98    4.9470    7.2011    4.9470    6.5980    6.0786
4.7375    6.0267    2.0741    7.5545    1.2872    1.5616    0.6988    2.9991    5.0023    5.2260    1.7837   14.5642

   7         1 hour             20%     10     24.20    0.98    4.3412    5.6282    4.3412    5.5312    5.4369
4.4124    5.6232    1.3438    6.4348    1.1588    1.3351    0.6854    2.6284    4.3875    4.5521    1.5231   12.5100

   8       1.5 hour             20%      1     27.60    0.98    2.0877    2.5366    2.0877    2.7592    2.8938
2.9734    3.8471    0.6401    4.1884    0.7023    0.8005    0.8494    1.5524    2.5935    2.5972    0.9140    6.5718

   8       1.5 hour             20%      2     27.60    0.98    2.4788    3.4733    2.4788    3.3156    3.1973
2.7778    3.5990    0.9338    4.2236    0.8649    1.0301    0.8427    1.9477    3.2091    3.2327    1.1776    8.4519

   8       1.5 hour             20%      3     27.60    0.98    2.4899    3.1723    2.4899    3.0943    3.0471
2.6516    3.5109    0.8545    4.1879    0.7272    0.8654    0.8310    1.6618    2.7332    2.7544    0.9883    7.1939

   8       1.5 hour             20%      4     27.60    0.98    2.9232    3.1152    2.9232    3.7415    3.9965
4.0508    5.3615    0.6736    6.0350    0.7322    0.6398    0.9360    1.2775    2.0960    2.3459    0.7288    9.1097
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8	1.5 hour	20%	5	27.60	0.98	2.9153	3.4452	2.9153	3.8681	3.8190	3.5437	4.4770	0.9703
4.7615	0.8747	1.0581	0.8620	2.0330	3.3945	3.4218	1.2088	8.4528					
8	1.5 hour	20%	6	27.60	0.98	2.6379	2.7205	2.6379	3.3533	3.6039	3.6111	4.6903	0.6242
5.2551	0.6375	0.5722	0.9043	1.1333	1.8681	2.1177	0.6543	8.0115					
8	1.5 hour	20%	7	27.60	0.98	2.8556	3.7480	2.8556	3.7227	3.5042	3.2113	4.0191	1.0047
4.4103	0.8454	0.8839	0.8635	1.7710	2.9530	3.0410	1.0072	8.4585					
8	1.5 hour	20%	8	27.60	0.98	2.6832	3.2435	2.6832	3.3826	3.5571	3.6717	5.0588	0.9274
5.8961	0.7988	0.9037	0.9223	1.7871	2.9858	3.0330	1.0307	8.9370					
8	1.5 hour	20%	9	27.60	0.98	4.8907	5.3396	4.8907	6.1074	5.8307	5.0515	6.5279	1.3311
7.0280	1.0118	1.0890	0.9626	2.0532	3.4608	3.7217	1.2456	11.9079					
8	1.5 hour	20%	10	27.60	0.98	6.3120	7.7979	6.3120	7.9488	7.3551	5.7594	7.0838	2.2043
8.3462	1.2691	1.5652	0.9953	2.9701	4.9263	5.2383	1.7888	15.3734					
9	2 hour	20%	1	30.30	0.98	1.6810	2.3477	1.6810	2.2867	2.2646	2.2153	2.9655	0.7918
3.3911	0.6585	0.7719	0.9801	1.5064	2.4957	2.5108	0.8808	6.4341					
9	2 hour	20%	2	30.30	0.98	1.6002	2.2971	1.6002	2.1690	2.2053	2.0718	2.6347	0.6528
3.0184	0.6875	0.8302	0.9463	1.5738	2.6185	2.6185	0.9482	6.3777					
9	2 hour	20%	3	30.30	0.98	1.6980	1.7296	1.6980	2.1806	2.4135	2.6208	3.4098	0.4041
3.7113	0.5845	0.7908	1.0093	1.4871	2.4702	2.4702	0.9044	5.5774					
9	2 hour	20%	4	30.30	0.98	2.3683	2.5208	2.3683	3.0040	3.2243	3.3663	4.3288	0.6455
4.6709	0.5720	0.7811	1.0986	1.4214	2.3102	2.3102	0.8946	7.0877					
9	2 hour	20%	5	30.30	0.98	3.8098	4.4325	3.8098	4.8189	4.6810	4.2936	5.7818	1.0548
6.7405	0.8436	0.8974	1.1533	1.7166	2.8175	3.2037	1.0249	10.9691					
9	2 hour	20%	6	30.30	0.98	2.6556	3.2168	2.6556	3.3927	3.3683	3.0332	4.0651	0.7393
4.7589	0.6160	0.6591	1.0547	1.2649	2.0793	2.5502	0.7527	8.0619					
9	2 hour	20%	7	30.30	0.98	2.2720	2.5865	2.2720	2.9077	3.0813	3.1447	4.0928	0.7577
4.6625	0.5787	0.6285	1.0808	1.2148	2.0192	2.0527	0.7175	7.0505					

9	2 hour	20%	8	30.30	0.98	2.6986	2.9235	2.6986	3.4398	3.6536	3.7617	4.9212
0.6392	5.5604	0.6466	0.6006	1.0909	1.1907	1.9508	2.2981	0.6845	8.5429			
9	2 hour	20%	9	30.30	0.98	3.4163	3.5118	3.4163	4.3666	4.6685	4.4909	5.8433
0.8150	6.4114	0.8422	0.7939	1.1584	1.5612	2.5849	2.6662	0.9054	9.9017			
9	2 hour	20%	10	30.30	0.98	3.4669	3.6979	3.4669	4.4745	4.4499	4.1657	5.4385
0.7924	6.1212	0.8738	0.9604	1.1769	1.7608	2.9755	3.0296	1.0997	9.3864			
10	3 hour	20%	1	34.50	0.98	1.9310	2.3244	1.9310	2.4825	2.3321	2.4292	2.9730
0.4808	3.4047	0.5826	0.6389	1.0437	1.2590	2.0913	2.2627	0.7286	6.2190			
10	3 hour	20%	2	34.50	0.98	1.5945	1.8785	1.5945	2.1109	2.3573	2.4192	3.1472
0.3750	3.3779	0.4670	0.4041	1.0945	0.7901	1.2956	1.4238	0.4614	4.9994			
10	3 hour	20%	3	34.50	0.98	1.7466	2.1401	1.7466	2.6432	2.7103	2.9647	3.7756
0.4182	4.0354	0.7430	0.7287	1.1584	1.5008	2.5442	2.6096	0.8291	7.0718			
10	3 hour	20%	4	34.50	0.98	2.2643	2.8315	2.2643	2.8962	3.3693	3.3314	4.3636
0.6683	4.6271	0.6588	0.6003	1.1776	1.2310	2.0468	2.1312	0.6830	6.9519			
10	3 hour	20%	5	34.50	0.98	1.5884	1.6220	1.5884	2.0397	2.2855	2.5051	3.2785
0.3645	3.5549	0.4180	0.3539	1.2510	0.7144	1.1912	1.8254	0.4031	5.7620			
10	3 hour	20%	6	34.50	0.98	1.7646	1.8595	1.7646	2.2622	2.4431	2.4429	3.3227
0.4255	3.6452	0.4462	0.3915	1.2545	0.7944	1.3343	2.1178	0.4458	6.2088			
10	3 hour	20%	7	34.50	0.98	1.2093	1.5414	1.2093	1.5689	1.7789	2.0146	2.6691
0.3289	2.9742	0.4028	0.3685	1.1599	0.7441	1.2304	1.6563	0.4196	4.4117			
10	3 hour	20%	8	34.50	0.98	3.0522	3.5540	3.0522	3.9118	4.4826	4.3429	5.7825
0.9082	6.1707	0.8111	0.8565	1.2150	1.6793	2.7561	2.8657	0.9769	9.2944			
10	3 hour	20%	9	34.50	0.98	2.8810	2.8890	2.8810	3.6542	4.0862	4.0342	5.2291
0.6530	5.7386	0.6782	0.5933	1.4669	1.2288	2.0588	2.4736	0.6746	8.8869			
10	3 hour	20%	10	34.50	0.98	2.2709	2.4348	2.2709	2.8905	3.2385		

3.5648 4.6203 0.5078 4.9811 0.5637 0.5046 1.4301 1.0108 1.6696 1.9913 0.5749 7.4708

11 4.5 hour 20% 1 39.70 0.99 0.9543 1.2557 0.9543 1.2394 1.3852
1.5349 1.9708 0.2753 2.1418 0.3384 0.2941 1.1449 0.5939 0.9790 1.6088 0.3348 3.8938

11 4.5 hour 20% 2 39.70 0.99 1.4162 1.6023 1.4162 1.8058 1.9198
2.1457 2.7927 0.3736 3.0482 0.3542 0.3423 1.2450 0.6446 1.0510 1.8502 0.3913 5.2223

11 4.5 hour 20% 3 39.70 0.99 1.5848 1.7586 1.5848 2.0980 2.1287
2.0786 2.8335 0.4803 3.0476 0.5878 0.6166 1.2665 1.2263 2.0360 2.0748 0.7028 5.4658

11 4.5 hour 20% 4 39.70 0.99 1.2845 1.4962 1.2845 1.6661 1.8574
1.9815 2.5548 0.3599 2.7678 0.3837 0.3791 1.2297 0.7556 1.2481 1.7508 0.4321 4.8091

11 4.5 hour 20% 5 39.70 0.99 1.2849 1.6060 1.2849 1.6783 1.8017
1.9033 2.4360 0.3789 2.7109 0.4664 0.4277 1.3412 0.8786 1.4758 2.2729 0.4888 5.3759

11 4.5 hour 20% 6 39.70 0.99 2.3839 2.6706 2.3839 3.0403 3.0156
2.7730 3.7733 0.5229 4.2751 0.5516 0.5509 1.3847 1.0995 1.8336 2.9450 0.6278 7.8478

11 4.5 hour 20% 7 39.70 0.99 1.5355 1.7794 1.5355 1.9832 2.0629
2.2638 2.8755 0.4329 3.2699 0.3920 0.3767 1.4031 0.7278 1.1769 2.3077 0.4299 6.0075

11 4.5 hour 20% 8 39.70 0.99 1.0028 1.0463 1.0028 1.3025 1.4799
1.6193 2.0858 0.2197 2.2792 0.2829 0.2719 1.2926 0.5305 0.8754 1.9219 0.3103 4.3790

11 4.5 hour 20% 9 39.70 0.99 1.6788 1.7898 1.6788 2.1576 2.3936
2.6174 3.4659 0.3511 3.8142 0.4408 0.3780 1.6004 0.7556 1.2522 2.3159 0.4306 6.5425

11 4.5 hour 20% 10 39.70 0.99 2.4285 2.6018 2.4285 3.1036 3.3329
3.3137 4.5566 0.5020 5.0586 0.5984 0.5373 1.5967 1.0811 1.7969 2.7531 0.6119 8.4237

12 6 hour 20% 1 44.00 0.99 1.5995 1.7900 1.5995 2.1152 2.1507
2.1016 2.8617 0.4857 3.0754 0.5910 0.6195 1.2831 1.2324 2.0461 2.0861 0.7062 5.5173

12 6 hour 20% 2 44.00 0.99 1.4035 1.6660 1.4035 1.9010 1.9771
2.0920 2.6709 0.3838 2.9249 0.4790 0.4898 0.9036 0.9788 1.6234 1.6437 0.5582 4.8541

12	6 hour	20%	3	44.00	0.99	0.9369	1.0501	0.9369	1.2237	1.3798		
1.5012	1.9375	0.2187	2.1319	0.2793	0.2344	0.9606	0.4775	0.7962	1.5300	0.2667	3.3861	
12	6 hour	20%	4	44.00	0.99	1.5872	1.8694	1.5872	2.0581	2.2010		
2.2490	2.9001	0.3605	3.0866	0.4021	0.3938	1.0966	0.7834	1.3061	1.8189	0.4488	4.6614	
12	6 hour	20%	5	44.00	0.99	0.9507	1.2002	0.9507	1.2401	1.3519		
1.5062	1.9902	0.2489	2.1931	0.3380	0.3451	1.1988	0.6849	1.1323	1.8630	0.3934	3.9846	
12	6 hour	20%	6	44.00	0.99	1.3235	1.5832	1.3235	1.7015	1.8519		
1.8443	2.3704	0.3544	2.5549	0.3467	0.3385	1.3702	0.6651	1.0939	1.8622	0.3860	4.3671	
12	6 hour	20%	7	44.00	0.99	1.2140	1.2712	1.2140	1.5682	1.7091		
1.8788	2.4011	0.2575	2.6200	0.3190	0.2762	1.2746	0.5570	0.9213	1.8527	0.3144	4.3069	
12	6 hour	20%	8	44.00	0.99	2.4273	2.7255	2.4273	3.0989	3.1794		
3.3757	4.2251	0.5205	4.6384	0.5750	0.5617	1.5029	1.1175	1.8629	2.4614	0.6402	7.7400	
12	6 hour	20%	9	44.00	0.99	2.1254	2.4267	2.1254	2.7328	2.8339		
3.1549	4.0303	0.5711	4.6014	0.5330	0.5035	1.6753	0.9782	1.5889	2.7283	0.5744	7.9041	
12	6 hour	20%	10	44.00	0.99	2.8134	2.9855	2.8134	3.5629	3.7344		
3.3940	4.7877	0.6238	5.3257	0.6470	0.6125	1.7231	1.2339	2.0658	3.3399	0.6977	9.3633	
13	9 hour	20%	1	51.10	0.99	1.3529	1.4025	1.3529	1.7475	1.8824		
1.8792	2.5646	0.2601	2.8213	0.3528	0.3013	0.8829	0.6168	1.0265	1.4151	0.3428	4.5792	
13	9 hour	20%	2	51.10	0.99	1.1962	1.3755	1.1962	1.5566	1.7901		
1.8905	2.4763	0.3404	2.6369	0.3353	0.2749	0.9293	0.5525	0.9390	1.3502	0.3137	4.1825	
13	9 hour	20%	3	51.10	0.99	1.1111	1.3613	1.1111	1.4586	1.4698		
1.7379	2.1556	0.2969	2.2523	0.3105	0.3211	1.0950	0.6186	1.0088	1.7982	0.3666	4.1137	
13	9 hour	20%	4	51.10	0.99	1.4803	1.6007	1.4803	1.9002	1.9852		
2.1520	2.7201	0.3624	3.0825	0.3699	0.3414	1.3128	0.6729	1.0976	1.8930	0.3892	5.3647	
13	9 hour	20%	5	51.10	0.99	0.9936	1.0095	0.9936	1.2941	1.4799		
1.6719	2.1675	0.2041	2.3550	0.2807	0.2248	1.0487	0.4548	0.7560	1.6612	0.2559	4.2671	

13	9 hour	20%	6	51.10	0.99	1.1180	1.1243	1.1180	1.4510	1.6511		
1.8398	2.4020	0.2205	2.6225	0.3096	0.2470	1.4034	0.5066	0.8408	2.0143	0.2809	4.9177	
13	9 hour	20%	7	51.10	0.99	1.3540	1.4248	1.3540	1.7461	1.8619		
1.8493	2.5396	0.2764	2.8160	0.3488	0.3060	0.9576	0.6206	1.0303	1.6639	0.3484	4.8282	
13	9 hour	20%	8	51.10	0.99	1.5520	1.6291	1.5520	1.9891	2.2709		
2.5907	3.3372	0.3255	3.6104	0.4113	0.3463	1.8596	0.6972	1.1570	2.5696	0.3944	6.3600	
13	9 hour	20%	9	51.10	0.99	1.7001	1.7638	1.7001	2.1919	2.3547		
2.4396	3.1209	0.3630	3.3978	0.4303	0.3762	1.6111	0.7818	1.3156	2.5268	0.4277	6.1972	
13	9 hour	20%	10	51.10	0.99	1.8814	1.9234	1.8814	2.4197	2.7437		
2.9473	3.9001	0.3621	4.2608	0.4889	0.4038	1.6545	0.8304	1.3826	2.2651	0.4592	6.9835	
14	12 hour	20%	1	57.00	0.99	0.9303	0.9813	0.9303	1.2159	1.3582		
1.4296	1.8930	0.2252	2.0449	0.2626	0.2209	0.9342	0.4356	0.7317	1.4578	0.2521	3.7373	
14	12 hour	20%	2	57.00	0.99	1.6330	1.6323	1.6330	2.1083	2.4462		
2.6610	3.4760	0.3748	3.7519	0.4362	0.3489	1.2548	0.7277	1.2227	1.6587	0.3966	5.8071	
14	12 hour	20%	3	57.00	0.99	0.6441	0.7793	0.6441	0.8737	0.9599		
0.9705	1.3473	0.1594	1.5013	0.2837	0.2684	0.5762	0.5451	0.9101	0.9571	0.3056	2.6625	
14	12 hour	20%	4	57.00	0.99	0.9037	0.9113	0.9037	1.1789	1.3251		
1.4938	1.9479	0.1832	2.1311	0.2568	0.2053	1.0024	0.4180	0.6914	1.4730	0.2336	3.8378	
14	12 hour	20%	5	57.00	0.99	1.0905	1.1834	1.0905	1.4159	1.5515		
1.6295	2.1766	0.2554	2.3747	0.2972	0.2626	1.3091	0.5113	0.8445	1.8672	0.2996	4.4375	
14	12 hour	20%	6	57.00	0.99	0.5457	0.5788	0.5457	0.7265	0.8251		
0.9345	1.2030	0.1221	1.2991	0.1698	0.1417	0.6940	0.2840	0.4663	1.0600	0.1613	2.2428	
14	12 hour	20%	7	57.00	0.99	1.1751	1.2610	1.1751	1.5185	1.6013		
1.7217	2.1933	0.2585	2.4519	0.3046	0.2741	1.2616	0.5501	0.9116	1.8286	0.3122	4.4729	
14	12 hour	20%	8	57.00	0.99	1.3498	1.4384	1.3498	1.7381	1.8590		

2.1618 2.7511 0.3202 2.9336 0.3465 0.3094 1.4703 0.6139 1.0037 2.1505 0.3525 5.1751

14 12 hour 20% 9 57.00 0.99 1.8981 1.9986 1.8981 2.4319 2.6115
2.7708 3.7470 0.4357 4.1827 0.4843 0.4191 1.8699 0.8350 1.3679 2.7466 0.4775 7.4069

14 12 hour 20% 10 57.00 0.99 1.7316 1.9561 1.7316 2.2118 2.2250
2.5507 3.1695 0.4755 3.4382 0.4094 0.4121 1.2792 0.7927 1.2825 2.1013 0.4705 6.0100

15 18 hour 20% 1 66.50 1.00 0.5608 0.6520 0.5608 0.7445 0.8651
1.0205 1.2894 0.1264 1.3880 0.1771 0.1383 0.7899 0.2844 0.4733 1.1594 0.1574 2.4139

15 18 hour 20% 2 66.50 1.00 1.2996 1.3032 1.2996 1.6554 1.9339
2.2930 2.9579 0.2939 3.1723 0.3780 0.3376 1.2508 0.6804 1.1255 1.5779 0.3844 5.0246

15 18 hour 20% 3 66.50 1.00 0.9148 0.9379 0.9148 1.1790 1.3158
1.4672 1.9350 0.1677 2.1027 0.2534 0.2123 0.7260 0.4288 0.7102 0.9200 0.2417 3.2296

15 18 hour 20% 4 66.50 1.00 0.5505 0.6031 0.5505 0.7442 0.8446
0.9181 1.2171 0.1138 1.3254 0.1779 0.1419 0.7658 0.2956 0.4939 1.1250 0.1613 2.5164

15 18 hour 20% 5 66.50 1.00 0.7819 1.0394 0.7819 1.0515 1.2798
1.5245 1.9181 0.2445 2.0189 0.2559 0.2074 0.7566 0.4008 0.6817 1.1458 0.2368 3.3764

15 18 hour 20% 6 66.50 1.00 0.5405 0.5921 0.5405 0.7262 0.8116
0.8826 1.1700 0.1144 1.2844 0.1704 0.1410 0.6209 0.2880 0.4792 0.8929 0.1604 2.3377

15 18 hour 20% 7 66.50 1.00 0.4093 0.4253 0.4093 0.5574 0.6394
0.7156 0.9273 0.0801 1.0074 0.1505 0.1151 0.5931 0.2438 0.4110 0.9596 0.1306 2.0933

15 18 hour 20% 8 66.50 1.00 0.8373 0.9022 0.8373 1.0990 1.1971
1.2907 1.7295 0.1927 1.9222 0.2390 0.2041 0.9940 0.4079 0.6711 1.4601 0.2325 3.6148

15 18 hour 20% 9 66.50 1.00 0.5014 0.5175 0.5014 0.6721 0.7608
0.8584 1.1143 0.1012 1.2155 0.1596 0.1280 0.7550 0.2610 0.4332 1.1882 0.1457 2.5494

15 18 hour 20% 10 66.50 1.00 1.6966 1.7237 1.6966 2.1975 2.5432
2.9163 3.7852 0.3146 4.0940 0.4685 0.3600 1.7544 0.7510 1.2552 2.2768 0.4091 6.7742

