Infrastructure and Servicing Report

Wurruk Development

Client

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

Issued

11/05/2022

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Project Management

Revision Table

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1.0	Initial Issue	28/05/2021	CC
2.0	Amended Section 3.4 and 3.5	09/09/2021	CC
3.0	Amended Section 1.1 and 3.3, and Fig 3, Fig 10 & Fig 11	4/11/2021	CC
4.0	Updated 'Traffic & Transport Assessment' (version 6) report, 'Stormwater Management Strategy' (version G) Report; and Development Plan (version 8)	22/3/2022	CC
5.0	Updated 'Stormwater Management Strategy' (version H)	27/4/2022	CC
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1 EXECUTIVE SUMMARY

1.1 Findings

This report discusses the availability of services to the proposed 141 hectare residential development site south of Princes Highway and west of Settlement Road, in Wurruk. Note that this report reviews the availability of services within the context provided by the Sale, Wurruk and Longford Structure Plan (2010).

Roads **(Regional Roads Victoria /Wellington Shire Council)**	Available	Primary access to the site will be provided from a new fourth leg to the existing roundabout at the intersection of Hunt Place and the Princes Highway. All access streets and local roads internal to the development will come off a new connector street connecting the new fourth leg of Princes Highway roundabout to Settlement Road at the southeast end of the Development Plan area.
Main Drainage **(West Gippsland Catchment Management Authority /Wellington Shire Council)**	Available (Significant internal infrastructure to be constructed)	Underground drainage infrastructure will need to be constructed for the 20% AEP storm, and the road reserves cross section are to have capacity to convey the gap flow up to the 1% AEP storm. 3 wetlands and 3 sedimentation basins will need to be constructed for the development to satisfy both stormwater quality and quantity requirements. The WGCMA have set the condition that there is to be no increase to the volume of stormwater discharging the site to the south. To satisfy this requirement it is proposed to pump stormwater from WLRB South to an existing dam located on farmland to the west and utilise this stormwater for irrigation.
Sewer **(Gippsland Water)**	Available (External Upgrades Required)	There are currently no existing reticulation or branch sewers in the area. Therefore, this site will be reliant upon external upgrades to provide outfall for internal sewer works. The Wurruk South Water Strategy outlines four sewer outfall options for the site. The preferred option requires the construction of a 300mm and 225mm diameter gravity sewer to service the north east catchment, which connects to the existing pump station at the corner of the Princes Highway and Settlement Road. Extension of the 300mm diameter sewer in Hunt Place to serve the north west catchment and a new pumping station, complete with 150mm rising main, near Settlement Road and Arnup Road to service the southern catchment.
Potable Water **(Gippsland Water)**	Available (External Upgrades Required)	There are existing water mains servicing the Princes Highway, Reid Drive, Settlement Road and The Ridge. Preliminary Servicing Advice from Gippsland Water is that the development of the overall area will require construction of 225mm and 150mm diameter Water mains from The Ridge, Settlement Road and Reid Drive. The Development will require a duplicate 225mm diameter main in Settlement Road to connect to the extension of the main from The Ridge. Any extension of the main from Reid Drive cannot be connected to the mains from The Ridge or Settlement Road as

		the Reid Drive main is downstream of the West Sale booster pump.
Recycled Water	Not Available	Not applicable
Gas **(APA Group)**	Available	There is gas available from Princes Highway, Settlement Road and other surrounding development roads. Gas is currently connected to the Kilmany Park Estate from Settlement Road. The amount of any contributions required to be made by developers for this extension have not been confirmed by APA Group. No external upgrades are expected to be required.
Electricity **(Ausnet Services)**	Available (relocation/ removal works required)	HV electricity is available from both the Princes Highway to the north and from Settlement Road to the southeast of the site. The most suitable point for connection is from the overhead HV in Princes Highway; followed by two good conductors to the south of the development. The power pole and associated overhead HV at the Hunt Place – Princes Highway intersections needs to be relocated; and the overhead HV along Arnup Road needs to be removed and new underground servicing provided. It is estimated that the site will require 15-20 new kiosk substations (spread throughout the various estates).
Telecommunications **(NBN Co.)**	Available	There are existing telecommunications surrounding the development site. Preliminary advice from NBN is that it is unlikely there would be backhaul costs or external works required to service this development. NBN Co will service this development via fixed line service.