16	24 hour	20%	1	73.90	1.00	0.5738	0.6928	0.5738	0.7850	0.8606		
0.9109	1.1964	0.1462	1.3351	0.1845	0.1757	0.5962	0.3474	0.5741	1.0475	0.2003	2.5698	
16	24 hour	20%	2	73.90	1.00	0.5719	0.6466	0.5719	0.7921	0.9037		
1.0069	1.2901	0.1435	1.4279	0.2771	0.2185	0.7570	0.4562	0.7643	1.0631	0.2483	2.5310	
16	24 hour	20%	3	73.90	1.00	0.7535	1.0353	0.7535	1.0060	1.1275		
1.3738	1.6362	0.2436	1.6750	0.2263	0.2241	0.8106	0.4347	0.7137	1.3053	0.2559	3.1717	
16	24 hour	20%	4	73.90	1.00	0.4712	0.5178	0.4712	0.6420	0.7306		
0.7915	1.0466	0.0933	1.1399	0.1563	0.1271	0.5108	0.2623	0.4382	0.8714	0.1445	2.1558	
16	24 hour	20%	5	73.90	1.00	0.3117	0.3208	0.3117	0.4322	0.4964		
0.5655	0.7257	0.0739	0.7872	0.1294	0.1033	0.3920	0.2111	0.3494	0.6292	0.1175	1.5179	
16	24 hour	20%	6	73.90	1.00	0.2759	0.3484	0.2759	0.4056	0.4512		
0.5336	0.6584	0.0728	0.7195	0.1203	0.0972	0.3821	0.1979	0.3278	0.6199	0.1105	1.3900	
16	24 hour	20%	7	73.90	1.00	0.8604	0.9871	0.8604	1.1347	1.3274		
1.5844	2.0203	0.2115	2.1660	0.2638	0.2267	0.9585	0.4490	0.7375	1.3557	0.2585	3.7361	
16	24 hour	20%	8	73.90	1.00	0.8618	0.9090	0.8618	1.1413	1.2834		
1.3768	1.8271	0.1669	1.9940	0.2536	0.2086	0.9579	0.4309	0.7187	1.2646	0.2371	3.3641	
16	24 hour	20%	9	73.90	1.00	0.9067	0.9369	0.9067	1.1733	1.2636		
1.3504	1.8026	0.2071	2.0097	0.2442	0.2112	1.1730	0.4175	0.6837	1.7794	0.2407	4.0298	
16	24 hour	20%	10	73.90	1.00	0.5315	0.5820	0.5315	0.7159	0.8039		
0.8756	1.1614	0.1158	1.2772	0.1691	0.1403	0.7061	0.2855	0.4733	1.0592	0.1597	2.4961	
17	30 hour	20%	1	79.80	1.00	0.6248	0.7178	0.6248	0.8483	0.9220		
0.9577	1.3014	0.1546	1.4560	0.2019	0.1744	0.6741	0.3505	0.5774	0.9248	0.1986	2.4973	
17	30 hour	20%	2	79.80	1.00	0.4697	0.4698	0.4697	0.6098	0.7013		
0.8264	1.0656	0.0982	1.1510	0.1811	0.1393	0.7579	0.2885	0.4808	1.0956	0.1583	2.2073	
17	30 hour	20%	3	79.80	1.00	0.6279	0.6697	0.6279	0.8441	0.9546		
1.0642	1.3954	0.1312	1.5266	0.1985	0.1627	0.8338	0.3325	0.5523	1.1497	0.1851	2.8614	

```
  17         30 hour             20%      4     79.80    1.00    0.2430    0.2606    0.2430    0.3402    0.3872
0.4344    0.5620    0.0506    0.6126    0.0971    0.0710    0.3354    0.1493    0.2501    0.5532    0.0808    1.1911

  17         30 hour             20%      5     79.80    1.00    0.8886    0.9354    0.8886    1.1640    1.2698
1.3292    1.7838    0.1934    1.9772    0.2483    0.2137    0.8999    0.4313    0.7128    1.1289    0.2433    3.3495

  17         30 hour             20%      6     79.80    1.00    0.3127    0.3257    0.3127    0.4328    0.4909
0.5465    0.7062    0.0649    0.7711    0.1113    0.0912    0.4081    0.1851    0.3068    0.7001    0.1039    1.5751

  17         30 hour             20%      7     79.80    1.00    0.6287    0.7268    0.6287    0.8338    0.8948
0.8708    1.2177    0.1581    1.3758    0.1772    0.1690    0.6213    0.3335    0.5470    0.8361    0.1927    2.3786

  17         30 hour             20%      8     79.80    1.00    0.4030    0.4151    0.4030    0.5493    0.6256
0.7141    0.9203    0.0833    1.0036    0.1367    0.1092    0.6454    0.2230    0.3696    0.9800    0.1243    2.0388

  17         30 hour             20%      9     79.80    1.00    0.3774    0.4218    0.3774    0.5185    0.5793
0.6313    0.8372    0.0856    0.9228    0.1299    0.1062    0.5189    0.2157    0.3566    0.8004    0.1208    1.6014

  17         30 hour             20%     10     79.80    1.00    0.5401    0.5415    0.5401    0.7272    0.8535
1.0132    1.2894    0.1142    1.3854    0.1782    0.1336    0.7743    0.2788    0.4668    1.1134    0.1518    2.6507

 Run,    Representative hydrograph
  1     dur10min_aep20tp5.out
 Run,    Representative hydrograph
  2     dur15min_aep20tp8.out
 Run,    Representative hydrograph
  3     dur20min_aep20tp6.out
 Run,    Representative hydrograph
  4     dur25min_aep20tp8.out
 Run,    Representative hydrograph
  5     dur30min_aep20tp7.out
 Run,    Representative hydrograph
  6     dur45min_aep20tp6.out
 Run,    Representative hydrograph
  7     dur1hour_aep20tp4.out
 Run,    Representative hydrograph
  8     dur1_5hour_aep20tp7.out
```

```
 Run,    Representative hydrograph
  9     dur2hour_aep20tp6.out
 Run,    Representative hydrograph
 10     dur3hour_aep20tp4.out
 Run,    Representative hydrograph
 11     dur4_5hour_aep20tp3.out
 Run,    Representative hydrograph
 12     dur6hour_aep20tp2.out
 Run,    Representative hydrograph
 13     dur9hour_aep20tp6.out
 Run,    Representative hydrograph
 14     dur12hour_aep20tp7.out
 Run,    Representative hydrograph
 15     dur18hour_aep20tp3.out
 Run,    Representative hydrograph
 16     dur24hour_aep20tp1.out
 Run,    Representative hydrograph
 17     dur30hour_aep20tp7.out

Elapsed Run Time (hh:mm:ss) = 00:00:05
```

```
 RORBWin Batch Run Summary
 *************************

 Program version 6.45 (last updated 20th March 2019)
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 Date run: 26 Apr 2021 17:50

 Catchment file   : K:\Jobs Data\1400147 - Wurruk rezoning application\_Wat\Models\RORB\Post Dev\SWMS REV E\No
RB\1400147-RORB-PostDev-NoRB_SWMS REV E.catg
 Rainfall location: User defined
 Temporal pattern : ARR2016 point temporal patterns
 Spatial pattern  : Uniform
 Areal Red. Fact. : Based on ARR 2016 (Book 2 Chapter 4)
 Loss factors     : Constant with ARI


 Parameters:  kc =     2.63    m = 0.80

 Loss parameters     Initial loss (mm)   Cont. loss (mm/h)
                           19.00              3.00

 Peak  Description
   01  Special storage :   Ex. U/S RB - Outflow
   02  Special storage :   Ex. U/S RB - Inflow
   03  Calculated hydrograph,  External
   04  Calculated hydrograph,  20m RR PC Convey (Catch R)
   05  Calculated hydrograph,  OverlandFlowEasement(CatchS)
   06  Calculated hydrograph,  30m RR PC Convey (Catch S)
   07  Calculated hydrograph,  Catch Q-W, External
   08  Calculated hydrograph,  Catch X
   09  Calculated hydrograph,  Outfall S(Catch Q-X,External
   10  Calculated hydrograph,  Catch B
   11  Calculated hydrograph,  Catch E
   12  Calculated hydrograph,  OutfallLagoon(Catch B-G,I-K)
   13  Calculated hydrograph,  20m RR PC Convey (Catch P)
```

14 Calculated hydrograph, Outfall RB SE(Catch L-P)
15 Calculated hydrograph, Outfall SE (Catch B-G, I-P)
16 Calculated hydrograph, Outfall NW - Catch A
17 Calculated hydrograph, Entire Catchment

Run	Duration		AEP	TPat	Rain(mm)	ARF	Peak0001	Peak0002	Peak0003	Peak0004	Peak0005	Peak0006
Peak0007	Peak0008	Peak0009	Peak0010	Peak0011	Peak0012	Peak0013	Peak0014	Peak0015	Peak0016	Peak0017		
1	10 min		1%	21	25.10	0.94	4.9273	7.4912	4.9273	6.9035	6.1745	4.8994
6.4102	2.0698	8.0729	1.5124	1.9370	0.7031	3.6130	6.1753	6.3951	2.2263	16.5475		
1	10 min		1%	22	25.10	0.94	4.8939	6.9400	4.8939	6.7998	5.9968	4.7927
6.2227	2.0552	7.6449	1.4730	1.9942	0.7035	3.4493	5.9503	6.1701	2.2909	15.7611		
1	10 min		1%	23	25.10	0.94	4.9572	7.5224	4.9572	6.9857	6.2425	4.9452
6.4285	2.0784	8.0972	1.5404	1.9070	0.7026	3.7311	6.3366	6.5563	2.1773	16.8308		
1	10 min		1%	24	25.10	0.94	4.9572	7.5224	4.9572	7.1768	6.4052	5.0575
6.4287	2.0784	8.0975	1.6434	2.2292	0.7015	4.1785	6.9309	7.1505	2.5496	17.7976		
1	10 min		1%	25	25.10	0.94	4.8410	7.2974	4.8410	6.7966	6.0714	4.8354
6.3267	2.0501	7.9226	1.5011	1.9552	0.7033	3.5659	6.1104	6.3301	2.2456	16.2930		
1	10 min		1%	26	25.10	0.94	4.9572	7.5224	4.9572	7.0888	6.3306	5.0054
6.4267	2.0784	8.0955	1.5960	2.0798	0.7017	3.9716	6.6579	6.8776	2.3767	17.3497		
1	10 min		1%	27	25.10	0.94	4.9038	7.1364	4.9038	6.8072	6.2748	4.9694
6.2784	2.0561	7.7939	1.4877	1.9726	0.7033	3.5122	6.0370	6.2568	2.2665	16.0479		
1	10 min		1%	28	25.10	0.94	4.9572	7.5224	4.9572	7.1578	6.3891	5.0446
6.4230	2.0784	8.0918	1.6331	2.1967	0.7016	4.1332	6.8708	7.0904	2.5120	17.6942		
1	10 min		1%	29	25.10	0.94	4.9572	7.5224	4.9572	7.2909	6.5020	5.1059
6.3683	2.0784	8.0371	1.7077	2.4156	0.7033	4.4365	7.2673	7.4869	2.7655	18.2895		
1	10 min		1%	30	25.10	0.94	4.9572	7.5224	4.9572	7.1923	6.4183	5.0629
6.4171	2.0784	8.0859	1.6517	2.2558	0.7014	4.2147	6.9784	7.1981	2.5804	17.8644		
2	15 min		1%	21	30.80	0.95	7.4524	9.4974	7.4524	9.3887	9.7034	7.7386
9.7326	2.3505	10.6494	1.8190	2.2196	1.2544	4.3272	7.2499	7.5810	2.5338	20.7641		
2	15 min		1%	22	30.80	0.95	7.9263	10.5033	7.9263	9.9407	9.9829	7.8902
9.7806	2.8245	11.3447	1.8909	2.4423	1.2533	4.6411	7.6828	8.0126	2.7919	22.1491		
2	15 min		1%	23	30.80	0.95	8.1134	9.9223	8.1134	10.2374	9.8105	7.8094
9.8683	2.8498	10.8318	1.7885	2.3362	1.2547	4.4061	7.2412	7.5404	2.6709	21.0432		
2	15 min		1%	24	30.80	0.95	8.3057	10.4228	8.3057	10.5524	10.1962	8.0674
10.0703	3.0263	11.2304	1.9353	2.7664	1.2526	5.0159	8.0824	8.3848	3.1688	22.7841		
2	15 min		1%	25	30.80	0.95	8.6497	9.7807	8.6497	11.0424	9.8689	7.9021

10.1478	3.1721	11.4466	1.9193	2.5525	1.2539	4.5917	7.3314	7.5897	2.9248	21.2769	
2	15 min		1%	26	30.80	0.95	8.3301	10.4891	8.3301	10.6434	10.3796	8.1749
10.1126	3.0095	11.2291	2.0401	3.0494	1.2544	5.4214	8.6360	8.9431	3.4962	23.6684	
2	15 min		1%	27	30.80	0.95	8.3301	10.4891	8.3301	10.5019	10.1480	8.0281
9.9999	3.0095	11.2906	1.8937	2.6006	1.2535	4.8010	7.8143	8.1216	2.9764	22.3885	
2	15 min		1%	28	30.80	0.95	8.3597	10.3416	8.3597	10.6167	10.1486	8.0416
10.0757	3.0466	11.1576	1.9044	2.7108	1.2529	4.9224	7.9332	8.2298	3.1049	22.4923	
2	15 min		1%	29	30.80	0.95	9.1212	11.7800	9.1212	11.9888	10.2229	8.0734
10.3988	3.3500	12.7771	2.1987	2.6719	1.2732	5.2301	8.9091	9.3510	3.0711	25.1479	
2	15 min		1%	30	30.80	0.95	9.2748	12.2171	9.2748	12.2529	10.4753	8.2144
10.5161	3.3729	13.0604	2.2497	2.8714	1.2691	5.4869	9.1461	9.5880	3.2808	25.9292	
3	20 min		1%	21	35.00	0.95	9.4009	10.1661	9.4009	11.9970	11.5472	9.7325
12.8360	2.8222	13.4882	2.0816	2.4928	1.6925	4.5934	7.6047	8.0793	2.8533	23.8297	
3	20 min		1%	22	35.00	0.95	8.9046	10.0599	8.9046	11.2917	10.9848	9.6375
12.7671	2.5939	13.6060	1.9551	2.4479	1.6920	4.6286	7.6651	7.9730	2.7985	22.0393	
3	20 min		1%	23	35.00	0.95	9.3930	10.0446	9.3930	12.0104	11.4490	9.7848
12.8706	2.8410	13.5078	2.1005	2.6839	1.6912	4.8918	7.9160	8.2184	3.0736	23.9224	
3	20 min		1%	24	35.00	0.95	10.8324	12.1556	10.8324	13.6011	12.9766	10.3270
13.1883	3.6371	14.7434	2.2545	2.7512	1.7131	5.0972	8.2453	8.6379	3.1480	25.9389	
3	20 min		1%	25	35.00	0.95	9.8270	12.9505	9.8270	12.3129	12.9761	10.3170
12.9368	3.2034	14.2810	2.3018	2.8946	1.7138	5.5561	9.2318	9.7098	3.3066	27.2974	
3	20 min		1%	26	35.00	0.95	10.1878	12.3423	10.1878	13.2319	12.5140	10.1815
12.9302	3.1843	14.4934	2.3597	2.8220	1.6948	5.4736	9.2955	9.8083	3.2396	27.4315	
3	20 min		1%	27	35.00	0.95	9.8028	12.8767	9.8028	12.2831	12.9536	10.3075
12.9402	3.1778	14.2355	2.2957	2.8791	1.7139	5.5321	9.1956	9.6730	3.2887	27.1972	
3	20 min		1%	28	35.00	0.95	9.9228	13.3702	9.9228	12.5730	13.0968	10.3589
12.8966	3.3279	14.5663	2.3207	2.9535	1.7105	5.6288	9.3072	9.7918	3.3750	27.7332	
3	20 min		1%	29	35.00	0.95	11.0118	13.3482	11.0118	13.7888	13.4289	10.6020
13.2871	3.9291	14.4613	2.2736	3.1080	1.7144	5.6948	9.2023	9.6185	3.5582	27.4598	
3	20 min		1%	30	35.00	0.95	10.9969	13.3580	10.9969	13.8042	13.4820	10.6419
13.3251	3.9264	14.4915	2.2923	3.2120	1.7137	5.8424	9.4061	9.8230	3.6786	27.7971	
4	25 min		1%	21	38.40	0.96	10.6686	11.4437	10.6686	13.5163	13.0489	11.4528
14.9046	2.7807	15.9537	2.3145	2.4484	2.0840	4.8243	8.0443	8.6456	2.7966	27.3011	
4	25 min		1%	22	38.40	0.96	9.1414	9.9230	9.1414	11.7392	12.5391	11.2531
14.0852	2.8263	15.4632	2.0730	2.6360	2.0598	4.7562	7.7461	8.2019	3.0202	24.1391	
4	25 min		1%	23	38.40	0.96	10.5497	11.8077	10.5497	13.3087	13.6287	11.4216

15.2210	2.8497	16.3290	2.2094	2.4065	2.0819	4.7691	7.9380	8.4976	2.7438	26.3825	
4	25 min		1%	24	38.40	0.96	8.5865	9.3610	8.5865	10.9610	11.4309	10.7631
14.0850	2.1419	15.4389	1.9880	2.0870	2.0602	3.9146	6.4564	6.8544	2.3868	24.4775	
4	25 min		1%	25	38.40	0.96	9.3832	10.3528	9.3832	11.9570	12.1110	10.9805
14.5026	2.2747	15.5693	2.1152	2.1350	2.0601	4.2845	7.0275	7.5882	2.4320	25.5894	
4	25 min		1%	26	38.40	0.96	10.5616	11.6781	10.5616	13.3032	13.5116	11.6233
14.7105	2.8236	15.7911	2.2715	2.6357	2.0645	5.1203	8.5532	8.9867	3.0092	26.5262	
4	25 min		1%	27	38.40	0.96	10.0699	12.3258	10.0699	12.9800	13.7320	11.7139
14.4778	2.9945	15.6042	2.3341	2.7444	2.0635	5.4392	9.1971	9.6995	3.1302	27.2225	
4	25 min		1%	28	38.40	0.96	10.7568	11.2106	10.7568	13.5705	13.3570	11.5520
14.7891	2.8718	16.0034	2.3031	2.5243	2.0645	4.8475	8.0137	8.5543	2.8834	27.1803	
4	25 min		1%	29	38.40	0.96	12.3614	16.7081	12.3614	15.3264	16.2275	12.7575
15.8070	4.3734	17.8164	2.7759	3.7439	2.1046	6.9621	11.3791	11.9693	4.2834	34.0691	
4	25 min		1%	30	38.40	0.96	11.3119	13.8541	11.3119	14.0516	14.9846	12.1151
15.6293	3.3378	16.8257	2.4059	2.9227	2.0859	5.5914	9.1378	9.6917	3.3388	29.0611	
5	30 min		1%	21	41.20	0.96	10.2296	10.6587	10.2296	12.8742	13.9087	12.6069
15.8984	2.7943	17.8114	2.2492	2.3614	2.3938	4.5487	7.6272	8.1240	2.7007	27.9002	
5	30 min		1%	22	41.20	0.96	10.3664	12.3231	10.3664	13.0056	13.5874	12.0134
15.5536	2.9230	16.5489	2.2565	2.7611	2.3737	5.3657	8.9691	9.4364	3.1521	26.4960	
5	30 min		1%	23	41.20	0.96	9.7047	11.4369	9.7047	12.1991	13.1555	11.8766
15.3095	2.7655	16.3331	2.1921	2.5326	2.3692	5.0349	8.4894	8.9592	2.8922	25.4755	
5	30 min		1%	24	41.20	0.96	9.9289	11.1730	9.9289	12.5086	13.0423	11.8871
15.6903	2.6196	16.9170	2.1631	2.5267	2.3733	4.9929	8.4287	8.8630	2.8823	25.1817	
5	30 min		1%	25	41.20	0.96	10.4326	11.6367	10.4326	13.3523	14.4413	12.8715
16.2980	3.0466	17.9363	2.3182	2.7685	2.3926	5.1251	8.6881	9.2244	3.1722	28.1322	
5	30 min		1%	26	41.20	0.96	11.0158	11.3424	11.0158	13.8687	14.4510	12.8774
16.2816	2.5762	18.1221	2.3837	2.4379	2.3961	4.8237	8.0237	8.5189	2.7801	29.2321	
5	30 min		1%	27	41.20	0.96	10.1196	10.9117	10.1196	12.7802	13.1884	12.1056
15.7465	2.7547	17.1175	2.1864	2.4997	2.3932	4.8208	8.0263	8.4122	2.8548	25.8298	
5	30 min		1%	28	41.20	0.96	10.7524	11.9977	10.7524	13.5292	13.7810	12.3667
16.3341	3.1132	17.7440	2.2766	2.7293	2.3933	5.1874	8.5935	8.9920	3.1193	26.6892	
5	30 min		1%	29	41.20	0.96	12.7301	13.4345	12.7301	16.0150	15.3012	13.4029
17.5709	3.6953	18.4373	2.6467	2.9914	2.4195	5.6420	9.4992	10.1916	3.4221	31.3735	
5	30 min		1%	30	41.20	0.96	11.9867	13.8537	11.9867	15.1964	15.6663	13.1377
17.5023	3.0262	18.6751	2.5495	2.8393	2.4183	5.5802	9.1984	9.8596	3.2386	30.8850	
6	45 min		1%	21	47.60	0.96	11.6323	12.3161	11.6323	14.5908	14.9075	14.2889

18.8446	2.9229	20.1255	2.4691	2.4585	3.1404	4.9077	8.1730	8.9800	2.8015	31.4641	
6	45 min		1%	22	47.60	0.96	12.5846	13.3331	12.5846	15.7784	15.8205	14.6305
19.0158	3.2853	20.3201	2.6203	2.8856	3.1539	5.5001	9.0388	9.7817	3.2979	31.5988	
6	45 min		1%	23	47.60	0.96	8.2692	8.7394	8.2692	10.3929	11.3065	11.5247
15.1208	2.4503	16.6011	1.8717	2.2736	3.1354	4.3189	7.2176	7.4722	2.5988	24.7450	
6	45 min		1%	24	47.60	0.96	8.7880	9.7720	8.7880	11.0998	10.9306	10.9104
14.6612	2.5272	16.6321	1.9977	2.2336	3.0847	4.2614	7.0811	7.3599	2.5519	26.2053	
6	45 min		1%	25	47.60	0.96	7.9403	9.4992	7.9403	10.0137	9.9172	10.7767
14.3670	2.3674	16.1230	1.8084	2.2097	3.0827	4.2592	7.1072	7.4103	2.5242	23.9231	
6	45 min		1%	26	47.60	0.96	10.0270	10.4872	10.0270	12.6394	13.4702	13.2428
17.7473	2.1556	19.8691	2.2639	2.0871	3.1345	4.1844	6.9200	7.8796	2.3779	30.1266	
6	45 min		1%	27	47.60	0.96	8.9031	9.1738	8.9031	11.2428	12.2676	12.5307
16.2359	2.4245	17.5826	2.0094	2.1527	3.1213	4.1229	6.8396	7.1237	2.4593	25.5211	
6	45 min		1%	28	47.60	0.96	8.5565	8.7867	8.5565	10.8533	11.9764	12.5562
16.3142	1.8942	17.9646	2.0313	1.8500	3.1029	3.6425	6.0468	6.7072	2.1103	26.6721	
6	45 min		1%	29	47.60	0.96	12.7501	13.2700	12.7501	15.9334	16.3554	15.1360
20.1838	3.1061	21.7607	2.6235	2.7593	3.1623	5.3365	8.9512	9.7294	3.1533	32.5053	
6	45 min		1%	30	47.60	0.96	12.1470	13.5328	12.1470	15.2724	15.1862	14.5055
18.6405	2.8676	21.4021	2.5941	2.6891	3.1427	5.2472	8.6328	9.5651	3.0680	34.0351	
7	1 hour		1%	21	52.30	0.97	13.3928	13.9983	13.3928	16.7121	17.7070	16.6915
21.4980	3.2415	23.8460	2.8308	2.7928	3.7206	5.4161	9.0945	10.1840	3.1889	37.0517	
7	1 hour		1%	22	52.30	0.97	8.4713	9.1059	8.4713	10.7823	11.3021	11.0320
14.1917	2.5400	15.4255	1.8788	2.1739	3.5505	4.1361	6.8451	7.1134	2.4844	22.3598	
7	1 hour		1%	23	52.30	0.97	10.8804	11.5704	10.8804	13.6777	14.4062	14.2787
18.8587	2.3962	20.2629	2.3633	2.3025	3.6591	4.5824	7.5601	8.4218	2.6239	31.0742	
7	1 hour		1%	24	52.30	0.97	7.8081	8.5310	7.8081	9.7633	10.6344	11.0227
14.5121	2.0529	15.8238	1.7440	1.8994	3.5791	3.5612	5.8675	6.2714	2.1723	23.4712	
7	1 hour		1%	25	52.30	0.97	8.7780	9.8096	8.7780	10.9976	11.8133	11.2465
14.5178	2.4031	15.6664	1.8612	1.9518	3.5289	3.7799	6.2603	7.4909	2.2280	24.8188	
7	1 hour		1%	26	52.30	0.97	9.1234	11.2269	9.1234	11.4995	11.9502	10.3663
13.9324	2.6797	15.7984	1.9454	2.2826	3.5172	4.1559	6.7275	8.2901	2.6186	26.6372	
7	1 hour		1%	27	52.30	0.97	9.4186	10.1183	9.4186	11.9533	12.7565	13.1581
17.1364	2.1850	19.3214	2.2028	2.0189	3.6248	4.0193	6.5939	7.4767	2.3002	29.0982	
7	1 hour		1%	28	52.30	0.97	8.9203	9.6039	8.9203	11.3355	12.1258	12.7804
17.4083	2.3502	19.4717	2.1432	1.9118	3.6421	3.7958	6.2315	7.4145	2.1784	29.0647	
7	1 hour		1%	29	52.30	0.97	8.1872	8.4438	8.1872	10.3212	10.9553	11.8033

15.7983	1.8076	17.5557	1.9168	1.6948	3.6497	3.4292	5.6956	6.6708	1.9296	26.0828	
7	1 hour		1%	30	52.30	0.97	13.1269	14.0789	13.1269	16.4103	17.7741	16.8569
21.7208	3.2700	23.8386	2.8292	2.8261	3.7410	5.5307	9.0121	9.9269	3.2235	36.6526	
8	1.5 hour		1%	21	59.30	0.97	9.0212	9.5583	9.0212	11.3181	12.4873	12.3504
16.0809	2.0335	17.6105	2.0201	1.9115	4.2459	3.8088	6.2657	6.9103	2.1782	26.4989	
8	1.5 hour		1%	22	59.30	0.97	7.7478	7.8914	7.7478	9.7914	10.8236	11.7670
15.5632	1.6090	17.0132	1.8718	1.5752	4.3920	3.1758	5.2449	7.2884	1.7935	26.0478	
8	1.5 hour		1%	23	59.30	0.97	7.0231	7.2651	7.0231	8.8922	9.8063	9.9321
12.8898	1.6462	13.8776	1.6384	1.5545	4.2123	3.1350	5.1926	5.8687	1.7705	20.7513	
8	1.5 hour		1%	24	59.30	0.97	8.3532	8.6230	8.3532	10.4380	11.1858	10.7041
14.2414	1.9245	15.7656	1.8081	1.7187	4.1118	3.3911	5.6716	8.1047	1.9611	25.7683	
8	1.5 hour		1%	25	59.30	0.97	9.5647	9.8369	9.5647	12.0508	13.3210	12.6875
16.7223	2.5186	18.4254	2.1746	2.2052	3.9647	4.1764	7.0464	7.4432	2.5254	27.8012	
8	1.5 hour		1%	26	59.30	0.97	8.2224	8.4968	8.2224	10.4167	11.2505	12.2287
16.0845	1.9156	17.7762	1.9726	1.6945	4.4109	3.4159	5.6580	6.8797	1.9294	26.5852	
8	1.5 hour		1%	27	59.30	0.97	7.4203	7.8586	7.4203	9.3974	10.2535	10.9256
14.3371	1.6391	15.8144	1.7692	1.5687	4.3618	3.1265	5.1520	6.7697	1.7873	24.3126	
8	1.5 hour		1%	28	59.30	0.97	7.7077	9.0218	7.7077	9.8182	10.5075	10.6108
14.0397	2.0703	16.1099	1.8442	1.7968	4.3198	3.4370	5.5946	7.4536	2.0516	25.6152	
8	1.5 hour		1%	29	59.30	0.97	11.5254	11.6863	11.5254	14.4263	15.7358	15.1811
19.3976	2.6666	21.7679	2.4712	2.3212	4.4299	4.7125	7.7854	8.7749	2.6424	33.1852	
8	1.5 hour		1%	30	59.30	0.97	12.8055	14.0381	12.8055	15.8540	17.1276	16.4196
21.3106	3.0429	22.8308	2.5682	2.7810	4.4022	5.3234	8.7591	9.9179	3.1766	34.7519	
9	2 hour		1%	21	64.70	0.97	8.8491	9.3764	8.8491	11.1059	12.2656	12.2012
15.9578	1.9929	17.4564	1.9919	1.8738	4.5483	3.7356	6.1453	6.8055	2.1351	26.2040	
9	2 hour		1%	22	64.70	0.97	9.5901	10.4411	9.5901	12.0223	12.9282	12.5731
16.1657	2.2904	17.4156	2.0835	2.1557	4.6503	4.2582	6.9979	7.4947	2.4579	25.7436	
9	2 hour		1%	23	64.70	0.97	12.2398	12.7376	12.2398	15.3367	15.2798	13.8387
18.2963	3.1784	19.4913	2.5372	2.7244	4.0587	5.2247	8.7785	9.4917	3.1134	30.7699	
9	2 hour		1%	24	64.70	0.97	8.3841	9.5600	8.3841	10.5983	10.3245	9.5787
12.3069	2.6396	13.5195	1.8298	2.2128	4.5128	4.2213	6.9414	8.0624	2.5283	23.6632	
9	2 hour		1%	25	64.70	0.97	8.3153	8.6697	8.3153	10.4309	11.3271	11.5726
15.3035	1.9164	16.7671	1.8786	1.7277	4.7411	3.3968	5.6168	7.7417	1.9701	26.3712	
9	2 hour		1%	26	64.70	0.97	5.7424	6.3778	5.7424	7.2461	7.8726	7.7336
10.3482	1.3912	11.2712	1.3377	1.2797	4.4239	2.4902	4.0822	6.1358	1.4600	17.5969	
9	2 hour		1%	27	64.70	0.97	7.0113	7.2380	7.0113	8.8028	9.4149	9.8921

12.7788	1.6319	13.8415	1.5715	1.4470	4.7134	2.9025	4.8313	6.9871	1.6484	22.1035	
9	2 hour		1%	28	64.70	0.97	11.8623	13.9987	11.8623	14.5217	14.5705	12.2792
15.3871	3.9908	16.7125	2.2022	2.7647	4.7029	4.8495	7.9234	9.0441	3.1710	28.2697	
9	2 hour		1%	29	64.70	0.97	7.4702	7.6858	7.4702	9.4669	10.4568	11.5396
15.1210	1.5772	16.5886	1.7983	1.5348	4.8897	3.1033	5.1196	7.0025	1.7472	25.0816	
9	2 hour		1%	30	64.70	0.97	8.5510	8.7055	8.5510	10.8185	11.8232	12.8285
17.0868	1.7738	18.7985	2.0472	1.7349	4.9057	3.5196	5.8362	7.9591	1.9747	28.7323	
10	3 hour		1%	21	73.00	0.97	7.7402	7.8116	7.7402	9.8187	10.9974	12.2719
16.1104	1.6155	17.5544	1.9054	1.5595	5.4913	3.1746	5.2904	8.2898	1.7758	27.5979	
10	3 hour		1%	22	73.00	0.97	5.1421	5.3068	5.1421	6.5633	7.6358	7.5926
10.0820	1.3244	10.8797	1.3038	1.4354	4.1034	2.7851	4.5812	5.9411	1.6384	16.8411	
10	3 hour		1%	23	73.00	0.97	4.6035	4.9985	4.6035	6.2397	6.3107	7.0753
9.0436	0.9387	9.7080	1.3530	1.3487	3.7891	2.7462	4.6262	5.8599	1.5354	14.8108	
10	3 hour		1%	24	73.00	0.97	4.5119	4.5587	4.5119	5.7319	6.3443	6.9324
9.1966	0.9121	10.1087	1.1626	1.1186	4.0829	2.3063	3.9007	5.7652	1.2726	16.7141	
10	3 hour		1%	25	73.00	0.97	5.2471	5.9359	5.2471	6.6167	7.3216	7.2496
9.4546	1.6015	9.9268	1.1918	1.2987	4.4988	2.4798	4.0116	7.8318	1.4834	18.9249	
10	3 hour		1%	26	73.00	0.97	7.3251	7.3783	7.3251	9.2736	10.5319	10.8356
14.4989	1.4818	15.8992	1.7435	1.4767	5.2090	3.0393	5.0657	6.9760	1.6795	23.8123	
10	3 hour		1%	27	73.00	0.97	5.1394	5.5807	5.1394	6.4786	6.6744	6.5908
8.7873	1.1850	9.9723	1.1603	1.1219	4.4630	2.2089	3.6338	7.5123	1.2793	18.7640	
10	3 hour		1%	28	73.00	0.97	5.0694	5.3782	5.0694	6.4368	7.2095	7.6539
10.1652	1.1081	11.0862	1.2617	1.0652	5.0379	2.1556	3.5917	6.4893	1.2129	18.0516	
10	3 hour		1%	29	73.00	0.97	5.6443	5.7913	5.6443	7.1244	7.9098	7.4701
10.2487	1.3063	11.2282	1.2932	1.1627	4.2813	2.3942	4.0256	7.8155	1.3228	20.3664	
10	3 hour		1%	30	73.00	0.97	9.1199	10.0401	9.1199	11.4321	11.7060	13.3419
16.9736	2.1822	17.9792	1.9250	1.9970	5.7085	3.8942	6.3947	7.3140	2.2785	26.5962	
11	4.5 hour		1%	21	82.50	0.98	3.8925	3.9891	3.8925	4.9595	5.4432	5.5069
7.0041	0.8412	7.7275	0.9586	0.8327	3.1962	1.6636	2.7535	4.8823	0.9488	11.7145	
11	4.5 hour		1%	22	82.50	0.98	5.2104	5.8770	5.2104	6.5604	6.7691	7.4775
9.5089	1.4444	9.9583	1.1415	1.1826	4.4669	2.2370	3.5776	7.6684	1.3511	17.6916	
11	4.5 hour		1%	23	82.50	0.98	5.3211	5.7862	5.3211	6.7316	6.8330	7.6949
9.8115	1.1921	10.4352	1.2132	1.1443	3.5401	2.2812	3.7535	5.0810	1.3039	15.2437	
11	4.5 hour		1%	24	82.50	0.98	5.2743	5.7124	5.2743	6.6770	7.6338	8.2107
10.5999	1.3903	11.3078	1.2693	1.1694	3.5943	2.3267	3.8794	5.2248	1.3330	17.6223	
11	4.5 hour		1%	25	82.50	0.98	3.1890	3.2646	3.1890	4.0673	4.5608	4.6071

5.8771	0.7717	6.4653	0.7986	0.7197	3.8458	1.4480	2.3947	5.4869	0.8198	11.4271	
11	4.5 hour		1%	26	82.50	0.98	4.8432	5.1467	4.8432	6.1516	7.0378	7.5971
9.9710	1.1370	10.7882	1.2005	1.0368	4.6881	2.0327	3.3816	6.5130	1.1824	17.0357	
11	4.5 hour		1%	27	82.50	0.98	5.3846	5.3879	5.3846	6.8124	7.7741	7.9306
10.2971	1.3493	11.1561	1.2584	1.0837	4.4174	2.2630	3.8263	6.8658	1.2377	19.2537	
11	4.5 hour		1%	28	82.50	0.98	4.8905	4.9808	4.8905	6.1841	6.9162	6.6874
9.0929	1.1219	9.9520	1.1358	1.0038	4.2911	2.0705	3.4776	6.1165	1.1419	16.9405	
11	4.5 hour		1%	29	82.50	0.98	6.2739	6.5474	6.2739	7.9398	8.4943	8.9522
12.1353	1.3851	13.5205	1.5005	1.3115	5.6439	2.6167	4.3034	8.0665	1.4941	23.0810	
11	4.5 hour		1%	30	82.50	0.98	5.7432	6.2932	5.7432	7.2823	8.4676	8.8080
11.5897	1.4882	12.4653	1.3861	1.2621	5.4488	2.4134	4.0459	8.6637	1.4414	20.8501	
12	6 hour		1%	21	90.10	0.98	7.3975	7.7933	7.3975	9.3838	10.6443	11.7808
15.4809	1.5046	16.8864	1.8016	1.5554	5.8440	3.1125	5.1753	7.7963	1.7722	26.3437	
12	6 hour		1%	22	90.10	0.98	4.9998	5.3161	4.9998	6.3115	6.6890	6.5843
8.8397	1.0225	9.8622	1.1489	1.0698	4.0169	2.1401	3.5611	6.0426	1.2190	17.1238	
12	6 hour		1%	23	90.10	0.98	5.4535	5.5573	5.4535	6.8877	7.6924	7.3838
10.0220	1.3927	10.8816	1.2580	1.1192	3.6359	2.3126	3.9220	7.0922	1.2727	19.2465	
12	6 hour		1%	24	90.10	0.98	4.0858	4.1035	4.0858	5.2370	5.9061	5.7301
7.7109	1.0602	8.3648	1.0555	1.1863	3.0882	2.3020	3.7892	4.8308	1.3541	13.1690	
12	6 hour		1%	25	90.10	0.98	3.6321	4.0275	3.6321	4.9067	4.8142	5.4433
7.1225	0.9884	7.7949	1.0617	1.0387	3.4593	2.1223	3.5712	4.8715	1.1822	13.3752	
12	6 hour		1%	26	90.10	0.98	7.4070	8.0800	7.4070	9.2717	10.3158	9.6936
13.0831	2.0391	14.0367	1.6418	1.6107	3.1683	3.1875	5.2903	6.8441	1.8365	22.1646	
12	6 hour		1%	27	90.10	0.98	2.6331	2.6684	2.6331	3.3553	3.6976	4.0185
5.2181	0.5447	5.7294	0.6817	0.7218	3.4766	1.3578	2.2025	4.8910	0.8252	11.0050	
12	6 hour		1%	28	90.10	0.98	3.4613	3.6094	3.4613	4.3991	4.7251	5.3501
6.9113	0.7754	7.5582	0.8482	0.7350	3.9636	1.4676	2.4089	5.3313	0.8373	13.2226	
12	6 hour		1%	29	90.10	0.98	2.8154	2.8750	2.8154	3.5895	4.0427	4.3810
5.7739	0.6367	6.2859	0.7162	0.5976	3.3738	1.1907	1.9857	4.9751	0.6820	10.4520	
12	6 hour		1%	30	90.10	0.98	4.0824	4.2383	4.0824	5.1896	5.8219	6.6119
8.6605	0.8378	9.4982	1.0396	0.8583	4.9467	1.7287	2.8702	6.5652	0.9775	16.3097	
13	9 hour		1%	21	102.00	0.99	2.1876	2.3619	2.1876	2.8071	2.9166	3.3955
4.3031	0.4522	4.6171	0.5667	0.4558	2.5725	0.9447	1.5735	3.9164	0.5182	8.4020	
13	9 hour		1%	22	102.00	0.99	2.4821	2.5026	2.4821	3.1818	3.6398	3.9688
5.2158	0.5151	5.6705	0.6473	0.5189	2.7484	1.0692	1.7802	3.7469	0.5901	9.8361	
13	9 hour		1%	23	102.00	0.99	6.0290	6.1568	6.0290	7.6510	8.6843	9.3363

12.3825 1.1593 13.5417 1.4769 1.2168 4.4895 2.4964 4.1521 5.7906 1.3842 20.7165
13 9 hour 1% 24 102.00 0.99 2.7062 2.7426 2.7062 3.4547 3.7969 4.3139
5.5853 0.5955 6.1681 0.6917 0.5835 3.4696 1.1581 1.8959 4.9242 0.6648 10.8154
13 9 hour 1% 25 102.00 0.99 5.6845 6.1412 5.6845 7.2790 8.7349 9.8563
12.7268 1.4362 13.5813 1.4804 1.2365 3.8910 2.3880 4.0533 5.7380 1.4120 20.5788
13 9 hour 1% 26 102.00 0.99 2.2733 2.3683 2.2733 2.9096 3.1768 3.3861
4.5365 0.4559 4.9924 0.5777 0.4913 2.6910 0.9949 1.6549 3.8346 0.5592 9.0872
13 9 hour 1% 27 102.00 0.99 3.1245 3.1711 3.1245 3.9966 4.4855 5.1855
6.7435 0.6574 7.3214 0.8185 0.6492 3.3996 1.3170 2.1956 5.0737 0.7391 13.1212
13 9 hour 1% 28 102.00 0.99 2.9241 3.0638 2.9241 3.7006 3.9109 4.6004
5.8843 0.6495 6.3066 0.7022 0.6283 3.6134 1.2442 2.0456 5.3109 0.7161 12.2054
13 9 hour 1% 29 102.00 0.99 3.8258 3.8775 3.8258 4.8756 5.4374 6.0350
7.9616 0.7600 8.7216 0.9657 0.7875 4.5008 1.6094 2.6703 6.2841 0.8959 15.1785
13 9 hour 1% 30 102.00 0.99 6.3154 6.4755 6.3154 8.0288 9.0598 9.5951
12.7907 1.1843 13.9749 1.5319 1.2948 4.9815 2.6753 4.4609 7.9627 1.4724 23.4100
14 12 hour 1% 21 112.00 0.99 3.6777 3.7477 3.6777 4.6767 5.1406 5.5990
7.4477 0.7603 8.2080 0.9161 0.7620 4.3292 1.5432 2.5499 5.8069 0.8674 14.1112
14 12 hour 1% 22 112.00 0.99 3.4952 3.6802 3.4952 4.4134 4.6206 4.8674
6.3110 0.8145 7.1255 0.8023 0.7492 3.2521 1.4786 2.4186 4.8554 0.8541 12.8350
14 12 hour 1% 23 112.00 0.99 2.4470 2.6199 2.4470 3.1021 3.2374 3.6286
4.5668 0.4884 4.9411 0.6079 0.4977 2.5195 0.9911 1.6386 3.4113 0.5672 7.6322
14 12 hour 1% 24 112.00 0.99 2.5250 2.5491 2.5250 3.2318 3.5420 4.0241
5.2985 0.5351 5.8335 0.6555 0.5436 3.1590 1.0879 1.7884 4.5264 0.6192 9.4827
14 12 hour 1% 25 112.00 0.99 5.7151 5.7846 5.7151 7.2975 8.4123 9.2455
12.1398 1.1564 13.1553 1.4387 1.1606 4.7801 2.4241 4.0609 7.5669 1.3189 22.0411
14 12 hour 1% 26 112.00 0.99 1.8125 1.8745 1.8125 2.3278 2.5948 2.7334
3.6448 0.3652 3.9914 0.4709 0.3944 2.6018 0.8045 1.3441 3.8993 0.4488 8.3395
14 12 hour 1% 27 112.00 0.99 2.4119 2.4432 2.4119 3.0899 3.4898 3.8925
5.0459 0.4678 5.5105 0.6290 0.5080 3.2547 1.0369 1.7189 4.4742 0.5780 10.5086
14 12 hour 1% 28 112.00 0.99 4.5176 4.6020 4.5176 5.7664 6.6360 7.1230
9.4083 0.8843 10.2251 1.1277 0.9288 4.7489 1.9285 3.2286 6.2135 1.0559 16.4160
14 12 hour 1% 29 112.00 0.99 1.9866 2.0032 1.9866 2.5506 2.8632 3.2027
4.1972 0.3935 4.5772 0.5259 0.4195 2.8656 0.8606 1.4310 3.9839 0.4772 9.0307
14 12 hour 1% 30 112.00 0.99 3.4596 3.5800 3.4596 4.3912 4.7951 5.0553
6.7371 0.7603 7.4974 0.8333 0.7304 2.9532 1.4643 2.4095 4.2359 0.8319 11.7416
15 18 hour 1% 21 127.00 0.99 1.3344 1.3781 1.3344 1.7282 1.9169 2.1016

2.7837	0.2573	3.0410	0.3700	0.2862	1.5706	0.5920	0.9853	2.2324	0.3254	4.7676	
15	18 hour		1%	22	127.00	0.99	1.4677	1.5031	1.4677	1.8536	2.0563	2.3620
3.0446	0.2876	3.3242	0.3918	0.3166	2.1758	0.6457	1.0719	2.9550	0.3602	6.4253	
15	18 hour		1%	23	127.00	0.99	1.5416	1.5570	1.5416	1.9897	2.2341	2.5393
3.3172	0.3061	3.6233	0.4189	0.3320	2.1780	0.6792	1.1239	2.9620	0.3777	6.9606	
15	18 hour		1%	24	127.00	0.99	2.2038	2.2288	2.2038	2.8355	3.2129	3.6870
4.8050	0.4340	5.2390	0.5917	0.4664	2.9867	0.9559	1.5883	4.0914	0.5305	9.2038	
15	18 hour		1%	25	127.00	0.99	2.2735	2.2827	2.2735	2.9276	3.3379	3.8713
5.0213	0.4506	5.4475	0.6174	0.4757	3.0960	0.9820	1.6360	4.1856	0.5409	10.1740	
15	18 hour		1%	26	127.00	0.99	1.3263	1.4158	1.3263	1.8142	1.9657	2.3273
2.9605	0.3007	3.1756	0.4431	0.3666	1.7966	0.7536	1.2541	2.4107	0.4170	5.1329	
15	18 hour		1%	27	127.00	0.99	1.9835	2.0111	1.9835	2.5625	2.9256	3.3539
4.3629	0.3839	4.7468	0.5395	0.4273	3.2040	0.8797	1.4642	4.4864	0.4859	9.1137	
15	18 hour		1%	28	127.00	0.99	2.7376	2.8978	2.7376	3.4197	3.4515	4.1368
5.1865	0.6615	5.5062	0.6660	0.5901	2.2997	1.1439	1.8645	2.9954	0.6735	9.0171	
15	18 hour		1%	29	127.00	0.99	1.7630	1.8645	1.7630	2.2616	2.4115	2.8797
3.6472	0.3839	3.9100	0.4435	0.3960	2.0491	0.7962	1.3149	2.9408	0.4509	6.9139	
15	18 hour		1%	30	127.00	0.99	1.3730	1.3918	1.3730	1.7738	1.9805	2.2658
2.9365	0.2709	3.1968	0.3734	0.2982	2.1902	0.6123	1.0187	3.0478	0.3392	6.5734	
16	24 hour		1%	21	139.00	1.00	1.4630	1.4720	1.4630	1.8909	2.1382	2.4311
3.1664	0.2813	3.4438	0.4013	0.3152	2.3129	0.6489	1.0797	3.2293	0.3585	6.7868	
16	24 hour		1%	22	139.00	1.00	1.2305	1.2777	1.2305	1.5893	1.7374	1.8129
2.4358	0.2509	2.6867	0.3886	0.3087	1.5667	0.6425	1.0740	2.2694	0.3509	5.0368	
16	24 hour		1%	23	139.00	1.00	2.2309	2.3163	2.2309	2.8554	3.1329	3.3687
4.5045	0.4671	4.9717	0.5675	0.4804	2.4727	0.9698	1.6045	3.3152	0.5470	8.4440	
16	24 hour		1%	24	139.00	1.00	1.9390	1.9788	1.9390	2.4948	2.8131	3.1875
4.1741	0.4359	4.5601	0.5178	0.4110	2.1952	0.8448	1.4016	2.9476	0.4674	7.7851	
16	24 hour		1%	25	139.00	1.00	2.5917	2.7116	2.5917	3.2839	3.4684	3.4679
4.7702	0.5820	5.3522	0.6120	0.5567	2.4968	1.1064	1.8156	3.3240	0.6344	8.8927	
16	24 hour		1%	26	139.00	1.00	1.8813	1.9557	1.8813	2.4092	2.6192	2.8001
3.7581	0.4194	4.1775	0.4785	0.4109	2.3985	0.8221	1.3510	3.1991	0.4680	7.3020	
16	24 hour		1%	27	139.00	1.00	2.4030	2.4917	2.4030	3.0784	3.4144	3.6860
4.9124	0.4911	5.4035	0.6133	0.5165	2.5497	1.0505	1.7431	3.3081	0.5879	9.0679	
16	24 hour		1%	28	139.00	1.00	1.3666	1.4494	1.3666	1.7998	1.9345	1.9943
2.6911	0.3005	2.9916	0.3935	0.3297	1.3664	0.6713	1.1113	1.9526	0.3752	4.7236	
16	24 hour		1%	29	139.00	1.00	2.2853	2.4075	2.2853	2.9136	3.1234	3.1519