2 OVERVIEW

2.1 Introduction

Beveridge Williams has prepared a preliminary report outlining the provision of the necessary infrastructure required to service the proposed residential development on Princes Highway in Wurruk (the subject site).

The 141 hectare site comprises of 14 titles with the following addresses: 148A Reid Drive (Lots 4 & 7 on PS602219, Lots 1 & 2 on PS819928), 148F Reid Drive (Lot 2 on PS602219), 148B Reid Drive (Lot 3 on PS602219), 148C Reid Drive (Lot 5 on PS602219), 1613 Settlement Road (Lot 1 on PS602219), 412 Arnup Road (Lots 1 & 2 on PS610634), Crown Allotment 19, Section E, Parish of Wurruk Wurruk and 15 The Ridge (Lot 1 on PS410216, Lots 6 & 7 on PS702630).

The site is owned by four (4) separate entities: Jelaryl Pty. Ltd., Park Ridge Investments Pty. Ltd., Pearsondale Heights Pty. Ltd. & Barry Hollonds.

2.2 Site Location

The subject site is located approximately 210 kilometres by road east of the Victorian state capital, Melbourne. The site is 2 kilometres west of Sale and is bounded Princes Highway to the north, Sovereign Estate to the west, Park Ridge Estate to the east, and historic Kilmany Park property and rural/farming land to the south.

The overall site is irregular in shape, with a direct frontage of approximately 993 metres to Princes Highway on its north side, 675 metres to Settlement Road on its southeast side and 120 metres to Reid Drive on its west side. It is bisected by Arnup Road, which a local gravel road, in its southern portion. The surrounding estates are all low density residential.

The site could be considered undulating with moderate to gentle slopes. The maximum falls approach 1:5 with some localised slopes of 1:4 at an old quarry site in the southeast corner of the site. The areas of steeper slopes will require an earthworks plan to minimize their impact to the developable area.
A small portion of the site grades north-west towards the Princes Highway. The rest of the side grades south east. An escarpment in the south of the site runs diagonally in a Northeast to Southwest direction.

Otherwise, it is noted that:

- The land below the subject site is flat. Towards the south end it is flood prone;
- The site contains the historic Kilmany Park mansion and associated outbuildings in its southwest portion;
- There is also a small former farmhouse located adjacent to Arnup Road within 402 Arnup Road;
- The Princes Highway has dual carriageways in each direction that are separated by a central median;
- Existing low density residential zoned blocks back onsite the site on its east and west sides;
- An existing pond is located to the east of the site. This pondage performs an informal stormwater detention/treatment function, but is located within neighbouring private properties;
- An old quarry site is located in the southeast portion of the site; and,
- The site contains scattered native paddock trees, with some in the northwest portion protected through a title restriction. A flora and fauna study being carried out as part of this development plan approval process provides information about the remaining scattered native paddock trees within the site and the pondage in the southeast corner.

Refer to Appendix A: Cadastre and Contour Information and **Figure 1** below for an aerial photo of the site.

Figure 1- Site Aerial Plan (Source: Google Maps, 2021)
(Not to scale)

2.3 Site Constraints

The land parcel is located within the Wellington Shire Council area and was identified as a potential residential growth area within the "Sale, Wurruk and Longford Structure Plan (August 2010)".

The northern and southeast portions of the subject site were subsequently rezoned from Low Density Residential to General Residential on the 24th of April, 2018. The southern and southwest portions of the subject site were rezoned from Farming to Low Density Residential on the same day. A Development Plan Overlay (Schedule 9) was introduced into the Wellington Planning Scheme to cover the rezoned areas and provide for a holistic approach to the planning and future development of the residential estates allowed by the Planning Scheme. A Development Plan has been prepared for the overall site under the provisions of the Development Plan Overlay (Schedule 9). It is anticipated that this Development Plan will be approved in the coming months. A Development Contributions Plan (DCP) is being prepared as part of the Development Plan.