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  4.3135    0.4948    4.8083    0.5574    0.4992    2.2133    1.0011    1.6504    3.3773    0.5686    8.7543
 16         24 hour              1%     30    139.00    1.00    2.3222    2.4125    2.3222    3.0012    3.3689    3.5698
  4.7542    0.4725    5.2026    0.6062    0.5251    2.2346    1.0740    1.7936    3.4562    0.5975    9.0814
 17         30 hour              1%     21    148.00    1.00    1.0372    1.0555    1.0372    1.3463    1.4883    1.6603
  2.1836    0.2137    2.3974    0.2872    0.2323    1.5559    0.4731    0.7825    2.1863    0.2644    4.5068
 17         30 hour              1%     22    148.00    1.00    1.8092    1.8326    1.8092    2.3326    2.6312    2.9826
  3.8977    0.3543    4.2519    0.4900    0.3875    2.7177    0.7963    1.3226    3.5231    0.4408    8.0990
 17         30 hour              1%     23    148.00    1.00    1.5448    1.5836    1.5448    1.9921    2.2016    2.3901
  3.1706    0.3125    3.4831    0.4087    0.3400    1.7362    0.6923    1.1475    2.3105    0.3869    6.1805
 17         30 hour              1%     24    148.00    1.00    1.2610    1.2809    1.2610    1.6340    1.8194    2.0622
  2.7028    0.2552    2.9581    0.3497    0.2780    1.8583    0.5664    0.9379    2.4809    0.3163    5.4754
 17         30 hour              1%     25    148.00    1.00    2.1910    2.2213    2.1910    2.8608    3.2691    3.8278
  4.9450    0.4196    5.3647    0.6398    0.4793    2.7555    0.9959    1.6604    3.9402    0.5447    9.8496
 17         30 hour              1%     26    148.00    1.00    1.1171    1.1411    1.1171    1.4777    1.6607    1.8761
  2.4432    0.2223    2.6655    0.3388    0.2628    1.4462    0.5424    0.9025    1.8980    0.2989    4.5905
 17         30 hour              1%     27    148.00    1.00    0.9006    0.9339    0.9006    1.1718    1.2615    1.3356
  1.7893    0.1957    1.9850    0.2446    0.2123    1.1365    0.4261    0.7025    1.7299    0.2418    3.7008
 17         30 hour              1%     28    148.00    1.00    0.7481    0.7508    0.7481    0.9849    1.1216    1.3105
  1.6876    0.1468    1.8308    0.2258    0.1730    1.2333    0.3535    0.5879    1.7089    0.1970    3.7068
 17         30 hour              1%     29    148.00    1.00    1.2185    1.2441    1.2185    1.5794    1.7611    1.9628
  2.5808    0.2442    2.8250    0.3344    0.2684    1.9081    0.5494    0.9106    2.7362    0.3053    5.7027
 17         30 hour              1%     30    148.00    1.00    0.8170    0.8219    0.8170    1.0745    1.2277    1.4180
  1.8314    0.1551    1.9865    0.2425    0.1885    1.2552    0.3876    0.6439    1.7956    0.2144    3.9964
Run,    Representative hydrograph
 1     dur10min_aep1tp26.out
Run,    Representative hydrograph
 2     dur15min_aep1tp28.out
Run,    Representative hydrograph
 3     dur20min_aep1tp25.out
Run,    Representative hydrograph
 4     dur25min_aep1tp28.out
Run,    Representative hydrograph
 5     dur30min_aep1tp21.out
Run,    Representative hydrograph
 6     dur45min_aep1tp26.out
Run,    Representative hydrograph
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  7     dur1hour_aep1tp28.out
 Run,    Representative hydrograph
  8     dur1_5hour_aep1tp21.out
 Run,    Representative hydrograph
  9     dur2hour_aep1tp21.out
 Run,    Representative hydrograph
 10     dur3hour_aep1tp25.out
 Run,    Representative hydrograph
 11     dur4_5hour_aep1tp24.out
 Run,    Representative hydrograph
 12     dur6hour_aep1tp30.out
 Run,    Representative hydrograph
 13     dur9hour_aep1tp27.out
 Run,    Representative hydrograph
 14     dur12hour_aep1tp30.out
 Run,    Representative hydrograph
 15     dur18hour_aep1tp23.out
 Run,    Representative hydrograph
 16     dur24hour_aep1tp23.out
 Run,    Representative hydrograph
 17     dur30hour_aep1tp24.out