Otherwise, it is noted that:

- There are areas covered by a Floodway Overlay (FO) and a Land Subject to Inundation Overlay (LISO) within the southern portion of the subject site, as shown in ***Figure 2***.
- There are no High Voltage Transmissions across the site. The existing overhead electricity supply will also need to be removed.
- There are existing farm sheds located along Arnup Road that will need to be demolished. The existing dwellings within the site, i.e. at 402 Arnup Road and Kilmany Park mansion, will be retained within lots;
- Existing Princes Highway requirements / crossing
- Connection to gas within the Princes Highway roundabout.
- There is an existing road reserve within the subject site containing the unsealed road named Arnup Road. This road reserve will be transferred with new roads within the adjoining estates as part of the estate works.
- Existing service supply to Kilmany Park will be maintained through the development of the estates.

Existing surface levels on the site range from RL 24 metres at a high point at the northern end of the site to RL 4 metres at the southern drainage reserve. The overall slope of the site is generally to the east and south with a ridge running north/south in the northern half of the site.

Lot 7 on PS702630C, which is located in the northeast portion of the Development Plan area, enjoys access to appurtenant drainage easements that run through private land from an adjoining road reserve to its east, i.e. The Ridge, down to and over the abovementioned pondage that sits in private lots that line the east side of The Ridge and the west side of Dowling Court.

The site will need to be filled and roads designs as necessary to allow freeboard to lots above the 1% AEP flood level.

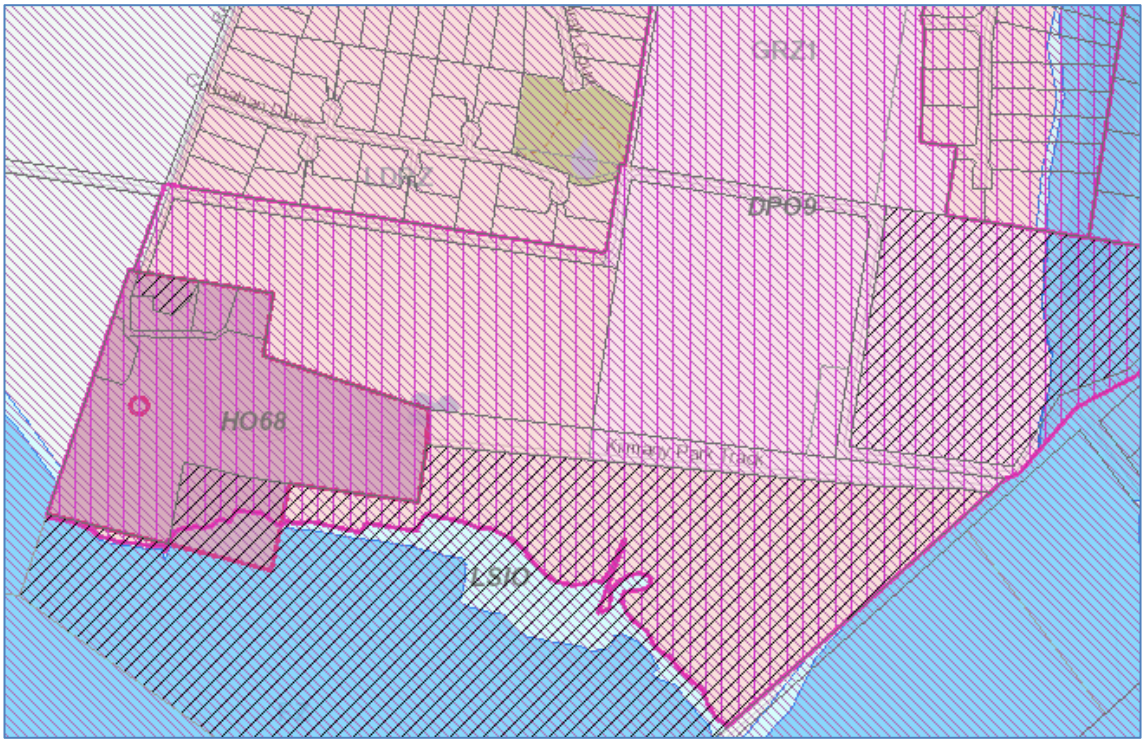


Figure 2 - Site Aerial Plan (VicPlan, 2021)
(Not to scale)

2.4 Development Proposal

The development for this site will be for General Residential and Low Density Residential development use.