Elapsed Run Time (hh:mm:ss) = 00:00:04
```

APPENDIX E: POST-DEVELOPED RORB RESULTS (WITH RB)

RORBWin Batch Run Summary
****

Program version 6.45 (last updated 20th March 2019)
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Date run: 26 Apr 2021 17:51

Catchment file   : K:\Jobs Data\1400147 - Wurruk rezoning application_Wat\Models\RORB\Post Dev\SWMS REV E\RB\1400147-RORB-PostDev-RB_SWMS REV E.catg
Rainfall location: User defined
Temporal pattern : ARR2016 point temporal patterns
Spatial pattern : Uniform
Areal Red. Fact. : Based on ARR 2016 (Book 2 Chapter 4)
Loss factors   : Constant with ARI

Parameters: kc =   2.63   m = 0.80

Loss parameters	Initial loss (mm)	Cont. loss (mm/h)
	19.00	3.00

Peak	Description
01	Calculated hydrograph, Catch B
02	Calculated hydrograph, Outfall lagoon (Catch B-C,I)
03	Calculated hydrograph, OutfallLagoon(Catch B-G,I-K)
04	Calculated hydrograph, 20m RR PC Convey (Catch P)
05	Special storage : RB SE - Outflow
06	Special storage : RB SE - Inflow
07	Calculated hydrograph, Outfall SE (Catch B-G, I-P)
08	Special storage : Ex. U/S RB - Outflow
09	Special storage : Ex. U/S RB - Inflow
10	Special storage : RB South - Outflow
11	Special storage : RB South - Inflow
12	Calculated hydrograph, Outfall S(Catch Q-X,External
13	Special storage : RB NW - Outflow
14	Special storage : RB NW - Inflow
15	Calculated hydrograph, Entire Catchment

Run	Duration		AEP	TPat	Rain(mm)	ARF	Peak0001	Peak0002	Peak0003	Peak0004	Peak0005
Peak0006	Peak0007	Peak0008	Peak0009	Peak0010	Peak0011	Peak0012	Peak0013	Peak0014	Peak0015		
1	10 min		20%	1	11.60	0.94	0.5579	0.2028	0.1481	1.4672	0.1047
2.4089	0.2143	0.7472	2.0507	0.1466	1.7280	0.5766	0.1446	0.9171	0.6690		
1	10 min		20%	2	11.60	0.94	0.5420	0.2038	0.1482	1.3948	0.1047
2.3239	0.2144	0.7472	2.0507	0.1465	1.7343	0.5770	0.1448	0.8515	0.6771		
1	10 min		20%	3	11.60	0.94	0.5406	0.2039	0.1482	1.3889	0.1048
2.3170	0.2144	0.7472	2.0507	0.1465	1.7348	0.5770	0.1448	0.8461	0.6780		
1	10 min		20%	4	11.60	0.94	0.5171	0.2052	0.1483	1.2859	0.1047
2.1923	0.2145	0.7472	2.0507	0.1464	1.7420	0.5777	0.1451	0.8261	0.6939		
1	10 min		20%	5	11.60	0.94	0.5465	0.2034	0.1481	1.4163	0.1047
2.3492	0.2143	0.7472	2.0507	0.1465	1.7327	0.5769	0.1447	0.8709	0.6743		
1	10 min		20%	6	11.60	0.94	0.5170	0.2052	0.1483	1.2856	0.1047
2.1919	0.2145	0.7472	2.0507	0.1464	1.7420	0.5777	0.1451	0.8262	0.6940		
1	10 min		20%	7	11.60	0.94	0.5936	0.2039	0.1500	1.6084	0.1080
2.5804	0.2174	0.7472	2.0507	0.1483	1.7097	0.5765	0.1483	1.0396	0.6600		
1	10 min		20%	8	11.60	0.94	0.5172	0.2052	0.1483	1.2864	0.1047
2.1930	0.2145	0.7472	2.0507	0.1464	1.7420	0.5777	0.1451	0.8259	0.6938		
1	10 min		20%	9	11.60	0.94	0.5698	0.2022	0.1481	1.5213	0.1049
2.4713	0.2144	0.7472	2.0507	0.1473	1.7236	0.5765	0.1445	0.9662	0.6640		
1	10 min		20%	10	11.60	0.94	0.5761	0.2019	0.1481	1.5500	0.1049
2.5029	0.2145	0.7472	2.0507	0.1473	1.7134	0.5765	0.1448	0.9930	0.6612		
2	15 min		20%	1	14.30	0.95	0.6115	0.2782	0.1973	1.6133	0.1515
2.5345	0.2888	1.1384	2.2232	0.2024	2.1425	0.7274	0.2020	1.0633	0.8189		
2	15 min		20%	2	14.30	0.95	0.5885	0.2801	0.1974	1.5145	0.1514
2.4323	0.2888	1.1328	2.1632	0.2014	2.1160	0.7274	0.2005	0.9655	0.8320		
2	15 min		20%	3	14.30	0.95	0.5964	0.2791	0.1974	1.4186	0.1514
2.3088	0.2889	1.1499	2.3555	0.2016	2.1642	0.7269	0.2005	0.9017	0.8285		
2	15 min		20%	4	14.30	0.95	0.6807	0.2751	0.1989	1.6829	0.1546
2.8638	0.2924	1.2785	2.6548	0.2138	2.2938	0.7453	0.2080	1.0498	0.9059		
2	15 min		20%	5	14.30	0.95	0.6323	0.2799	0.1992	1.7137	0.1548
2.6551	0.2926	1.1395	2.2358	0.2040	2.1532	0.7272	0.2070	1.1513	0.8131		
2	15 min		20%	6	14.30	0.95	0.6541	0.2777	0.1990	1.6244	0.1547
2.7166	0.2924	1.1666	2.5174	0.2049	2.2385	0.7118	0.2077	1.1066	0.8901		
2	15 min		20%	7	14.30	0.95	0.6948	0.2738	0.1988	1.7446	0.1546
2.9411	0.2923	1.2785	2.6548	0.2139	2.2910	0.7449	0.2080	1.0400	0.8957		
2	15 min		20%	8	14.30	0.95	0.6683	0.2762	0.1989	1.6298	0.1545

2.7961 0.2923 1.2785 2.6548 0.2138 2.2966 0.7456 0.2077 1.0762 0.9144
2 15 min 20% 9 14.30 0.95 0.7218 0.2720 0.1986 1.8648 0.1542
3.0888 0.2919 1.2785 2.6548 0.2141 2.2827 0.7442 0.2083 1.1473 0.8756
2 15 min 20% 10 14.30 0.95 0.7528 0.2706 0.1987 2.0045 0.1547
3.2545 0.2924 1.2785 2.6548 0.2152 2.2576 0.7439 0.2090 1.2724 0.8543
3 20 min 20% 1 16.30 0.96 0.6724 0.3408 0.2355 1.6811 0.1889
2.7940 0.3487 1.3974 2.4115 0.2581 2.4071 0.8397 0.2430 1.0122 1.0180
3 20 min 20% 2 16.30 0.96 0.6390 0.3425 0.2376 1.5069 0.1926
2.5325 0.3526 1.4244 2.4422 0.2535 2.4464 0.8359 0.2448 0.8902 1.0208
3 20 min 20% 3 16.30 0.96 0.6461 0.3417 0.2376 1.5524 0.1926
2.5925 0.3526 1.4673 2.4697 0.2590 2.4777 0.8536 0.2452 0.9221 1.0319
3 20 min 20% 4 16.30 0.96 0.7502 0.3315 0.2366 1.7663 0.1930
3.0316 0.3519 1.6088 3.0699 0.2637 2.7011 0.8616 0.2510 1.1780 1.0768
3 20 min 20% 5 16.30 0.96 0.7786 0.3389 0.2391 2.1289 0.1973
3.3525 0.3562 1.4090 2.3786 0.2624 2.4814 0.8400 0.2541 1.4025 0.9605
3 20 min 20% 6 16.30 0.96 0.7614 0.3344 0.2387 1.9433 0.1973
3.1243 0.3560 1.5239 2.8698 0.2594 2.6340 0.8506 0.2561 1.3122 0.9980
3 20 min 20% 7 16.30 0.96 0.7804 0.3310 0.2377 1.8827 0.1956
3.2397 0.3542 1.6433 3.1142 0.2677 2.7218 0.8732 0.2550 1.2588 1.0768
3 20 min 20% 8 16.30 0.96 0.7272 0.3334 0.2368 1.7791 0.1933
2.8848 0.3522 1.5187 2.8340 0.2576 2.6195 0.8528 0.2499 1.1634 0.9831
3 20 min 20% 9 16.30 0.96 0.7537 0.3351 0.2388 1.9733 0.1974
3.0814 0.3561 1.5093 2.7720 0.2594 2.6061 0.8540 0.2558 1.3270 0.9560
3 20 min 20% 10 16.30 0.96 0.7962 0.3310 0.2385 1.9437 0.1974
3.3234 0.3559 1.6433 3.1142 0.2684 2.7257 0.8729 0.2573 1.2417 1.0711
4 25 min 20% 1 17.80 0.96 0.7265 0.3809 0.2660 1.6240 0.2223
2.6674 0.3970 1.7509 2.9956 0.3107 2.8370 0.9546 0.2753 1.0088 1.1422
4 25 min 20% 2 17.80 0.96 0.7161 0.3685 0.2541 1.6553 0.2223
2.7481 0.3834 1.6167 2.8972 0.3105 2.5809 0.9126 0.2769 0.9640 1.1774
4 25 min 20% 3 17.80 0.96 0.7166 0.3851 0.2635 1.7084 0.2225
2.8323 0.3938 1.5891 2.7425 0.3131 2.6757 0.9289 0.2778 1.0099 1.1644
4 25 min 20% 4 17.80 0.96 0.7333 0.3811 0.2660 1.8539 0.2227
3.0158 0.3968 1.6791 2.7275 0.3135 2.8012 0.9463 0.2790 1.1479 1.1310
4 25 min 20% 5 17.80 0.96 0.7646 0.3827 0.2679 1.9695 0.2266
3.2078 0.4004 1.6688 2.6833 0.3165 2.8158 0.9438 0.2836 1.2265 1.1248
4 25 min 20% 6 17.80 0.96 0.6987 0.3851 0.2662 1.5494 0.2221
2.5491 0.3969 1.7089 2.8602 0.3123 2.7935 0.9533 0.2751 0.9187 1.1672
4 25 min 20% 7 17.80 0.96 0.7750 0.3674 0.2559 1.8636 0.2267

3.1766	0.3872	1.6129	2.9195	0.3141	2.6282	0.9083	0.2836	1.1832	1.1646		
4	25 min		20%	8	17.80	0.96	0.7595	0.3808	0.2628	1.8611	0.2266
3.1281	0.3946	1.5838	2.7547	0.3158	2.7029	0.9267	0.2836	1.0987	1.1541		
4	25 min		20%	9	17.80	0.96	0.8325	0.3751	0.2674	2.0336	0.2269
3.3515	0.4001	1.7901	3.2682	0.3140	2.9840	0.9435	0.2836	1.3525	1.1550		
4	25 min		20%	10	17.80	0.96	0.8353	0.3804	0.2679	2.2460	0.2270
3.5766	0.4004	1.6303	2.6367	0.3184	2.8017	0.9347	0.2836	1.4552	1.0892		
5	30 min		20%	1	19.10	0.97	0.7828	0.4167	0.2912	1.7501	0.2474
2.9391	0.4353	1.9464	3.2883	0.3702	3.0958	1.0396	0.2836	1.1291	1.2393		
5	30 min		20%	2	19.10	0.97	0.7095	0.4082	0.2792	1.6867	0.2467
2.8509	0.4216	1.7010	2.5130	0.3529	2.6787	0.7308	0.2836	1.0196	0.9559		
5	30 min		20%	3	19.10	0.97	0.6658	0.4144	0.2801	1.4223	0.2463
2.3606	0.4219	1.6251	2.5358	0.3516	2.7423	0.7561	0.2836	0.8107	1.0785		
5	30 min		20%	4	19.10	0.97	0.7778	0.4255	0.2934	1.8981	0.2517
3.1108	0.4387	1.8345	2.8385	0.3765	3.0268	1.0238	0.2836	1.1470	1.2622		
5	30 min		20%	5	19.10	0.97	0.8022	0.4224	0.2932	2.0152	0.2519
3.2577	0.4387	1.8414	2.8662	0.3766	3.0557	1.0242	0.2836	1.2507	1.2434		
5	30 min		20%	6	19.10	0.97	0.7723	0.4101	0.2813	1.7825	0.2514
2.9628	0.4252	1.8192	3.0933	0.3729	2.8706	0.9985	0.2836	1.0372	1.2896		
5	30 min		20%	7	19.10	0.97	0.7928	0.4214	0.2931	1.9655	0.2518
3.2052	0.4386	1.8731	2.9901	0.3764	3.0804	1.0302	0.2836	1.2065	1.2470		
5	30 min		20%	8	19.10	0.97	0.8062	0.4012	0.2788	1.8998	0.2478
3.1223	0.4212	1.8824	3.2481	0.3681	2.8741	0.9774	0.2836	1.1343	1.2716		
5	30 min		20%	9	19.10	0.97	0.8783	0.4152	0.2947	2.0647	0.2558
3.4062	0.4422	2.0148	3.5253	0.3790	3.2661	1.0323	0.2836	1.3301	1.2629		
5	30 min		20%	10	19.10	0.97	0.9222	0.4123	0.2944	2.2298	0.2563
3.7355	0.4423	2.0787	3.6892	0.3877	3.3336	1.0335	0.2836	1.4947	1.3143		
6	45 min		20%	1	22.00	0.97	0.7134	0.7189	0.4715	1.4064	0.2836
2.3118	0.6875	2.4231	3.0006	0.6664	3.6066	0.7779	0.2836	0.8311	1.4107		
6	45 min		20%	2	22.00	0.97	0.7345	0.7137	0.4702	1.5231	0.2836
2.4898	0.6864	2.5239	3.0759	0.6853	3.7001	0.8954	0.2836	0.9052	1.4275		
6	45 min		20%	3	22.00	0.97	0.6838	0.6894	0.4579	1.5540	0.2836
2.6183	0.6708	1.9489	2.2628	0.6585	3.4074	0.7254	0.2836	0.9544	1.3840		
6	45 min		20%	4	22.00	0.97	0.7147	0.7586	0.4747	1.4135	0.2836
2.2858	0.6874	2.6448	3.3558	0.6647	3.6613	0.9391	0.2836	0.8346	1.4964		
6	45 min		20%	5	22.00	0.97	0.9052	0.6940	0.4697	2.0387	0.2836
3.3235	0.6879	2.7600	3.7860	0.6895	3.8674	1.1418	0.2870	1.2440	1.4362		
6	45 min		20%	6	22.00	0.97	0.7809	0.7818	0.4882	1.5854	0.2836

2.5717	0.7097	2.8894	3.6168	0.6918	3.9115	1.0013	0.2836	0.9270	1.5461		
6	45 min		20%	7	22.00	0.97	0.8749	0.7257	0.4749	1.9753	0.2836
3.3012	0.6998	2.6841	3.5810	0.7005	3.9519	1.0334	0.3009	1.1427	1.4522		
6	45 min		20%	8	22.00	0.97	0.8137	0.6888	0.4591	1.9439	0.2836
3.1299	0.6768	2.0926	2.9495	0.6596	3.5951	0.7780	0.2836	1.2339	1.3938		
6	45 min		20%	9	22.00	0.97	1.0319	0.7167	0.4761	2.6020	0.2836
4.2987	0.7060	2.9738	4.0438	0.7187	4.1858	1.2559	0.3248	1.5853	1.5750		
6	45 min		20%	10	22.00	0.97	0.8967	0.7326	0.4747	2.1176	0.2836
3.6121	0.7003	2.7140	3.4750	0.6946	4.0292	1.0653	0.3085	1.3475	1.4460		
7	1 hour		20%	1	24.20	0.98	0.6355	0.8538	0.6194	1.5569	0.2836
2.5936	0.9018	2.1520	2.3855	0.9244	3.7581	0.9245	0.2836	0.9282	1.8100		
7	1 hour		20%	2	24.20	0.98	0.6588	0.8864	0.6084	1.3898	0.2848
2.3362	0.8906	2.4419	2.9986	0.9301	3.8866	0.9303	0.2836	0.8313	1.8014		
7	1 hour		20%	3	24.20	0.98	0.6075	0.8888	0.6246	1.4738	0.2914
2.4148	0.9067	2.2737	2.4097	0.9345	4.0017	0.9345	0.2858	0.9142	1.8298		
7	1 hour		20%	4	24.20	0.98	0.8579	0.9182	0.6417	2.0014	0.3159
3.3210	0.9253	2.8869	3.5375	1.0107	4.6595	1.1071	0.3584	1.1731	1.9342		
7	1 hour		20%	5	24.20	0.98	0.7914	0.9902	0.6532	1.4495	0.3058
2.4105	0.9368	3.1469	3.3312	1.0167	4.7475	1.0168	0.3456	0.8238	1.9433		
7	1 hour		20%	6	24.20	0.98	0.9234	0.9064	0.6390	2.0565	0.3123
3.3738	0.9226	3.1142	3.9683	0.9924	4.6918	1.2674	0.3594	1.2180	1.9141		
7	1 hour		20%	7	24.20	0.98	0.8874	0.9649	0.6563	1.9533	0.3198
3.2355	0.9399	3.0278	3.6231	1.0342	4.8385	1.0342	0.3711	1.1789	1.9703		
7	1 hour		20%	8	24.20	0.98	0.7302	0.9411	0.6399	1.5958	0.3053
2.6341	0.9235	2.3716	2.7423	0.9858	4.3602	0.9858	0.3286	0.9570	1.9035		
7	1 hour		20%	9	24.20	0.98	1.2872	1.1546	0.6988	2.9991	0.3252
5.0023	0.9824	4.9470	7.2011	1.1347	6.0267	2.0973	0.4134	1.7837	2.4297		
7	1 hour		20%	10	24.20	0.98	1.1588	1.0980	0.6854	2.6284	0.3294
4.3875	0.9690	4.3412	5.6282	1.0882	5.6232	1.4072	0.4195	1.5231	2.0600		
8	1.5 hour		20%	1	27.60	0.98	0.7023	0.9374	0.8494	1.5524	0.3943
2.5935	1.1330	2.0877	2.5366	1.3121	3.8471	1.3130	0.3168	0.9140	2.5735		
8	1.5 hour		20%	2	27.60	0.98	0.8649	0.9742	0.8427	1.9477	0.3599
3.2091	1.1263	2.4788	3.4733	1.2503	3.5990	1.5605	0.2836	1.1776	2.4496		
8	1.5 hour		20%	3	27.60	0.98	0.7272	1.0412	0.8310	1.6618	0.3738
2.7332	1.1146	2.4899	3.1723	1.3117	3.5109	1.3664	0.2836	0.9883	2.4734		
8	1.5 hour		20%	4	27.60	0.98	0.7322	1.2663	0.9360	1.2775	0.4413
2.0960	1.2196	2.9232	3.1152	1.5224	5.3615	1.5225	0.4057	0.7288	2.8435		
8	1.5 hour		20%	5	27.60	0.98	0.8747	0.8886	0.8620	2.0330	0.3963

3.3945	1.1456	2.9153	3.4452	1.3085	4.4770	1.3722	0.3452	1.2088	2.6023		
8	1.5 hour		20%	6	27.60	0.98	0.6375	1.1880	0.9043	1.1333	0.4131
1.8681	1.1879	2.6379	2.7205	1.4410	4.6903	1.4410	0.3447	0.6543	2.7138		
8	1.5 hour		20%	7	27.60	0.98	0.8454	0.9059	0.8635	1.7710	0.4009
2.9530	1.1471	2.8556	3.7480	1.3273	4.0191	1.3277	0.3036	1.0072	2.6136		
8	1.5 hour		20%	8	27.60	0.98	0.7988	1.2407	0.9223	1.7871	0.4308
2.9858	1.2059	2.6832	3.2435	1.4944	5.0588	1.4945	0.4041	1.0307	2.8050		
8	1.5 hour		20%	9	27.60	0.98	1.0118	1.4056	0.9626	2.0532	0.4533
3.4608	1.2462	4.8907	5.3396	1.5791	6.5279	1.5793	0.4608	1.2456	2.9068		
8	1.5 hour		20%	10	27.60	0.98	1.2691	1.5410	0.9953	2.9701	0.4599
4.9263	1.2789	6.3120	7.7979	1.6527	7.0838	2.2618	0.4899	1.7888	3.0041		
9	2 hour		20%	1	30.30	0.98	0.6585	0.9106	0.9801	1.5064	0.4283
2.4957	1.2929	1.6810	2.3477	1.4897	2.9655	1.5310	0.2836	0.8808	2.9104		
9	2 hour		20%	2	30.30	0.98	0.6875	0.7585	0.9463	1.5738	0.4163
2.6185	1.2644	1.6002	2.2971	1.3783	2.6347	1.4546	0.2836	0.9482	2.7815		
9	2 hour		20%	3	30.30	0.98	0.5845	0.9524	1.0093	1.4871	0.4517
2.4702	1.3405	1.6980	1.7296	1.5414	3.4098	1.5556	0.2836	0.9044	3.0505		
9	2 hour		20%	4	30.30	0.98	0.5720	1.1680	1.0986	1.4214	0.4944
2.3102	1.4420	2.3683	2.5208	1.7530	4.3288	1.7539	0.3507	0.8946	3.3286		
9	2 hour		20%	5	30.30	0.98	0.8436	1.5109	1.1533	1.7166	0.5101
2.8175	1.4945	3.8098	4.4325	1.9017	5.7818	1.9019	0.4189	1.0249	3.4840		
9	2 hour		20%	6	30.30	0.98	0.6160	1.1915	1.0547	1.2649	0.4604
2.0793	1.3736	2.6556	3.2168	1.6455	4.0651	1.6457	0.2836	0.7527	3.1668		
9	2 hour		20%	7	30.30	0.98	0.5787	1.1210	1.0808	1.2148	0.4811
2.0192	1.4252	2.2720	2.5865	1.7091	4.0928	1.7115	0.3395	0.7175	3.2824		
9	2 hour		20%	8	30.30	0.98	0.6466	1.2777	1.0909	1.1907	0.4753
1.9508	1.4158	2.6986	2.9235	1.6843	4.9212	1.6850	0.3563	0.6845	3.2352		
9	2 hour		20%	9	30.30	0.98	0.8422	1.2901	1.1584	1.5612	0.5269
2.5849	1.5228	3.4163	3.5118	1.9015	5.8433	1.9024	0.4490	0.9054	3.5116		
9	2 hour		20%	10	30.30	0.98	0.8738	1.3933	1.1769	1.7608	0.5397
2.9755	1.5433	3.4669	3.6979	1.9573	5.4385	1.9576	0.4652	1.0997	3.5792		
10	3 hour		20%	1	34.50	0.98	0.5826	0.8637	1.0437	1.2590	0.4447
2.0913	1.3903	1.9310	2.3244	1.5896	2.9730	1.5896	0.2836	0.7286	3.1645		
10	3 hour		20%	2	34.50	0.98	0.4670	0.7821	1.0945	0.7901	0.4372
1.2956	1.4867	1.5945	1.8785	1.4654	3.1472	1.5530	0.2836	0.4614	3.1160		
10	3 hour		20%	3	34.50	0.98	0.7430	0.9274	1.1584	1.5008	0.4731
2.5442	1.5973	1.7466	2.1401	1.5849	3.7756	1.7365	0.3226	0.8291	3.5126		
10	3 hour		20%	4	34.50	0.98	0.6588	0.9711	1.1776	1.2310	0.4773

2.0468 1.6206 2.2643 2.8315 1.6485 4.3636 1.7519 0.3278 0.6830 3.5733
10 3 hour 20% 5 34.50 0.98 0.4180 1.0049 1.2510 0.7144 0.5073
1.1912 1.6676 1.5884 1.6220 1.8648 3.2785 1.9158 0.2836 0.4031 3.7798
10 3 hour 20% 6 34.50 0.98 0.4462 1.0330 1.2545 0.7944 0.5229
1.3343 1.6764 1.7646 1.8595 1.8646 3.3227 1.8646 0.2836 0.4458 3.7410
10 3 hour 20% 7 34.50 0.98 0.4028 0.7674 1.1599 0.7441 0.4773
1.2304 1.5744 1.2093 1.5414 1.6204 2.6691 1.7651 0.2836 0.4196 3.4428
10 3 hour 20% 8 34.50 0.98 0.8111 1.2934 1.2150 1.6793 0.5033
2.7561 1.6350 3.0522 3.5540 1.8565 5.7825 2.0049 0.4362 0.9769 3.5730
10 3 hour 20% 9 34.50 0.98 0.6782 1.3743 1.4669 1.2288 0.5803
2.0588 1.8976 2.8810 2.8890 2.2285 5.2291 2.2534 0.4133 0.6746 4.2826
10 3 hour 20% 10 34.50 0.98 0.5637 1.2428 1.4301 1.0108 0.5851
1.6696 1.8872 2.2709 2.4348 2.1927 4.6203 2.2557 0.3844 0.5749 4.2360
11 4.5 hour 20% 1 39.70 0.99 0.3384 0.6361 1.1449 0.5939 0.4509
0.9790 1.5857 0.9543 1.2557 1.5237 1.9708 1.6398 0.2224 0.3348 3.4103
11 4.5 hour 20% 2 39.70 0.99 0.3542 0.8429 1.2450 0.6446 0.4876
1.0510 1.6840 1.4162 1.6023 1.8506 2.7927 1.9312 0.2784 0.3913 3.7797
11 4.5 hour 20% 3 39.70 0.99 0.5878 0.7677 1.2665 1.2263 0.5015
2.0360 1.7486 1.5848 1.7586 1.7053 2.8335 1.8354 0.2836 0.7028 3.7318
11 4.5 hour 20% 4 39.70 0.99 0.3837 0.7894 1.2297 0.7556 0.4837
1.2481 1.7033 1.2845 1.4962 1.6913 2.5548 1.8316 0.2685 0.4321 3.6627
11 4.5 hour 20% 5 39.70 0.99 0.4664 0.7995 1.3412 0.8786 0.5462
1.4758 1.8606 1.2849 1.6060 1.8324 2.4360 1.9951 0.2672 0.4888 4.0159
11 4.5 hour 20% 6 39.70 0.99 0.5516 1.1168 1.3847 1.0995 0.5849
1.8336 1.8833 2.3839 2.6706 2.0772 3.7733 2.0772 0.2836 0.6278 4.2265
11 4.5 hour 20% 7 39.70 0.99 0.3920 0.9205 1.4031 0.7278 0.5728
1.1769 1.9157 1.5355 1.7794 2.0070 2.8755 2.0849 0.2836 0.4299 4.1938
11 4.5 hour 20% 8 39.70 0.99 0.2829 0.7028 1.2926 0.5305 0.5126
0.8754 1.7965 1.0028 1.0463 1.7327 2.0858 1.8822 0.2404 0.3103 3.8449
11 4.5 hour 20% 9 39.70 0.99 0.4408 1.0936 1.6004 0.7556 0.6202
1.2522 2.1673 1.6788 1.7898 2.3180 3.4659 2.4251 0.2935 0.4306 4.7243
11 4.5 hour 20% 10 39.70 0.99 0.5984 1.3360 1.5967 1.0811 0.6252
1.7969 2.1132 2.4285 2.6018 2.4736 4.5566 2.4736 0.3528 0.6119 4.7813
12 6 hour 20% 1 44.00 0.99 0.5910 0.7725 1.2831 1.2324 0.5054
2.0461 1.7740 1.5995 1.7900 1.7181 2.8617 1.8516 0.2836 0.7062 3.7618
12 6 hour 20% 2 44.00 0.99 0.4790 0.7235 0.9036 0.9788 0.3944
1.6234 1.2232 1.4035 1.6660 1.4746 2.6709 1.4816 0.2836 0.5582 2.8604
12 6 hour 20% 3 44.00 0.99 0.2793 0.5414 0.9606 0.4775 0.4303

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0.7962    1.3909    0.9369    1.0501    1.2870    1.9375    1.4181    0.2147    0.2667    2.9674
  12          6 hour              20%       4     44.00    0.99    0.4021    0.7470    1.0966    0.7834    0.4628
1.3061    1.5341    1.5872    1.8694    1.4602    2.9001    1.5080    0.2740    0.4488    3.1588
  12          6 hour              20%       5     44.00    0.99    0.3380    0.6390    1.1988    0.6849    0.4738
1.1323    1.6649    0.9507    1.2002    1.5066    1.9902    1.6462    0.2250    0.3934    3.4870
  12          6 hour              20%       6     44.00    0.99    0.3467    0.7466    1.3702    0.6651    0.5129
1.0939    1.8749    1.3235    1.5832    1.7640    2.3704    1.9102    0.2588    0.3860    3.9145
  12          6 hour              20%       7     44.00    0.99    0.3190    0.7274    1.2746    0.5570    0.4958
0.9213    1.7695    1.2140    1.2712    1.6124    2.4011    1.7814    0.2532    0.3144    3.7451
  12          6 hour              20%       8     44.00    0.99    0.5750    1.2074    1.5029    1.1175    0.5647
1.8629    1.9925    2.4273    2.7255    2.2152    4.2251    2.2556    0.3342    0.6402    4.2525
  12          6 hour              20%       9     44.00    0.99    0.5330    1.2271    1.6753    0.9782    0.6634
1.5889    2.2645    2.1254    2.4267    2.6018    4.0303    2.6155    0.3381    0.5744    5.0704
  12          6 hour              20%      10     44.00    0.99    0.6470    1.3914    1.7231    1.2339    0.6808
2.0658    2.3202    2.8134    2.9855    2.6976    4.7877    2.6976    0.3558    0.6977    5.2540
  13          9 hour              20%       1     51.10    0.99    0.3528    0.7293    0.8829    0.6168    0.3297
1.0265    1.1665    1.3529    1.4025    1.1705    2.5646    1.1786    0.2411    0.3428    2.4691
  13          9 hour              20%       2     51.10    0.99    0.3353    0.7316    0.9293    0.5525    0.3460
0.9390    1.2706    1.1962    1.3755    1.2140    2.4763    1.2544    0.2591    0.3137    2.5696
  13          9 hour              20%       3     51.10    0.99    0.3105    0.6107    1.0950    0.6186    0.4679
1.0088    1.5629    1.1111    1.3613    1.5051    2.1556    1.6013    0.2128    0.3666    3.3002
  13          9 hour              20%       4     51.10    0.99    0.3699    0.8301    1.3128    0.6729    0.5090
1.0976    1.7808    1.4803    1.6007    1.8621    2.7201    1.9366    0.2836    0.3892    3.8371
  13          9 hour              20%       5     51.10    0.99    0.2807    0.6686    1.0487    0.4548    0.4601
0.7560    1.4941    0.9936    1.0095    1.5754    2.1675    1.6567    0.2288    0.2559    3.2737
  13          9 hour              20%       6     51.10    0.99    0.3096    0.7627    1.4034    0.5066    0.5564
0.8408    1.9329    1.1180    1.1243    1.9044    2.4020    2.0449    0.2559    0.2809    4.2045
  13          9 hour              20%       7     51.10    0.99    0.3488    0.7262    0.9576    0.6206    0.4062
1.0303    1.3061    1.3540    1.4248    1.5404    2.5396    1.5671    0.2349    0.3484    3.0241
  13          9 hour              20%       8     51.10    0.99    0.4113    1.0456    1.8596    0.6972    0.6582
1.1570    2.5177    1.5520    1.6291    2.5418    3.3372    2.7638    0.2887    0.3944    5.4004
  13          9 hour              20%       9     51.10    0.99    0.4303    0.9641    1.6111    0.7818    0.6426
1.3156    2.2537    1.7001    1.7638    2.2457    3.1209    2.3999    0.2836    0.4277    4.8215
  13          9 hour              20%      10     51.10    0.99    0.4889    1.0916    1.6545    0.8304    0.6304
1.3826    2.2775    1.8814    1.9234    2.4761    3.9001    2.6842    0.3127    0.4592    5.0455
  14         12 hour              20%       1     57.00    0.99    0.2626    0.5804    0.9342    0.4356    0.3430
0.7317    1.2772    0.9303    0.9813    1.2299    1.8930    1.3296    0.2005    0.2521    2.7518
  14         12 hour              20%       2     57.00    0.99    0.4362    0.9525    1.2548    0.7277    0.4517
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1.2227	1.6720	1.6330	1.6323	1.6783	3.4760	1.7708	0.2836	0.3966	3.5987		
14	12 hour		20%	3	57.00	0.99	0.2837	0.4062	0.5762	0.5451	0.2836
0.9101	0.8354	0.6441	0.7793	0.7960	1.3473	0.8177	0.1642	0.3056	1.7026		
14	12 hour		20%	4	57.00	0.99	0.2568	0.6083	1.0024	0.4180	0.4095
0.6914	1.3877	0.9037	0.9113	1.4523	1.9479	1.5304	0.2103	0.2336	3.0813		
14	12 hour		20%	5	57.00	0.99	0.2972	0.7047	1.3091	0.5113	0.4940
0.8445	1.8030	1.0905	1.1834	1.6864	2.1766	1.8535	0.2352	0.2996	3.8331		
14	12 hour		20%	6	57.00	0.99	0.1698	0.3548	0.6940	0.2840	0.3036
0.4663	0.9776	0.5457	0.5788	0.9183	1.2030	0.9953	0.1368	0.1613	2.0929		
14	12 hour		20%	7	57.00	0.99	0.3046	0.6810	1.2616	0.5501	0.4909
0.9116	1.7465	1.1751	1.2610	1.6462	2.1933	1.7612	0.2386	0.3122	3.6543		
14	12 hour		20%	8	57.00	0.99	0.3465	0.8529	1.4703	0.6139	0.5564
1.0037	2.0268	1.3498	1.4384	1.9991	2.7511	2.1304	0.2836	0.3525	4.3792		
14	12 hour		20%	9	57.00	0.99	0.4843	1.1718	1.8699	0.8350	0.6890
1.3679	2.4982	1.8981	1.9986	2.7725	3.7470	2.8625	0.3071	0.4775	5.6355		
14	12 hour		20%	10	57.00	0.99	0.4094	0.9612	1.2792	0.7927	0.5594
1.2825	1.7858	1.7316	1.9561	1.9976	3.1695	2.1046	0.2836	0.4705	4.0329		
15	18 hour		20%	1	66.50	1.00	0.1771	0.4142	0.7899	0.2844	0.2836
0.4733	1.0734	0.5608	0.6520	0.9865	1.2894	1.0633	0.1518	0.1574	2.2659		
15	18 hour		20%	2	66.50	1.00	0.3780	0.8928	1.2508	0.6804	0.4874
1.1255	1.7381	1.2996	1.3032	1.7159	2.9579	1.7358	0.2836	0.3844	3.6601		
15	18 hour		20%	3	66.50	1.00	0.2534	0.4846	0.7260	0.4288	0.2836
0.7102	1.0096	0.9148	0.9379	1.0638	1.9350	1.1015	0.2066	0.2417	2.1465		
15	18 hour		20%	4	66.50	1.00	0.1779	0.3734	0.7658	0.2956	0.3002
0.4939	1.0660	0.5505	0.6031	1.0015	1.2171	1.0692	0.1398	0.1613	2.2437		
15	18 hour		20%	5	66.50	1.00	0.2559	0.5352	0.7566	0.4008	0.2836
0.6817	1.0402	0.7819	1.0394	1.0472	1.9181	1.0821	0.2052	0.2368	2.2497		
15	18 hour		20%	6	66.50	1.00	0.1704	0.3684	0.6209	0.2880	0.2836
0.4792	0.9045	0.5405	0.5921	0.8623	1.1700	0.9014	0.1375	0.1604	1.9103		
15	18 hour		20%	7	66.50	1.00	0.1505	0.2948	0.5931	0.2438	0.2836
0.4110	0.8767	0.4093	0.4253	0.8040	0.9273	0.8785	0.1170	0.1306	1.8659		
15	18 hour		20%	8	66.50	1.00	0.2390	0.5394	0.9940	0.4079	0.4447
0.6711	1.4386	0.8373	0.9022	1.4423	1.7295	1.5160	0.1882	0.2325	3.1425		
15	18 hour		20%	9	66.50	1.00	0.1596	0.3659	0.7550	0.2610	0.3716
0.4332	1.1266	0.5014	0.5175	1.0339	1.1143	1.1352	0.1378	0.1457	2.3996		
15	18 hour		20%	10	66.50	1.00	0.4685	1.1261	1.7544	0.7510	0.6549
1.2552	2.4093	1.6966	1.7237	2.4767	3.7852	2.5857	0.2836	0.4091	5.2785		
16	24 hour		20%	1	73.90	1.00	0.1845	0.3592	0.5962	0.3474	0.2836

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0.5741    0.8617    0.5738    0.6928    0.8766    1.1964    0.9004    0.1364    0.2003    1.8613
  16         24 hour              20%       2     73.90    1.00    0.2771    0.4625    0.7570    0.4562    0.2926
0.7643    1.0406    0.5719    0.6466    0.8508    1.2901    0.9317    0.1842    0.2483    2.0710
  16         24 hour              20%       3     73.90    1.00    0.2263    0.5037    0.8106    0.4347    0.3048
0.7137    1.1154    0.7535    1.0353    1.0872    1.6362    1.1957    0.1791    0.2559    2.3758
  16         24 hour              20%       4     73.90    1.00    0.1563    0.3086    0.5108    0.2623    0.2836
0.4382    0.7944    0.4712    0.5178    0.7777    1.0466    0.8069    0.1195    0.1445    1.7047
  16         24 hour              20%       5     73.90    1.00    0.1294    0.2212    0.3920    0.2111    0.2469
0.3494    0.6385    0.3117    0.3208    0.6035    0.7257    0.6382    0.0950    0.1175    1.3636
  16         24 hour              20%       6     73.90    1.00    0.1203    0.2025    0.3821    0.1979    0.2373
0.3278    0.6193    0.2759    0.3484    0.5607    0.6584    0.6009    0.0903    0.1105    1.3048
  16         24 hour              20%       7     73.90    1.00    0.2638    0.6403    0.9585    0.4490    0.3419
0.7375    1.3004    0.8604    0.9871    1.2727    2.0203    1.4183    0.2148    0.2585    2.6898
  16         24 hour              20%       8     73.90    1.00    0.2536    0.5332    0.9579    0.4309    0.3447
0.7187    1.3026    0.8618    0.9090    1.3270    1.8271    1.4434    0.1848    0.2371    2.7300
  16         24 hour              20%       9     73.90    1.00    0.2442    0.5962    1.1730    0.4175    0.4722
0.6837    1.6452    0.9067    0.9369    1.5469    1.8026    1.7540    0.2075    0.2407    3.5265
  16         24 hour              20%      10     73.90    1.00    0.1691    0.3627    0.7061    0.2855    0.2836
0.4733    0.9897    0.5315    0.5820    0.9939    1.1614    1.0600    0.1372    0.1597    2.1767
  17         30 hour              20%       1     79.80    1.00    0.2019    0.3678    0.6741    0.3505    0.2836
0.5774    0.9577    0.6248    0.7178    0.8139    1.3014    0.8268    0.1500    0.1986    1.8890
  17         30 hour              20%       2     79.80    1.00    0.1811    0.3812    0.7579    0.2885    0.2836
0.4808    1.0415    0.4697    0.4698    0.8751    1.0656    0.9380    0.1384    0.1583    2.0943
  17         30 hour              20%       3     79.80    1.00    0.1985    0.4265    0.8338    0.3325    0.3326
0.5523    1.1664    0.6279    0.6697    1.0374    1.3954    1.0858    0.1574    0.1851    2.3712
  17         30 hour              20%       4     79.80    1.00    0.0971    0.1644    0.3354    0.1493    0.2207
0.2501    0.5499    0.2430    0.2606    0.4939    0.5620    0.5293    0.0781    0.0808    1.1508
  17         30 hour              20%       5     79.80    1.00    0.2483    0.4944    0.8999    0.4313    0.2999
0.7128    1.1997    0.8886    0.9354    1.1198    1.7838    1.1315    0.1818    0.2433    2.4328
  17         30 hour              20%       6     79.80    1.00    0.1113    0.2203    0.4081    0.1851    0.2489
0.3068    0.6422    0.3127    0.3257    0.6024    0.7062    0.6673    0.0964    0.1039    1.4059
  17         30 hour              20%       7     79.80    1.00    0.1772    0.3286    0.6213    0.3335    0.2836
0.5470    0.9049    0.6287    0.7268    0.8684    1.2177    0.8824    0.1250    0.1927    1.8856
  17         30 hour              20%       8     79.80    1.00    0.1367    0.2944    0.6454    0.2230    0.2836
0.3696    0.9290    0.4030    0.4151    0.8494    0.9203    0.9189    0.1164    0.1243    1.9630
  17         30 hour              20%       9     79.80    1.00    0.1299    0.2412    0.5189    0.2157    0.2629
0.3566    0.7819    0.3774    0.4218    0.6475    0.8372    0.7149    0.0956    0.1208    1.5905
  17         30 hour              20%      10     79.80    1.00    0.1782    0.4244    0.7743    0.2788    0.2843
```

```
0.4668    1.0585    0.5401    0.5415    0.9883    1.2894    1.0843    0.1483    0.1518    2.1629
 Run,    Representative hydrograph
  1     dur10min_aep20tp2.out
 Run,    Representative hydrograph
  2     dur15min_aep20tp9.out
 Run,    Representative hydrograph
  3     dur20min_aep20tp2.out
 Run,    Representative hydrograph
  4     dur25min_aep20tp9.out
 Run,    Representative hydrograph
  5     dur30min_aep20tp4.out
 Run,    Representative hydrograph
  6     dur45min_aep20tp10.out
 Run,    Representative hydrograph
  7     dur1hour_aep20tp4.out
 Run,    Representative hydrograph
  8     dur1_5hour_aep20tp6.out
 Run,    Representative hydrograph
  9     dur2hour_aep20tp7.out
 Run,    Representative hydrograph
 10     dur3hour_aep20tp4.out
 Run,    Representative hydrograph
 11     dur4_5hour_aep20tp5.out
 Run,    Representative hydrograph
 12     dur6hour_aep20tp1.out
 Run,    Representative hydrograph
 13     dur9hour_aep20tp4.out
 Run,    Representative hydrograph
 14     dur12hour_aep20tp7.out
 Run,    Representative hydrograph
 15     dur18hour_aep20tp1.out
 Run,    Representative hydrograph
 16     dur24hour_aep20tp10.out
 Run,    Representative hydrograph
 17     dur30hour_aep20tp8.out

Elapsed Run Time (hh:mm:ss) = 00:00:04
```