The proposed subdivision layout for the subject site is as shown on the Indicative Development Plan shown below. The proposal plan will yield over 1,200 lots with an average lot yield of 13 lots per hectare across the General Residential Zoned portions of the development plan area and minimum lot sizes of 2,000m² across the Low Density Residential Zoned portions of the development plan area.

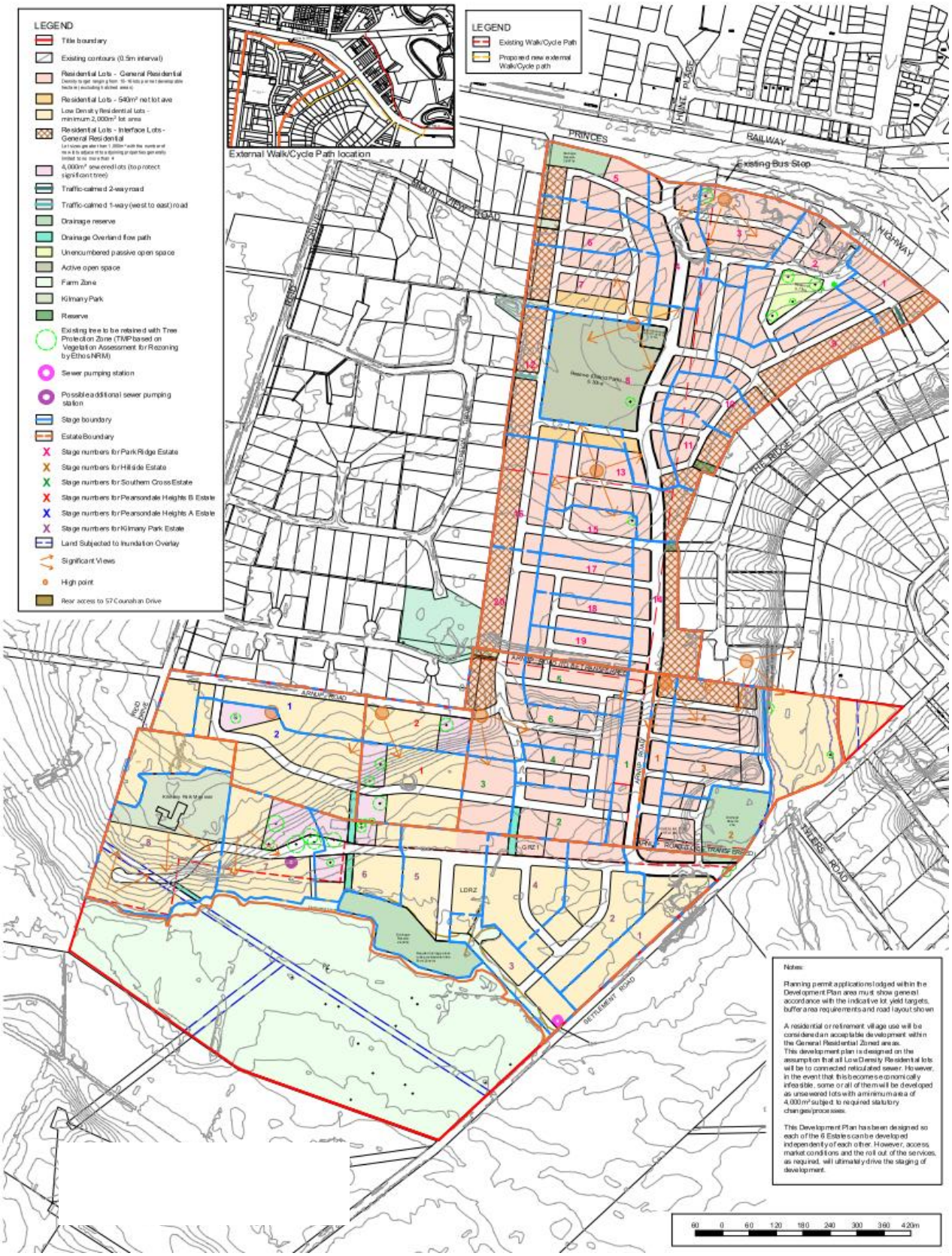


Figure 3 - Wurruk Indicative Development Plan (Version 8) (Beveridge Williams, 2022)
(Not to scale)

An area of approximately 5 hectares has been set aside for the provision of Drainage Reserves to the North West, South East and South of the site. A public open space reserve of 5.3 hectares has been provided near the middle of the site.