RORBWin Batch Run Summary
****

Program version 6.42 (last updated 19th Dec 2018)
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Date run: 16 Mar 2022 23:29

Catchment file   : K:\Jobs Data\1400147 - Wurruk rezoning application_Wat\Models\RORB\Post Dev\SWMS REV G\1400147-RORB-PostDev-RB_SWMS REV G.catg
Rainfall location: User defined
Temporal pattern : ARR2016 point temporal patterns
Spatial pattern : Uniform
Areal Red. Fact. : Based on ARR 2016 (Book 2 Chapter 4)
Loss factors   : Constant with ARI

Parameters: kc =   2.72   m = 0.80

Loss parameters   Initial loss (mm)   Cont. loss (mm/h)
                          19.00   3.00

Peak Description
  01 Calculated hydrograph, Catch B
  02 Calculated hydrograph, Catch E
  03 Calculated hydrograph, OutfallLagoon(Catch B-G,I-K)
  04 Calculated hydrograph, 20m RR PC Convey (Catch P)
  05 Special storage :   RB SE - Outflow
  06 Special storage :   RB SE - Inflow
  07 Calculated hydrograph, Outfall SE (Catch B-G, I-P)
  08 Calculated hydrograph, Catch Q-R (20m RR)
  09 Special storage :   Ex. U/S RB - Outflow
  10 Special storage :   Ex. U/S RB - Inflow
  11 Calculated hydrograph, Catch Q-R, External (Swale2)
  12 Calculated hydrograph, Catch Q-S, External (30m RR)
  13 Special storage :   RB South - Outflow
  14 Special storage :   RB South - Inflow
  15 Calculated hydrograph, Catch X
  16 Calculated hydrograph, Outfall S(Catch Q-X,External
  17 Special storage :   RB NW - Outflow
  18 Special storage :   RB NW - Inflow
  19 Calculated hydrograph, Entire Catchment

Run	Duration	AEP	TPat	Rain(mm)	ARF	Peak0001	Peak0002	Peak0003	Peak0004	Peak0005	Peak0006	Peak0007	Peak0008	Peak0009	Peak0010	Peak0011	Peak0012	Peak0013	Peak0014	Peak0015	Peak0016	Peak0017	Peak0018	Peak0019
1	10 min	1%	21	25.10	0.94	1.5117	1.9362	0.7025	3.6121	0.3651	6.1735	0.9861												

2.7589 4.9245 7.4889 4.2142 3.3616 1.0349 4.9911 2.0692 2.0819 0.4615 2.2254 2.3985
1 10 min 1% 22 25.10 0.94 1.4723 1.9933 0.7029 3.4486 0.3650 5.9488 0.9865
2.7011 4.8915 6.9382 4.1337 3.2994 1.0143 4.7822 2.0546 2.0694 0.4596 2.2899 2.3425
1 10 min 1% 23 25.10 0.94 1.5396 1.9067 0.7020 3.7301 0.3647 6.3345 0.9856
2.8018 4.9543 7.5202 4.2674 3.3893 1.0397 5.0043 2.0778 2.0901 0.4626 2.1769 2.3930
1 10 min 1% 24 25.10 0.94 1.6425 2.2287 0.7009 4.1770 0.3649 6.9280 0.9845
2.9534 4.9543 7.5202 4.4081 3.4525 1.0437 5.0072 2.0778 2.0885 0.4661 2.5491 2.3560
1 10 min 1% 25 25.10 0.94 1.5004 1.9544 0.7027 3.5651 0.3651 6.1087 0.9863
2.7420 4.8383 7.2952 4.1546 3.3195 1.0193 4.9124 2.0495 2.0625 0.4610 2.2447 2.3361
1 10 min 1% 26 25.10 0.94 1.5951 2.0794 0.7011 3.9703 0.3647 6.6554 0.9847
2.8832 4.9543 7.5202 4.3432 3.4228 1.0405 5.0011 2.0778 2.0891 0.4642 2.3762 2.3722
1 10 min 1% 27 25.10 0.94 1.4870 1.9717 0.7028 3.5114 0.3650 6.0353 0.9864
2.7234 4.9033 7.1344 4.2500 3.4105 1.0451 4.8518 2.0555 2.0693 0.4606 2.2655 2.3326
1 10 min 1% 28 25.10 0.94 1.6323 2.1962 0.7010 4.1318 0.3647 6.8680 0.9846
2.9386 4.9543 7.5202 4.3942 3.4455 1.0417 4.9998 2.0778 2.0886 0.4664 2.5115 2.3591
1 10 min 1% 29 25.10 0.94 1.7067 2.4149 0.7028 4.4347 0.3706 7.2640 0.9864
3.0486 4.9543 7.5202 4.4934 3.4862 1.0474 4.9549 2.0778 2.0885 0.4732 2.7647 2.3410
1 10 min 1% 30 25.10 0.94 1.6508 2.2553 0.7009 4.2132 0.3652 6.9755 0.9845
2.9654 4.9543 7.5202 4.4195 3.4564 1.0438 4.9979 2.0778 2.0885 0.4665 2.5799 2.3534
2 15 min 1% 21 30.80 0.95 1.8182 2.2193 1.2534 4.3261 0.6149 7.2478 1.6527
3.3003 7.4513 9.4945 6.6205 5.4018 1.9836 6.5114 2.3505 2.4233 0.6790 2.5334 3.7871
2 15 min 1% 22 30.80 0.95 1.8899 2.4418 1.2523 4.6397 0.6154 7.6802 1.6523
3.4086 7.9249 10.4996 6.8100 5.4977 1.9960 6.7854 2.8244 2.8878 0.6828 2.7913 3.8001
2 15 min 1% 23 30.80 0.95 1.7876 2.3357 1.2537 4.4047 0.6150 7.2386 1.6536
3.2263 8.1117 9.9186 6.8564 5.5025 1.9952 6.7746 2.8496 2.9052 0.6816 2.6704 3.7982
2 15 min 1% 24 30.80 0.95 1.9342 2.7656 1.2516 5.0139 0.6157 8.0787 1.6524
3.4390 8.3039 10.4188 7.0765 5.6536 2.0243 6.7601 3.0262 3.0763 0.6873 3.1679 3.8236
2 15 min 1% 25 30.80 0.95 1.9186 2.5517 1.2528 4.5899 0.6150 7.3281 1.6528
3.5226 8.6472 9.7765 7.1280 5.6501 2.0267 7.1393 3.1717 3.2101 0.6844 2.9239 3.8816
2 15 min 1% 26 30.80 0.95 2.0389 3.0484 1.2534 5.4191 0.6206 8.6316 1.6586
3.6003 8.3284 10.4852 7.1641 5.7153 2.0347 6.6825 3.0093 3.0596 0.6939 3.4950 3.8387
2 15 min 1% 27 30.80 0.95 1.8927 2.5999 1.2525 4.7992 0.6156 7.8111 1.6531
3.3834 8.3284 10.4852 7.0354 5.6261 2.0259 6.7298 3.0093 3.0633 0.6854 2.9756 3.8270
2 15 min 1% 28 30.80 0.95 1.9033 2.7100 1.2519 4.9204 0.6154 7.9297 1.6522
3.4129 8.3580 10.3375 7.0800 5.6490 2.0248 6.8115 3.0464 3.0954 0.6864 3.1040 3.8245
2 15 min 1% 29 30.80 0.95 2.1977 2.6707 1.2721 5.2288 0.6211 8.9065 1.6778
4.0033 9.1174 11.7770 7.2562 5.6721 2.0195 7.8667 3.3491 3.3698 0.6919 3.0698 3.8416
2 15 min 1% 30 30.80 0.95 2.2486 2.8708 1.2680 5.4853 0.6170 9.1429 1.6704
4.0575 9.2708 12.2138 7.3835 5.7402 2.0408 8.0593 3.3720 3.3907 0.6890 3.2802 3.8545
3 20 min 1% 21 35.00 0.95 2.0808 2.4922 1.6910 4.5917 0.7514 7.6038 2.2383
3.7958 9.3984 10.1648 8.8880 7.1831 2.8444 8.4284 2.8220 2.8706 0.7915 2.8525 5.1607
3 20 min 1% 22 35.00 0.95 1.9544 2.4474 1.6906 4.6270 0.7501 7.6623 2.2373
3.5765 8.9027 10.0564 8.6987 7.0872 2.8341 8.5294 2.5940 2.8341 0.7854 2.7979 5.1502
3 20 min 1% 23 35.00 0.95 2.0997 2.6831 1.6899 4.8899 0.7515 7.9125 2.2373
3.8499 9.3908 10.0408 8.9190 7.2086 2.8453 8.4367 2.8408 2.8909 0.7925 3.0727 5.1616
3 20 min 1% 24 35.00 0.95 2.2537 2.7506 1.7117 5.0955 0.7548 8.2423 2.2595

4.1083 10.8300 12.1510 9.1565 7.2866 2.8529 9.1178 3.6367 3.7060 0.8084 3.1472 5.1843
3 20 min 1% 25 35.00 0.95 2.3007 2.8941 1.7125 5.5545 0.7582 9.2288 2.2657
4.1565 9.8258 12.9465 8.9356 7.1943 2.8261 8.5763 3.2035 3.3023 0.8119 3.3060 5.1772
3 20 min 1% 26 35.00 0.95 2.3586 2.8209 1.6934 5.4724 0.7579 9.2932 2.2461
4.3029 10.1843 12.3396 9.2119 7.3394 2.8519 8.7630 3.1837 3.2134 0.8100 3.2384 5.1793
3 20 min 1% 27 35.00 0.95 2.2946 2.8786 1.7126 5.5305 0.7582 9.1927 2.2658
4.1455 9.8016 12.8728 8.9311 7.1925 2.8261 8.5492 3.1778 3.2771 0.8117 3.2882 5.1769
3 20 min 1% 28 35.00 0.95 2.3196 2.9530 1.7092 5.6271 0.7548 9.3042 2.2591
4.1822 9.9215 13.3660 8.9704 7.2049 2.8262 8.7630 3.3279 3.4262 0.8092 3.3744 5.1708
3 20 min 1% 29 35.00 0.95 2.2728 3.1071 1.7131 5.6927 0.7593 9.1985 2.2660
4.1768 11.0096 13.3431 9.3267 7.4125 2.8901 8.9602 3.9288 3.9984 0.8171 3.5573 5.2359
3 20 min 1% 30 35.00 0.95 2.2914 3.2111 1.7123 5.8401 0.7593 9.4020 2.2653
4.2236 10.9946 13.3528 9.3505 7.4314 2.8907 8.9484 3.9262 3.9946 0.8181 3.6776 5.2367
4 25 min 1% 21 38.40 0.96 2.3137 2.4480 2.0822 4.8238 0.8483 8.0435 2.7409
4.1815 10.6663 11.4423 10.3507 8.4265 3.5013 9.9399 2.7807 3.5013 0.8744 2.7961 6.3430
4 25 min 1% 22 38.40 0.96 2.0721 2.6352 2.0581 4.7543 0.8419 7.7450 2.7122
3.7969 9.1388 9.9216 9.6348 8.2241 3.5171 10.0700 2.8261 3.5171 0.8493 3.0193 6.3331
4 25 min 1% 23 38.40 0.96 2.2085 2.4062 2.0803 4.7683 0.8453 7.9365 2.7335
3.9683 10.5469 11.8058 10.3655 8.4295 3.5161 10.1863 2.8496 3.5161 0.8703 2.7435 6.3409
4 25 min 1% 24 38.40 0.96 1.9875 2.0865 2.0585 3.9133 0.8404 6.4539 2.7116
3.5345 8.5855 9.3600 9.5373 8.0294 3.4835 10.0896 2.1416 3.4835 0.8500 2.3862 6.3017
4 25 min 1% 25 38.40 0.96 2.1145 2.1348 2.0583 4.2841 0.8429 7.0270 2.7121
3.7861 9.3815 10.3514 9.8829 8.1953 3.4843 10.0557 2.2745 3.4843 0.8598 2.4318 6.2943
4 25 min 1% 26 38.40 0.96 2.2708 2.6353 2.0628 5.1190 0.8473 8.5507 2.7205
4.1295 10.5599 11.6747 10.2576 8.3805 3.4970 9.9094 2.8237 3.4970 0.8692 3.0088 6.3281
4 25 min 1% 27 38.40 0.96 2.3330 2.7441 2.0619 5.4379 0.8479 9.1947 2.7195
4.2495 10.0690 12.3229 10.0330 8.3793 3.5142 9.9684 2.9940 3.5142 0.8704 3.1299 6.3402
4 25 min 1% 28 38.40 0.96 2.3023 2.5239 2.0627 4.8462 0.8451 8.0113 2.7175
4.1657 10.7547 11.2071 10.3353 8.4114 3.4986 9.8648 2.8717 3.4986 0.8696 2.8829 6.3198
4 25 min 1% 29 38.40 0.96 2.7744 3.7430 2.1029 6.9596 0.8570 11.3746 2.7667
4.9687 12.3600 16.7025 11.0620 8.8842 3.5891 10.5878 4.3734 4.4829 0.9079 4.2824 6.4665
4 25 min 1% 30 38.40 0.96 2.4048 2.9222 2.0842 5.5900 0.8519 9.1353 2.7424
4.3220 11.3106 13.8504 10.6195 8.6365 3.5580 10.4044 3.3377 3.5580 0.8898 3.3382 6.3968
5 30 min 1% 21 41.20 0.96 2.2486 2.3608 2.3920 4.5481 0.9109 7.6262 3.1315
4.0159 10.2287 10.6572 10.9281 9.2401 4.1085 11.3993 2.7942 4.1085 0.9158 2.7001 7.3541
5 30 min 1% 22 41.20 0.96 2.2555 2.7607 2.3717 5.3643 0.9087 8.9665 3.1085
4.0876 10.3644 12.3196 10.5761 9.1393 4.0256 11.2570 2.9231 4.0256 0.9083 3.1517 7.2594
5 30 min 1% 23 41.20 0.96 2.1912 2.5323 2.3673 5.0339 0.9046 8.4874 3.1015
3.9890 9.7038 11.4343 10.3494 9.0274 4.0251 11.1914 2.7651 4.0251 0.9004 2.8912 7.2562
5 30 min 1% 24 41.20 0.96 2.1624 2.5264 2.3714 4.9917 0.9090 8.4265 3.1080
3.9325 9.9276 11.1702 10.5416 9.1187 4.0314 11.1439 2.6191 4.0314 0.9093 2.8819 7.2623
5 30 min 1% 25 41.20 0.96 2.3173 2.7677 2.3908 5.1243 0.9128 8.6866 3.1308
4.2299 10.4319 11.6349 11.0389 9.4511 4.1242 11.4694 3.0464 4.1242 0.9210 3.1712 7.3693
5 30 min 1% 26 41.20 0.96 2.3830 2.4377 2.3942 4.8228 0.9128 8.0221 3.1341
4.2743 11.0143 11.3400 11.3051 9.3581 4.1146 11.3838 2.5760 4.1146 0.9249 2.7798 7.3636
5 30 min 1% 27 41.20 0.96 2.1857 2.4993 2.3912 4.8195 0.9100 8.0239 3.1286

3.9730 10.1176 10.9083 10.5365 9.1640 4.0452 11.2257 2.7547 4.0452 0.9105 2.8543 7.2873
5 30 min 1% 28 41.20 0.96 2.2758 2.7287 2.3914 5.1858 0.9123 8.5905 3.1302
4.1488 10.7503 11.9936 10.9629 9.3339 4.0576 11.1561 3.1133 4.0577 0.9208 3.1187 7.3069
5 30 min 1% 29 41.20 0.96 2.6457 2.9907 2.4176 5.6413 0.9203 9.4980 3.1615
4.8044 12.7273 13.4331 12.2046 9.8628 4.1533 11.5882 3.6951 4.1533 0.9461 3.4213 7.4447
5 30 min 1% 30 41.20 0.96 2.5484 2.8390 2.4163 5.5792 0.9171 9.1966 3.1558
4.5817 11.9835 13.8512 11.9747 9.7511 4.1252 11.6829 3.0260 4.1252 0.9423 3.2382 7.4018
6 45 min 1% 21 47.60 0.96 2.4684 2.4583 3.1378 4.9072 1.0368 8.1719 4.0294
4.3537 11.6306 12.3150 12.8032 11.2042 5.4092 13.8127 2.9225 5.4092 1.0135 2.8013 9.5885
6 45 min 1% 22 47.60 0.96 2.6194 2.8850 3.1515 5.4986 1.0353 9.0380 4.0525
4.7356 12.5824 13.3291 12.9362 11.5673 5.3763 13.9640 3.2853 5.3763 1.0128 3.2973 9.5853
6 45 min 1% 23 47.60 0.96 1.8714 2.2731 3.1330 4.3174 1.0223 7.2148 4.0257
3.1944 8.2682 8.7374 10.0800 9.7399 5.3226 12.8124 2.4501 5.3226 0.9513 2.5983 9.5169
6 45 min 1% 24 47.60 0.96 1.9973 2.2331 3.0824 4.2602 1.0164 7.0787 3.9684
3.3779 8.7866 9.7707 9.7736 9.1151 5.1823 12.8754 2.5272 5.1823 0.9424 2.5514 9.3260
6 45 min 1% 25 47.60 0.96 1.8081 2.2093 3.0802 4.2580 1.0127 7.1049 3.9629
3.1930 7.9388 9.4961 9.4446 9.4570 5.1667 12.4683 2.3675 5.1667 0.9421 2.5238 9.3112
6 45 min 1% 26 47.60 0.96 2.2634 2.0869 3.1319 4.1841 1.0288 6.9194 4.0207
3.9080 10.0262 10.4866 11.5134 10.6090 5.3244 13.6358 2.1554 5.3244 0.9852 2.3778 9.4983
6 45 min 1% 27 47.60 0.96 2.0089 2.1523 3.1189 4.1217 1.0249 6.8375 4.0115
3.5683 8.9024 9.1707 10.7538 10.4840 5.2829 13.4529 2.4245 5.2829 0.9752 2.4589 9.4573
6 45 min 1% 28 47.60 0.96 2.0309 1.8498 3.1006 3.6418 1.0246 6.0455 3.9933
3.4980 8.5562 8.7864 10.9099 10.3624 5.2667 13.5565 1.8943 5.2669 0.9777 2.1101 9.4164
6 45 min 1% 29 47.60 0.96 2.6226 2.7588 3.1597 5.3360 1.0419 8.9503 4.0587
4.7082 12.7482 13.2665 13.6128 11.7936 5.4859 14.3969 3.1061 5.4859 1.0318 3.1528 9.6877
6 45 min 1% 30 47.60 0.96 2.5933 2.6887 3.1403 5.2463 1.0365 8.6312 4.0370
4.5249 12.1450 13.5310 13.0265 11.0227 5.3977 13.9706 2.8677 5.3977 1.0174 3.0676 9.5739
7 1 hour 1% 21 52.30 0.97 2.8301 2.7924 3.7176 5.4157 1.1285 9.0937 4.7064
4.9712 13.3915 13.9957 14.5926 13.0602 6.4590 16.1448 3.2415 6.4594 1.1758 3.1884 11.3187
7 1 hour 1% 22 52.30 0.97 1.8781 2.1735 3.5479 4.1348 1.0729 6.8428 4.5186
3.4192 8.4693 9.1025 9.3674 9.4691 5.7669 12.0538 2.5399 5.7690 0.9305 2.4840 10.5328
7 1 hour 1% 23 52.30 0.97 2.3627 2.3023 3.6563 4.5819 1.1011 7.5592 4.6310
4.1296 10.8792 11.5694 12.7319 11.6742 6.1794 14.4646 2.3962 6.1794 1.0235 2.6237 11.0006
7 1 hour 1% 24 52.30 0.97 1.7438 1.8990 3.5764 3.5600 1.0860 5.8652 4.5436
2.9847 7.8076 8.5298 9.7421 9.7509 5.9285 12.6238 2.0526 5.9287 0.9651 2.1718 10.6999
7 1 hour 1% 25 52.30 0.97 1.8607 1.9515 3.5265 3.7791 1.0801 6.2588 4.4906
3.1789 8.7762 9.8082 10.0061 9.2526 5.8430 11.8367 2.4028 5.8430 0.9528 2.2276 10.5794
7 1 hour 1% 26 52.30 0.97 1.9449 2.2818 3.5146 4.1547 1.0738 6.7254 4.4708
3.2934 9.1210 11.2243 9.8171 8.4647 5.7014 11.6589 2.6797 5.7014 0.9371 2.6177 10.4287
7 1 hour 1% 27 52.30 0.97 2.2023 2.0188 3.6221 4.0190 1.0980 6.5934 4.6005
3.7960 9.4180 10.1175 11.5163 11.0250 6.1118 13.9202 2.1849 6.1123 1.0066 2.3000 10.9141
7 1 hour 1% 28 52.30 0.97 2.1428 1.9117 3.6391 3.7955 1.1078 6.2310 4.6220
3.6269 8.9199 9.6032 11.2449 11.1062 6.1748 14.8454 2.3499 6.1752 1.0251 2.1783 10.9896
7 1 hour 1% 29 52.30 0.97 1.9166 1.6948 3.6470 3.4290 1.1023 5.6953 4.6216
3.2022 8.1864 8.4433 10.2811 10.6159 6.0966 14.3503 1.8075 6.0966 1.0047 1.9296 10.9314
7 1 hour 1% 30 52.30 0.97 2.8285 2.8258 3.7378 5.5299 1.1314 9.0107 4.7315