2.5 Assumptions and Limitations

This project has been scoped and undertaken as a desktop study to provide preliminary advice on the servicing works required for the vicinity of this property. There are limitations to the level of detail provided given the nature of this review. Desktop studies are reliant upon information made available from service authorities; with assumptions of the accuracy and completeness of the information provided. Further assessment and confirmation of details provided will be necessary during the planning and design stages.

3 SERVICES

3.1 Investigation

Our investigation into the availability of services is generally based on Dial Before You Dig (DBYD) information relating to existing services in the area, Wurruk South Water Strategy provided by Kevin Hart, Beveridge Williams Stormwater Management Strategy and Beveridge Williams Traffic and Transport Assessment report. Our servicing advice is based on our knowledge of the region, likely requirements of authorities and some preliminary advice from authorities.

3.2 Roads and Transport

The site has frontages to the Princes Highway to the north, Settlement Road to the southeast and Arnup Road through its centre as shown in **Figure 3**.

Princes Highway is an arterial road under the authority of Regional Roads Victoria (RRV). It has a dual carriageway road with a central median and two (2) lanes in either direction and a speed limit of 80 kilometres per hour. A combination of wire rope safety barrier and guard rail run along both sides of the road and the central median. The lanes are generally 3.5m wide and the median width varies around 14m. Main access to the site will be via a new connector street tying into a new southern leg of the Princes Highway – Hunt Place roundabout.

Figure 4 – Princes Highway west of the Hunt Place roundabout (facing west) (Google Maps, 2021)
(Not to scale)

The Ridge is an existing road servicing a low-density residential development to the east of the development. It is a local road that continues south from its roundabout with Princes Highway. This road will provide local road thoroughfare to the subject site. The road is a two-way road with a varied non-delineated carriageway width of approximately 6m. The road has no kerbing or pedestrian facilities and operates with a default local road speed limit of 50km/h.

Settlement Road is a local road that also continues south from its roundabout with Princes Highway. It is a local road that services a service centre and low-density residential area. Settlement Road will connect to the general and low-density residential areas in the south of the subject site. Settlement Road is a two-lane, two-way road with a varied width of approximately 6.5 metres. The road has no kerbing or pedestrian facilities and operates with a posted speed limit of 80km/h.

Figure 5 – Settlement Road south of the development (facing southwest) (Google Maps, 2021)
(Not to scale)

Arnup Road is an unsealed road that bisects the southern portion of the site connecting Settlement Road to Reid Drive. Portions of the road reserve alignment will be maintained and will need to be reconstructed to council requirements. A 500 metre (approx.) section of Arnup Road reserve will be converted to residential lots. Those portions of Arnup Road reserve will be transferred over to new roads within the estate to provide a more suitable layout. A section of Arnup Road which runs north-south will require the road reserve to be widened to 30 metres to become part of the main collector road through the development that connects the Princes Highway to Settlement Road.

Figure 6 – Arnup Road at the Settlement Road intersection (facing west) (Google Maps, 2021)
(Not to scale)

The proposed road network and road hierarchy is shown in the development plan. The Traffic and Transport Report complete by Beveridge Williams outlines traffic impacts and access considerations for the subject site. A copy of this report can be shown in Appendix I: . The report finds that sufficient road network planning and capacity will be available in the short and long term to cater for traffic generated by the subject site.

Connector Street

Main access to the site will be via a new connector street tying into a new southern leg of the Princes Highway – Hunt Place roundabout. This connector street will serve as the backbone of the development connecting Princes Highway to the north with Settlement Road to the southeast. This connection will include pedestrian footpaths and an offs-street, two-way bike path. This wide cross section will also be key to directing overland flow to the south of the development.

An indicative street profile is shown below.