4.9846 13.1260 14.0768 14.5725 13.3183 6.5044 16.3904 3.2697 6.5046 1.2048 3.2231 11.3896
8 1.5 hour 1% 21 59.30 0.97 2.0198 1.9114 4.2428 3.8085 1.1550 6.2651 5.3317
3.5098 9.0209 9.5574 10.6622 10.2998 6.5553 12.7905 2.0335 7.0022 0.9602 2.1780 12.2357
8 1.5 hour 1% 22 59.30 0.97 1.8716 1.5751 4.3890 3.1757 1.1900 5.2446 5.4897
3.1362 7.7477 7.8911 10.4129 10.7704 7.2376 14.5484 1.6090 7.2376 1.0464 1.7934 12.9946
8 1.5 hour 1% 23 59.30 0.97 1.6381 1.5544 4.2092 3.1347 1.1465 5.1920 5.2972
2.8467 7.0223 7.2639 8.5824 8.9224 6.5568 11.8711 1.6461 6.8262 0.9538 1.7704 12.3200
8 1.5 hour 1% 24 59.30 0.97 1.8078 1.7185 4.1089 3.3909 1.1505 5.6711 5.1671
3.1222 8.3525 8.6219 9.5127 8.7807 6.4522 11.5965 1.9244 6.4522 0.9490 1.9609 12.0009
8 1.5 hour 1% 25 59.30 0.97 2.1741 2.2046 3.9623 4.1757 1.1065 7.0452 5.0279
3.8171 9.5644 9.8362 11.0108 10.1045 5.7051 12.2859 2.5184 6.3465 0.9477 2.5247 11.5077
8 1.5 hour 1% 26 59.30 0.97 1.9723 1.6944 4.4077 3.4158 1.1848 5.6577 5.5063
3.3289 8.2220 8.4964 10.7231 11.1385 7.2280 14.4639 1.9155 7.2363 1.0416 1.9293 12.9925
8 1.5 hour 1% 27 59.30 0.97 1.7689 1.5686 4.3586 3.1263 1.1806 5.1515 5.4458
2.9666 7.4198 7.8580 9.7302 10.1905 7.0696 13.2585 1.6390 7.0696 1.0141 1.7872 12.8320
8 1.5 hour 1% 28 59.30 0.97 1.8439 1.7965 4.3165 3.4365 1.1789 5.5934 5.4083
3.0656 7.7066 9.0203 9.6348 9.6354 6.9522 13.4184 2.0703 6.9545 1.0113 2.0513 12.6903
8 1.5 hour 1% 29 59.30 0.97 2.4706 2.3212 4.4268 4.7122 1.1789 7.7850 5.5275
4.3399 11.5247 11.6859 13.2722 12.3338 7.1018 15.2400 2.6667 7.3803 1.0509 2.6423 12.8989
8 1.5 hour 1% 30 59.30 0.97 2.5675 2.7805 4.3987 5.3221 1.1991 8.7566 5.4935
4.5631 12.8045 14.0357 14.5646 13.1784 7.6703 16.4165 3.0427 7.6703 1.2056 3.1761 13.2779
9 2 hour 1% 21 64.70 0.97 1.9915 1.8737 4.5454 3.7352 1.1700 6.1447 5.6988
3.4518 8.8487 9.3756 10.5764 10.2556 6.6158 12.7020 1.9928 6.9909 0.9589 2.1350 13.1288
9 2 hour 1% 22 64.70 0.97 2.0830 2.1555 4.6470 4.2575 1.1887 6.9969 5.8100
3.7027 9.5893 10.4393 10.8234 10.9230 7.1169 13.8864 2.2904 7.3979 1.0146 2.4577 13.4579
9 2 hour 1% 23 64.70 0.97 2.5363 2.7239 4.0570 5.2242 1.1519 8.7776 5.1695
4.5693 12.2375 12.7338 12.4870 10.7150 5.3946 12.8161 3.1784 6.4930 0.9787 3.1128 11.8963
9 2 hour 1% 24 64.70 0.97 1.8291 2.2124 4.5100 4.2201 1.1738 6.9392 5.6510
3.3302 8.3826 9.5569 8.2131 7.8749 6.6614 10.8730 2.6394 7.0178 0.9314 2.5279 13.1273
9 2 hour 1% 25 64.70 0.97 1.8783 1.7276 4.7377 3.3963 1.2223 5.6166 5.8946
3.2104 8.3149 8.6688 10.2510 10.3740 7.7615 13.2747 1.9163 7.7826 1.0167 1.9699 14.0290
9 2 hour 1% 26 64.70 0.97 1.3375 1.2795 4.4215 2.4898 1.1711 4.0815 5.5558
2.2546 5.7421 6.3770 6.9870 6.8039 6.4368 9.1144 1.3912 6.9207 0.8571 1.4598 12.8528
9 2 hour 1% 27 64.70 0.97 1.5713 1.4469 4.7103 2.9022 1.2149 4.8307 5.8522
2.6685 7.0106 7.2375 8.6900 9.3036 7.4074 12.1820 1.6318 7.4074 0.9743 1.6483 13.6851
9 2 hour 1% 28 64.70 0.97 2.2015 2.7637 4.6997 4.8474 1.1979 7.9221 5.8621
3.9144 11.8602 13.9939 11.0315 10.1820 7.0272 12.5745 3.9906 7.5275 0.9466 3.1699 13.5913
9 2 hour 1% 29 64.70 0.97 1.7980 1.5348 4.8861 3.1032 1.2355 5.1194 6.0533
3.0351 7.4700 7.6855 10.1646 10.7084 8.0893 14.0846 1.5771 8.0954 1.0315 1.7471 14.4245
9 2 hour 1% 30 64.70 0.97 2.0469 1.7349 4.9022 3.5194 1.2457 5.8359 6.0562
3.4538 8.5507 8.7053 11.3365 11.9659 8.4284 15.7335 1.7738 8.4288 1.1024 1.9747 14.6912
10 3 hour 1% 21 73.00 0.97 1.9052 1.5594 5.4877 3.1747 1.2969 5.2904 6.7262
3.2054 7.7402 7.8112 10.7644 11.1758 8.9205 15.0142 1.6155 8.9633 1.0531 1.7758 16.1989
10 3 hour 1% 22 73.00 0.97 1.3037 1.4352 4.1010 2.7845 1.1266 4.5802 5.1721
2.2687 5.1421 5.3056 6.6656 6.5888 5.9702 8.9388 1.3243 6.0146 0.8492 1.6382 11.5598
10 3 hour 1% 23 73.00 0.97 1.3526 1.3486 3.7878 2.7460 1.1324 4.6256 4.9202

2.4155 4.6030 4.9981 5.9853 6.1836 5.1969 7.6276 0.9388 5.4900 0.7185 1.5354 10.9381
10 3 hour 1% 24 73.00 0.97 1.1622 1.1186 4.0812 2.3061 1.1124 3.9004 5.1390
2.0744 4.5119 4.5586 6.1292 6.4228 5.8321 8.6870 0.9121 5.9302 0.8008 1.2726 11.4447
10 3 hour 1% 25 73.00 0.97 1.1916 1.2985 4.4969 2.4793 1.1959 4.0107 5.6849
2.0488 5.2467 5.9342 6.4073 5.8642 6.0712 7.8289 1.6013 6.4523 0.7653 1.4831 12.5130
10 3 hour 1% 26 73.00 0.97 1.7433 1.4767 5.2059 3.0393 1.2546 5.0656 6.4587
2.9808 7.3250 7.3784 9.6381 9.9423 7.2725 12.1745 1.4818 8.2083 0.9686 1.6795 14.6379
10 3 hour 1% 27 73.00 0.97 1.1601 1.1217 4.4616 2.2086 1.2019 3.6332 5.6563
1.9634 5.1388 5.5801 5.7434 6.0529 6.1282 7.8032 1.1850 6.6187 0.7935 1.2792 12.5364
10 3 hour 1% 28 73.00 0.97 1.2617 1.0652 5.0352 2.1554 1.2351 3.5914 6.2649
2.0934 5.0693 5.3777 6.8658 7.4117 7.0403 9.9228 1.1081 7.5242 0.8912 1.2129 14.2657
10 3 hour 1% 29 73.00 0.97 1.2930 1.1627 4.2795 2.3940 1.1989 4.0253 5.4567
2.2326 5.6441 5.7913 6.8802 6.4577 5.9645 8.6074 1.3062 6.1205 0.7879 1.3228 12.0219
10 3 hour 1% 30 73.00 0.97 1.9249 1.9967 5.7048 3.8936 1.3091 6.3936 6.9785
3.3430 9.1187 10.0388 11.5379 11.4523 9.2465 14.8902 2.1821 9.8343 1.0730 2.2782 16.6818
11 4.5 hour 1% 21 82.50 0.98 0.9585 0.8326 3.1954 1.6634 1.0705 2.7532 4.1794
1.6446 3.8923 3.9890 4.6404 4.8931 3.9612 6.2736 0.8412 4.3237 0.6000 0.9488 8.9139
11 4.5 hour 1% 22 82.50 0.98 1.1412 1.1824 4.4655 2.2366 1.1922 3.5768 5.6564
1.9324 5.2095 5.8760 6.5233 6.0536 5.7431 8.0851 1.4443 6.1928 0.7195 1.3508 12.3703
11 4.5 hour 1% 23 82.50 0.98 1.2130 1.1443 3.5385 2.2810 1.0872 3.7531 4.5430
2.0974 5.3204 5.7857 6.6399 6.3516 4.4957 8.4136 1.1921 4.9596 0.7364 1.3038 9.6834
11 4.5 hour 1% 24 82.50 0.98 1.2693 1.1692 3.5923 2.3264 1.0484 3.8787 4.5753
2.1244 5.2742 5.7117 7.3105 7.5209 5.4878 9.9101 1.3901 5.7098 0.8499 1.3329 10.5033
11 4.5 hour 1% 25 82.50 0.98 0.7985 0.7197 3.8449 1.4478 1.1227 2.3945 4.9519
1.3642 3.1890 3.2639 3.9199 4.3561 4.7014 5.8124 0.7717 5.2248 0.6048 0.8197 10.6017
11 4.5 hour 1% 26 82.50 0.98 1.2004 1.0367 4.6868 2.0324 1.2119 3.3817 5.8974
2.0256 4.8432 5.1461 6.7383 6.8165 5.9506 9.1808 1.1370 6.4569 0.8036 1.1823 12.8089
11 4.5 hour 1% 27 82.50 0.98 1.2582 1.0837 4.4161 2.2629 1.2229 3.8262 5.5830
2.1842 5.3845 5.3881 6.9464 7.5545 6.4655 9.7005 1.3492 6.8413 0.8335 1.2374 12.9847
11 4.5 hour 1% 28 82.50 0.98 1.1356 1.0038 4.2903 2.0705 1.1761 3.4775 5.4605
1.9601 4.8904 4.9808 6.0963 6.2622 5.5684 7.7138 1.1218 5.9421 0.7514 1.1419 11.6667
11 4.5 hour 1% 29 82.50 0.98 1.5004 1.3114 5.6410 2.6165 1.3300 4.3031 6.9477
2.5060 6.2736 6.5470 8.0136 8.7047 8.5831 11.4643 1.3851 8.6959 0.9784 1.4940 16.2770
11 4.5 hour 1% 30 82.50 0.98 1.3860 1.2619 5.4462 2.4129 1.3176 4.0460 6.7547
2.3827 5.7433 6.2921 7.8558 7.8102 7.4780 9.9171 1.4881 8.2035 0.8693 1.4412 15.3245
12 6 hour 1% 21 90.10 0.98 1.8014 1.5553 5.8414 3.1122 1.3476 5.1746 7.1645
3.0734 7.3976 7.7928 10.3031 10.8938 9.5419 13.6090 1.5047 9.9078 1.0307 1.7721 17.2063
12 6 hour 1% 22 90.10 0.98 1.1487 1.0697 4.0152 2.1399 1.1021 3.5607 5.0792
1.9465 4.9993 5.3158 5.8562 6.1720 5.7130 7.8959 1.0225 5.9925 0.7757 1.2189 11.4461
12 6 hour 1% 23 90.10 0.98 1.2578 1.1192 3.6350 2.3125 1.1665 3.9217 4.7556
2.1693 5.4533 5.5574 6.7782 6.0083 5.3636 8.5634 1.3925 5.4204 0.7497 1.2727 10.6200
12 6 hour 1% 24 90.10 0.98 1.0553 1.1861 3.0869 2.3015 1.0342 3.7883 3.9795
1.8672 4.0857 4.1036 5.0730 5.2895 4.4709 7.1319 1.0601 4.5618 0.7083 1.3539 8.8100
12 6 hour 1% 25 90.10 0.98 1.0614 1.0386 3.4576 2.1221 1.0237 3.5709 4.4252
1.8916 3.6315 4.0270 4.7585 5.4031 4.9687 7.0558 0.9882 5.1544 0.7012 1.1822 9.7544
12 6 hour 1% 26 90.10 0.98 1.6415 1.6105 3.1666 3.1870 1.0801 5.2894 4.1454

2.8593 7.4061 8.0791 8.9233 7.6406 5.1019 10.6054 2.0388 5.1019 0.8490 1.8363 9.5786
12 6 hour 1% 27 90.10 0.98 0.6816 0.7216 3.4761 1.3574 1.0858 2.2018 4.5603
1.2063 2.6330 2.6684 3.4876 3.8759 4.3523 5.0012 0.5446 4.7749 0.5386 0.8250 9.7060
12 6 hour 1% 28 90.10 0.98 0.8481 0.7350 3.9621 1.4675 1.0883 2.4087 5.0336
1.4130 3.4611 3.6092 4.6867 5.1041 5.1854 6.6653 0.7753 5.5586 0.6699 0.8373 10.8828
12 6 hour 1% 29 90.10 0.98 0.7161 0.5976 3.3730 1.1907 1.0404 1.9857 4.3822
1.1928 2.8154 2.8748 3.8878 4.2910 4.3584 5.5137 0.6367 4.6458 0.5696 0.6819 9.3163
12 6 hour 1% 30 90.10 0.98 1.0395 0.8583 4.9455 1.7286 1.2527 2.8700 6.1933
1.7145 4.0825 4.2381 5.7839 6.4876 6.4531 8.5362 0.8377 6.9969 0.7837 0.9775 13.5773
13 9 hour 1% 21 102.00 0.99 0.5667 0.4558 2.5725 0.9447 0.9646 1.5736 3.5231
0.9585 2.1875 2.3618 2.9284 3.1945 3.2011 4.1022 0.4522 3.5890 0.4007 0.5182 7.4980
13 9 hour 1% 22 102.00 0.99 0.6473 0.5189 2.7467 1.0692 0.8954 1.7802 3.6122
1.0794 2.4822 2.5027 3.5095 3.7089 3.6472 4.9558 0.5151 3.8183 0.5085 0.5901 7.5956
13 9 hour 1% 23 102.00 0.99 1.4767 1.2168 4.4861 2.4964 1.1597 4.1520 5.6302
2.4899 6.0290 6.1568 8.2580 8.0391 6.6078 11.0852 1.1593 6.8449 0.8757 1.3842 12.3714
13 9 hour 1% 24 102.00 0.99 0.6916 0.5834 3.4684 1.1580 1.0405 1.8958 4.5073
1.1340 2.7061 2.7425 3.7864 4.2834 4.3335 5.5548 0.5955 4.7015 0.5890 0.6648 9.6225
13 9 hour 1% 25 102.00 0.99 1.4803 1.2363 3.8883 2.3882 1.0932 4.0536 4.8901
2.5189 5.6849 6.1402 8.5904 8.4984 6.0961 11.3689 1.4362 6.0961 0.8761 1.4118 11.0712
13 9 hour 1% 26 102.00 0.99 0.5776 0.4913 2.6905 0.9949 0.9378 1.6548 3.6213
0.9650 2.2732 2.3682 3.0163 3.2273 3.5752 4.2814 0.4559 3.9574 0.4238 0.5592 7.9513
13 9 hour 1% 27 102.00 0.99 0.8185 0.6492 3.3981 1.3170 1.0873 2.1956 4.4855
1.3518 3.1246 3.1710 4.5217 5.1124 4.8507 6.6704 0.6574 5.1170 0.6377 0.7391 9.8399
13 9 hour 1% 28 102.00 0.99 0.7022 0.6282 3.6127 1.2440 1.1330 2.0454 4.7457
1.1669 2.9239 3.0636 3.9769 4.3927 4.7173 5.6767 0.6495 5.0897 0.5985 0.7160 10.2689
13 9 hour 1% 29 102.00 0.99 0.9657 0.7875 4.5001 1.6094 1.2252 2.6703 5.7254
1.6117 3.8257 3.8775 5.3083 5.6061 5.8847 7.5327 0.7600 6.4874 0.6936 0.8959 12.8242
13 9 hour 1% 30 102.00 0.99 1.5316 1.2949 4.9799 2.6753 1.3118 4.4609 6.2288
2.6243 6.3154 6.4756 8.5229 8.0333 7.7666 11.2288 1.1843 7.8376 0.8777 1.4724 14.7011
14 12 hour 1% 21 112.00 0.99 0.9160 0.7620 4.3272 1.5432 1.1740 2.5498 5.5011
1.5227 3.6776 3.7476 4.9613 5.5609 5.8154 7.1346 0.7603 6.1931 0.7223 0.8674 12.2265
14 12 hour 1% 22 112.00 0.99 0.8022 0.7491 3.2512 1.4785 1.0524 2.4183 4.3036
1.3622 3.4949 3.6798 4.1447 4.8295 4.4654 6.0047 0.8144 4.7368 0.6142 0.8540 9.3556
14 12 hour 1% 23 112.00 0.99 0.6079 0.4977 2.5185 0.9910 0.8458 1.6384 3.3482
1.0219 2.4469 2.6198 3.1272 3.4795 3.1437 4.4178 0.4884 3.3851 0.4469 0.5672 7.0145
14 12 hour 1% 24 112.00 0.99 0.6555 0.5436 3.1578 1.0879 0.9783 1.7884 4.1339
1.0730 2.5250 2.5490 3.5296 3.9373 3.9139 5.2117 0.5350 4.2730 0.5346 0.6191 8.7986
14 12 hour 1% 25 112.00 0.99 1.4385 1.1607 4.7787 2.4242 1.2944 4.0610 5.9957
2.4507 5.7153 5.7849 8.1297 7.9783 7.3168 10.8727 1.1563 7.3583 0.8704 1.3190 14.0461
14 12 hour 1% 26 112.00 0.99 0.4709 0.3944 2.6016 0.8044 0.9406 1.3440 3.5422
0.7841 1.8125 1.8744 2.4464 2.7371 3.2876 3.4722 0.3652 3.5539 0.3883 0.4488 7.4837
14 12 hour 1% 27 112.00 0.99 0.6290 0.5080 3.2533 1.0368 0.9884 1.7188 4.2417
1.0413 2.4119 2.4432 3.3842 3.8916 4.2545 5.0451 0.4678 4.5057 0.5391 0.5780 9.1868
14 12 hour 1% 28 112.00 0.99 1.1276 0.9289 4.7474 1.9285 1.2059 3.2287 5.9533
1.9236 4.5176 4.6021 6.2984 6.7024 6.4482 8.3257 0.8843 6.9052 0.7792 1.0560 13.2615
14 12 hour 1% 29 112.00 0.99 0.5259 0.4195 2.8651 0.8606 0.9752 1.4310 3.8067

0.8689 1.9866 2.0032 2.8162 3.0993 3.6360 4.0938 0.3935 3.9068 0.4441 0.4772 8.0395
14 12 hour 1% 30 112.00 0.99 0.8332 0.7303 2.9521 1.4643 1.0160 2.4093 3.7987
1.4036 3.4595 3.5798 4.4513 5.1386 4.2589 6.4787 0.7602 4.2827 0.6307 0.8318 8.4932
15 18 hour 1% 21 127.00 0.99 0.3700 0.2862 1.5699 0.5920 0.6362 0.9854 2.1661
0.6120 1.3344 1.3781 1.8167 1.9444 1.9943 2.5639 0.2573 2.1702 0.2836 0.3254 4.5722
15 18 hour 1% 22 127.00 0.99 0.3918 0.3166 2.1751 0.6456 0.7604 1.0719 2.9355
0.6443 1.4677 1.5031 2.0673 2.4057 2.6612 3.0883 0.2876 2.8637 0.3141 0.3602 6.0905
15 18 hour 1% 23 127.00 0.99 0.4189 0.3320 2.1775 0.6792 0.8214 1.1239 2.9989
0.6909 1.5416 1.5570 2.2200 2.4767 2.8100 3.2546 0.3061 2.9887 0.2936 0.3777 6.2811
15 18 hour 1% 24 127.00 0.99 0.5917 0.4664 2.9864 0.9559 0.9437 1.5884 3.9301
0.9757 2.2039 2.2289 3.2234 3.6170 3.9078 4.7350 0.4340 4.2013 0.4629 0.5305 8.5039
15 18 hour 1% 25 127.00 0.99 0.6174 0.4758 3.0952 0.9820 0.9886 1.6360 4.0839
1.0160 2.2735 2.2828 3.3690 3.8262 3.8127 4.9762 0.4506 4.2389 0.5041 0.5409 8.3997
15 18 hour 1% 26 127.00 0.99 0.4430 0.3666 1.7963 0.7536 0.6770 1.2541 2.4447
0.7487 1.3262 1.4157 2.0046 2.3420 2.2398 2.9754 0.3007 2.4207 0.2836 0.4170 4.9717
15 18 hour 1% 27 127.00 0.99 0.5395 0.4273 3.2033 0.8797 0.9796 1.4642 4.1828
0.8947 1.9835 2.0111 2.9247 3.2747 3.9088 4.2398 0.3839 4.2435 0.4586 0.4859 8.8652
15 18 hour 1% 28 127.00 0.99 0.6673 0.5901 2.2985 1.1437 0.8110 1.8642 3.1005
1.0991 2.7372 2.8974 3.4873 4.0743 3.1783 5.1241 0.6615 3.2823 0.5147 0.6734 6.6624
15 18 hour 1% 29 127.00 0.99 0.4435 0.3959 2.0489 0.7961 0.8064 1.3148 2.8553
0.7486 1.7628 1.8644 2.4646 2.9392 2.5930 3.7068 0.3839 2.8329 0.3529 0.4509 5.9718
15 18 hour 1% 30 127.00 0.99 0.3734 0.2982 2.1900 0.6123 0.8212 1.0187 3.0111
0.6174 1.3730 1.3918 1.9747 2.2826 2.7411 2.9533 0.2709 3.0014 0.2963 0.3392 6.2108
16 24 hour 1% 21 139.00 1.00 0.4013 0.3152 2.3128 0.6489 0.8540 1.0797 3.1668
0.6621 1.4630 1.4720 2.1270 2.3820 2.9210 3.1172 0.2813 3.1878 0.3320 0.3585 6.6083
16 24 hour 1% 22 139.00 1.00 0.3886 0.3088 1.5664 0.6425 0.6575 1.0741 2.2239
0.6546 1.2305 1.2776 1.6164 1.7409 2.0420 2.2427 0.2509 2.2098 0.2698 0.3509 4.6747
16 24 hour 1% 23 139.00 1.00 0.5675 0.4804 2.4724 0.9698 0.8316 1.6045 3.2568
0.9489 2.2308 2.3162 2.9936 3.0998 3.3345 4.2355 0.4671 3.5264 0.3799 0.5469 7.0938
16 24 hour 1% 24 139.00 1.00 0.5177 0.4110 2.1940 0.8448 0.7776 1.4016 2.9716
0.8581 1.9390 1.9788 2.7878 3.0346 3.0506 4.0212 0.4358 3.2017 0.3639 0.4674 6.4920
16 24 hour 1% 25 139.00 1.00 0.6119 0.5567 2.4962 1.1063 0.8706 1.8154 3.2906
1.0339 2.5915 2.7114 3.1342 3.4941 3.5428 4.2679 0.5820 3.7185 0.4195 0.6343 7.2473
16 24 hour 1% 26 139.00 1.00 0.4785 0.4109 2.3980 0.8220 0.8400 1.3509 3.2370
0.7972 1.8812 1.9556 2.4886 2.8333 3.1123 3.5512 0.4193 3.3366 0.3728 0.4680 6.6745
16 24 hour 1% 27 139.00 1.00 0.6132 0.5165 2.5494 1.0504 0.8398 1.7431 3.3654
1.0287 2.4029 2.4917 3.2651 3.3412 3.4062 4.5675 0.4911 3.5306 0.4071 0.5878 7.1205
16 24 hour 1% 28 139.00 1.00 0.3935 0.3297 1.3663 0.6713 0.5826 1.1113 1.9490
0.6615 1.3665 1.4493 1.7381 1.8972 1.7381 2.3816 0.3005 1.9034 0.2774 0.3752 3.9962
16 24 hour 1% 29 139.00 1.00 0.5573 0.4992 2.2127 1.0010 0.8621 1.6503 3.0748
0.9428 2.2852 2.4074 2.8440 2.7210 3.0688 3.8825 0.4948 3.1107 0.3296 0.5686 6.4690
16 24 hour 1% 30 139.00 1.00 0.6061 0.5251 2.2345 1.0740 0.8488 1.7935 3.0699
1.0308 2.3222 2.4125 3.1837 3.1606 3.1325 4.3450 0.4725 3.2626 0.3954 0.5975 6.6660
17 30 hour 1% 21 148.00 1.00 0.2872 0.2323 1.5555 0.4731 0.6394 0.7825 2.1949
0.4745 1.0372 1.0555 1.4563 1.5973 1.9567 2.1206 0.2137 2.1001 0.2361 0.2644 4.5309
17 30 hour 1% 22 148.00 1.00 0.4900 0.3875 2.7174 0.7963 0.9110 1.3226 3.6284

0.8074 1.8092 1.8326 2.6129 2.9200 3.0753 3.8350 0.3543 3.4008 0.3897 0.4408 7.2083
17 30 hour 1% 23 148.00 1.00 0.4087 0.3400 1.7358 0.6923 0.5957 1.1475 2.3223
0.6835 1.5448 1.5836 2.1073 2.1924 1.9479 2.9728 0.3125 2.2604 0.2836 0.3869 4.4360
17 30 hour 1% 24 148.00 1.00 0.3497 0.2780 1.8579 0.5663 0.7024 0.9379 2.5603
0.5739 1.2610 1.2809 1.8027 2.0180 2.1930 2.6586 0.2552 2.3325 0.2836 0.3163 5.1276
17 30 hour 1% 25 148.00 1.00 0.6398 0.4793 2.7554 0.9959 0.9227 1.6604 3.6328
1.0465 2.1910 2.2213 3.3077 3.8075 3.7419 4.9248 0.4196 4.1615 0.5109 0.5447 7.8736
17 30 hour 1% 26 148.00 1.00 0.3388 0.2629 1.4456 0.5424 0.5622 0.9025 2.0079
0.5584 1.1171 1.1411 1.6251 1.7898 1.8087 2.3569 0.2223 1.9085 0.2674 0.2989 4.1008
17 30 hour 1% 27 148.00 1.00 0.2445 0.2123 1.1362 0.4260 0.5303 0.7024 1.6665
0.4086 0.9006 0.9339 1.1889 1.2567 1.5075 1.6771 0.1956 1.6398 0.1962 0.2418 3.4984
17 30 hour 1% 28 148.00 1.00 0.2258 0.1730 1.2333 0.3535 0.5308 0.5879 1.7641
0.3694 0.7481 0.7509 1.1347 1.3291 1.5296 1.7062 0.1468 1.6624 0.1943 0.1970 3.5757
17 30 hour 1% 29 148.00 1.00 0.3344 0.2684 1.9075 0.5494 0.7382 0.9106 2.6457
0.5546 1.2185 1.2440 1.7200 1.9985 2.4489 2.5509 0.2442 2.6599 0.2836 0.3053 5.5892
17 30 hour 1% 30 148.00 1.00 0.2425 0.1885 1.2551 0.3876 0.5538 0.6439 1.8064
0.3988 0.8170 0.8219 1.2303 1.3923 1.5977 1.8056 0.1551 1.7429 0.2062 0.2144 3.6806
Run, Representative hydrograph
1
Run, Representative hydrograph
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Run, Representative hydrograph
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Run, Representative hydrograph

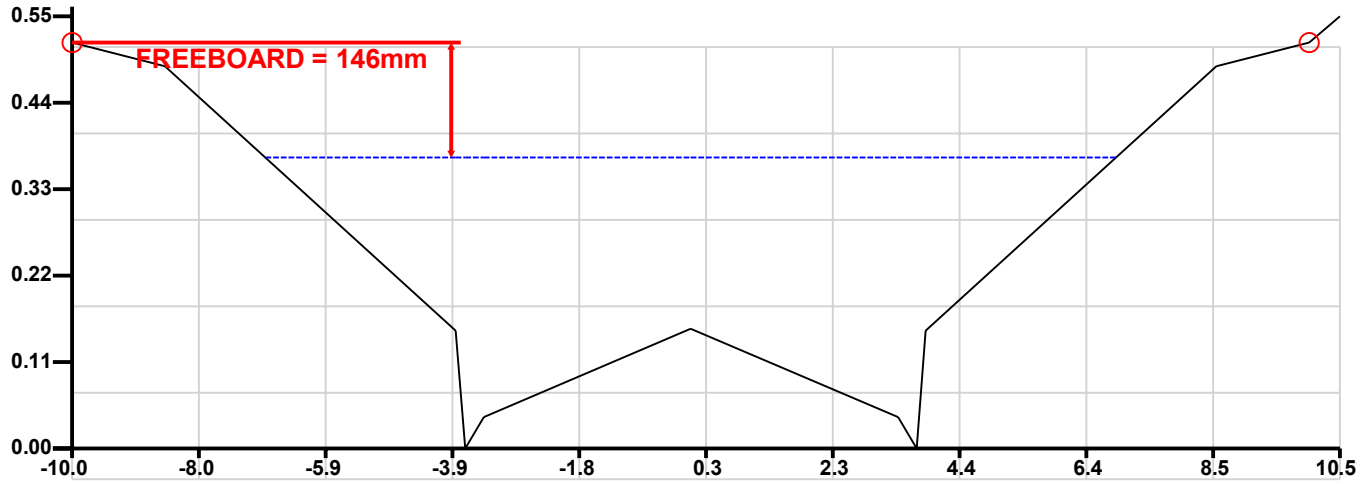
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 15
 Run,    Representative hydrograph
 16
 Run,    Representative hydrograph
 17

Elapsed Run Time (hh:mm:ss) = 00:01:32
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APPENDIX F: PC CONVEY RESULTS

PROJECT: 1400147-PC Convey-20mRR (Catch L-P)
Print-out date: 16/09/2021 - Time: 3:57
Data File: 1400147-PC Convey-20mRR (Catch L-P).dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 2.53 cumecs

There is no pipe discharge
Overland / Channel / Watercourse discharge = 2.530 cumecs

3. RESULTS: Water surface elevation = 0.370m

High Flow Channel grade = 1 in 200, Main Channel / Low Flow Channel grade = 1 in 200.

	LEFT OVERBANK	MAIN CHANNEL	RIGHT OVERBANK	TOTAL CROSS-SECTION
Discharge (cumecs):	0.00	2.66	0.00	2.66
D(Max) = Max. Depth (m):	0.00	0.37	0.00	0.37
D(Ave) = Ave. Depth (m):	0.00	0.20	0.00	0.20
V = Ave. Velocity (m/s):	0.00	0.94	0.00	0.94
D(Max) x V (cumecs/m):	0.00	0.35	0.00	0.35
D(Ave) x V (cumecs/m):	0.00	0.19	0.00	0.19
Froude Number:	0.00	0.67	0.00	0.67
Area (m^2):	0.00	2.81	0.00	2.81
Wetted Perimeter (m):	0.00	13.90	0.00	13.90
Flow Width (m):	0.00	13.75	0.00	13.75
Hydraulic Radius (m):	0.00	0.20	0.00	0.20
Composite Manning's n:	0.000	0.026	0.000	0.026
Split Flow?	-	-	-	No

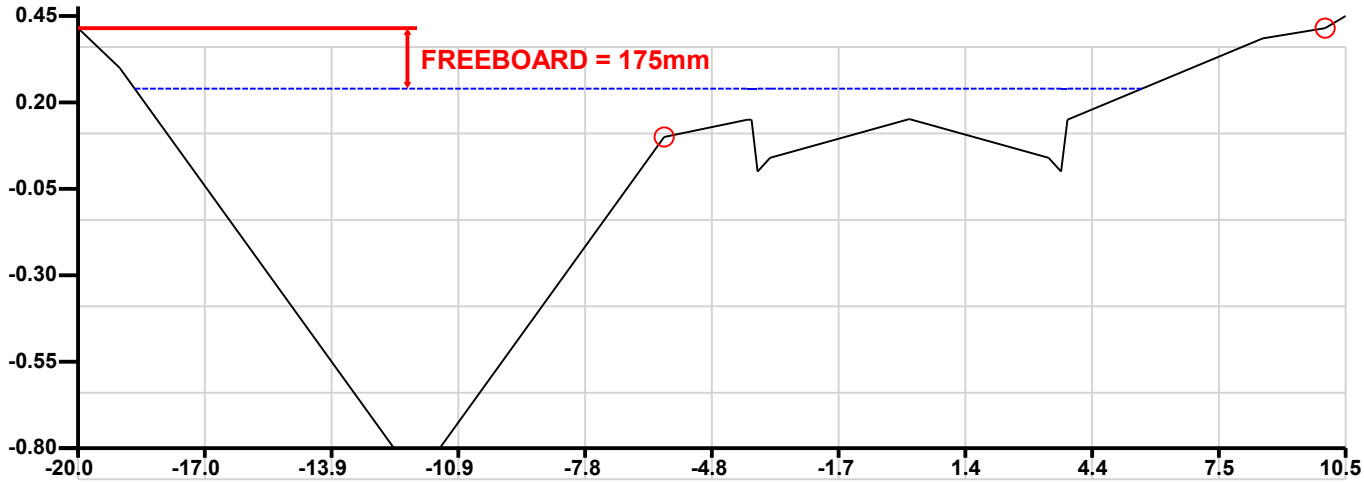
4. CROSS-SECTION DATA:

	LEFT HAND POINT		RIGHT HAND POINT		
SEGMENT NO.	CHAINAGE (m)	R.L. (m)	CHAINAGE (m)	R.L. (m)	MANNING'S N
1	-10.000	0.516	-8.500	0.486	0.013
2	-8.500	0.486	-3.800	0.150	0.035
3	-3.800	0.150	-3.650	0.000	0.013
4	-3.650	0.000	-3.350	0.040	0.013
5	-3.350	0.040	0.000	0.152	0.015
6	0.000	0.152	3.350	0.040	0.015
7	3.350	0.040	3.650	0.000	0.013
8	3.650	0.000	3.800	0.150	0.013
9	3.800	0.150	8.500	0.486	0.035
10	8.500	0.486	10.000	0.516	0.013
11	10.000	0.516	10.500	0.550	0.035

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PROJECT: 1400147-PC Convey-30mRR with Swale
Print-out date: 06/04/2022 - Time: 12:51
Data File: 1400147-PC Convey-30mRR with Swale.dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 11.67 cumecs

There is no pipe discharge
Overland / Channel / Watercourse discharge = 11.67 cumecs

3. RESULTS: Water surface elevation = 0.240m

High Flow Channel grade = 1 in 200, Main Channel / Low Flow Channel grade = 1 in 200.

	LEFT OVERBANK	MAIN CHANNEL	RIGHT OVERBANK	TOTAL CROSS-SECTION
Discharge (cumecs):	10.73	1.11	0.00	11.85
D(Max) = Max. Depth (m):	1.04	0.24	0.00	1.04
D(Ave) = Ave. Depth (m):	0.59	0.13	0.00	0.59
V = Ave. Velocity (m/s):	1.42	0.76	0.00	1.31
D(Max) x V (cumecs/m):	1.47	0.18	0.00	1.36
D(Ave) x V (cumecs/m):	0.84	0.10	0.00	0.78
Froude Number:	0.59	0.68	0.00	0.63
Area (m^2):	7.57	1.47	0.00	9.04
Wetted Perimeter (m):	12.90	11.64	0.00	24.54
Flow Width (m):	12.74	11.50	0.00	24.24
Hydraulic Radius (m):	0.59	0.13	0.00	0.37
Composite Manning's n:	0.035	0.023	0.000	0.030
Split Flow?	-	-	-	No

4. CROSS-SECTION DATA:

	LEFT HAND POINT		RIGHT HAND POINT		
SEGMENT NO.	CHAINAGE (m)	R.L. (m)	CHAINAGE (m)	R.L. (m)	MANNING'S N
1	-20.000	0.415	-19.000	0.300	0.035
2	-19.000	0.300	-12.400	-0.800	0.035
3	-12.400	-0.800	-11.300	-0.800	0.035
4	-11.300	-0.800	-5.900	0.100	0.035
5	-5.900	0.100	-3.900	0.150	0.035
6	-3.900	0.150	-3.800	0.150	0.013
7	-3.800	0.150	-3.650	0.000	0.013
8	-3.650	0.000	-3.350	0.040	0.013
9	-3.350	0.040	0.000	0.152	0.015
10	0.000	0.152	3.350	0.040	0.015
11	3.350	0.040	3.650	0.000	0.013
12	3.650	0.000	3.800	0.150	0.013

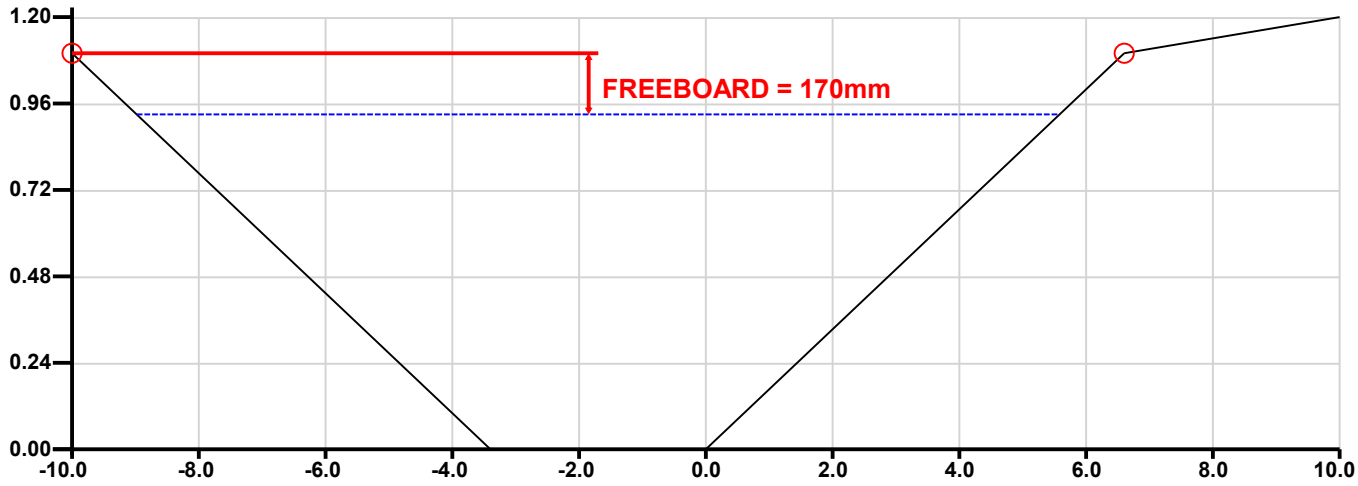
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4. CROSS-SECTION DATA: (continued)

SEGMENT NO.	LEFT HAND POINT CHAINAGE (m)	LEFT HAND POINT R.L. (m)	RIGHT HAND POINT CHAINAGE (m)	RIGHT HAND POINT R.L. (m)	MANNING'S N
13	3.800	0.150	8.500	0.385	0.035
14	8.500	0.385	10.000	0.415	0.013
15	10.000	0.415	10.500	0.450	0.035

PROJECT: 1400147-PC Convey-Swale
Comment
Print-out date: 05/04/2022 - Time: 5:12
Data File: 1400147-PC Convey-Swale.dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 12.73 cumecs

There is no pipe discharge
Overland / Channel / Watercourse discharge = 12.73 cumecs

3. RESULTS: Water surface elevation = 0.930m

High Flow Channel grade = 1 in 160, Main Channel / Low Flow Channel grade = 1 in 160.

	LEFT OVERBANK	MAIN CHANNEL	RIGHT OVERBANK	TOTAL CROSS-SECTION
Discharge (cumecs):	0.00	12.93	0.00	12.93
D(Max) = Max. Depth (m):	0.00	0.93	0.00	0.93
D(Ave) = Ave. Depth (m):	0.00	0.57	0.00	0.57
V = Ave. Velocity (m/s):	0.00	1.55	0.00	1.55
D(Max) x V (cumecs/m):	0.00	1.44	0.00	1.44
D(Ave) x V (cumecs/m):	0.00	0.89	0.00	0.89
Froude Number:	0.00	0.65	0.00	0.65
Area (m^2):	0.00	8.35	0.00	8.35
Wetted Perimeter (m):	0.00	14.71	0.00	14.71
Flow Width (m):	0.00	14.56	0.00	14.56
Hydraulic Radius (m):	0.00	0.57	0.00	0.57
Composite Manning's n:	0.000	0.035	0.000	0.035
Split Flow?	-	-	-	No

4. CROSS-SECTION DATA:

	LEFT HAND POINT		RIGHT HAND POINT		
SEGMENT NO.	CHAINAGE (m)	R.L. (m)	CHAINAGE (m)	R.L. (m)	MANNING'S N
1	-10.000	1.100	-3.400	0.000	0.035
2	-3.400	0.000	0.000	0.000	0.035
3	0.000	0.000	6.600	1.100	0.035
4	6.600	1.100	10.000	1.200	0.035

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APPENDIX G: FLUX FILE RESULTS

	Jan-91	Jan-92	Jan-93	Jan-94	Jan-95	Jan-96	Jan-97	Jan-98	Jan-99	Jan-00	Average for Jan [ML/yr]
Total [ML/yr]	7.010	3.918	7.607	7.607	7.138	7.199	5.421	2.890	7.169	7.328	6.329
	Feb-91	Feb-92	Feb-93	Feb-94	Feb-95	Feb-96	Feb-97	Feb-98	Feb-99	Feb-00	Average for Feb [ML/yr]
Total [ML/yr]	5.115	6.085	6.871	6.871	5.149	4.847	3.283	5.789	6.871	1.186	5.207
	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Average for Mar [ML/yr]
Total [ML/yr]	5.853	6.225	7.386	7.607	5.872	6.134	5.755	2.208	5.593	0.004	5.264
	Apr-91	Apr-92	Apr-93	Apr-94	Apr-95	Apr-96	Apr-97	Apr-98	Apr-99	Apr-00	Average for Apr [ML/yr]
Total [ML/yr]	6.300	5.861	4.436	6.897	6.894	7.361	2.029	5.178	4.863	4.457	5.428
	May-91	May-92	May-93	May-94	May-95	May-96	May-97	May-98	May-99	May-00	Average for May [ML/yr]
Total [ML/yr]	6.519	7.446	5.412	5.867	7.353	5.858	6.812	3.319	5.584	4.614	5.878
	Jun-91	Jun-92	Jun-93	Jun-94	Jun-95	Jun-96	Jun-97	Jun-98	Jun-99	Jun-00	Average for Jun [ML/yr]
Total [ML/yr]	6.871	7.361	6.066	4.833	7.361	4.769	5.287	6.490	5.424	4.440	5.890
	Jul-91	Jul-92	Jul-93	Jul-94	Jul-95	Jul-96	Jul-97	Jul-98	Jul-99	Jul-00	Average for Jul [ML/yr]
Total [ML/yr]	7.607	7.361	6.949	2.995	7.607	7.607	4.846	7.607	3.505	6.239	6.232
	Aug-91	Aug-92	Aug-93	Aug-94	Aug-95	Aug-96	Aug-97	Aug-98	Aug-99	Aug-00	Average for Aug [ML/yr]
Total [ML/yr]	7.607	7.607	6.655	2.995	7.607	7.607	5.798	7.057	4.908	5.473	6.331
	Sep-91	Sep-92	Sep-93	Sep-94	Sep-95	Sep-96	Sep-97	Sep-98	Sep-99	Sep-00	Average for Sep [ML/yr]
Total [ML/yr]	7.361	7.361	7.361	6.214	6.214	7.361	6.009	6.730	3.866	7.302	6.578
	Oct-91	Oct-92	Oct-93	Oct-94	Oct-95	Oct-96	Oct-97	Oct-98	Oct-99	Oct-00	Average for Oct [ML/yr]
Total [ML/yr]	7.607	7.607	7.607	7.119	7.119	4.344	5.090	7.607	6.981	7.607	6.869
	Nov-91	Nov-92	Nov-93	Nov-94	Nov-95	Nov-96	Nov-97	Nov-98	Nov-99	Nov-00	Average for Nov [ML/yr]
Total [ML/yr]	5.518	7.361	7.361	7.361	7.361	6.210	6.068	7.361	5.264	5.575	6.544
	Dec-91	Dec-92	Dec-93	Dec-94	Dec-95	Dec-96	Dec-97	Dec-98	Dec-99	Dec-00	Average for Dec [ML/yr]
Total [ML/yr]	5.491	7.607	5.856	7.070	7.607	5.587	5.690	6.969	5.727	2.973	6.058

Post-dev water usage [ML/yr]=	66.278
Post-dev rainwater falling (from Post Dev MUSIC model - discharge south & SE) [ML/yr]=	328.000
Post-Dev rainwater discharged into lagoon [ML/yr] =	261.722
Pre-dev rainwater discharged into lagoon (from Pre Dev MUSIC model) [ML/yr] =	77.600
Post-dev excess rainwater discharge into lagoon [ML/yr] =	184.122