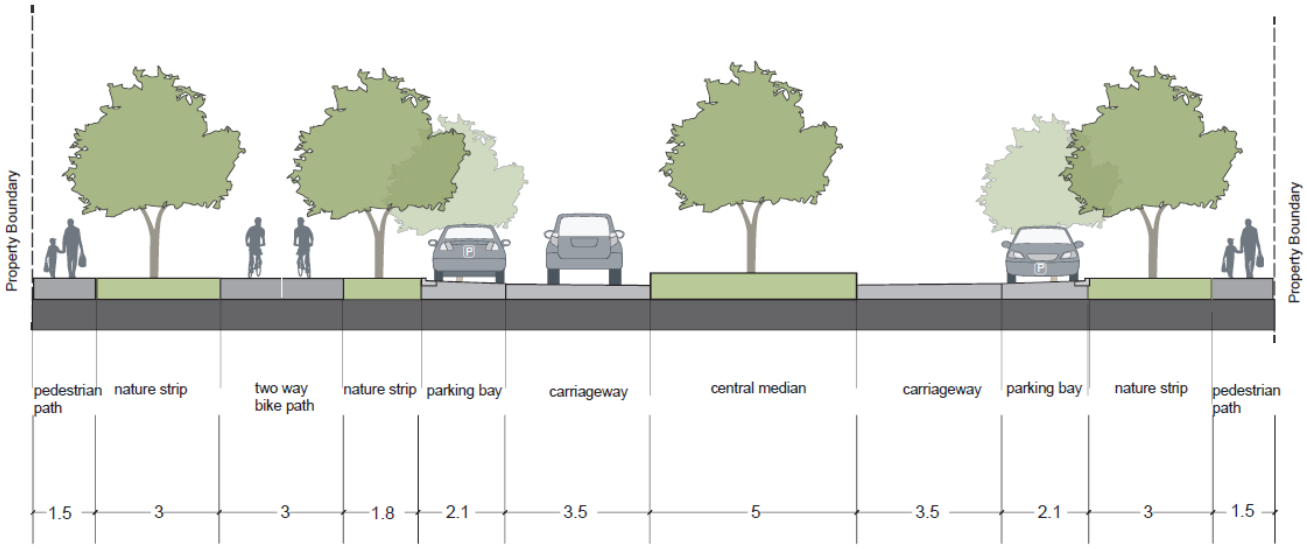


Figure 7 – Connector Street Profile – Road Reserve 30m
(Not to scale)

Access Street

The next road in the road hierarchy for this development is an access street. This road profile is used where the bike path alignment and/or parking is required. An indicative street profile is shown below.

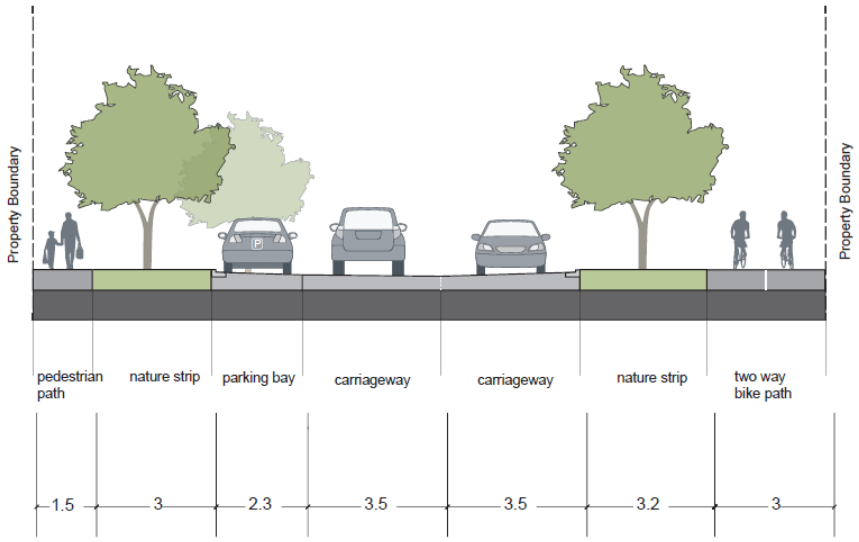


Figure 8 – Key Access Street Profile – Road Reserve 20m
(Not to scale)

Local Road

The next road in the road hierarchy for this development is a local access road. This road profile is used where the bike path alignment is not required. An indicative street profile is shown below.

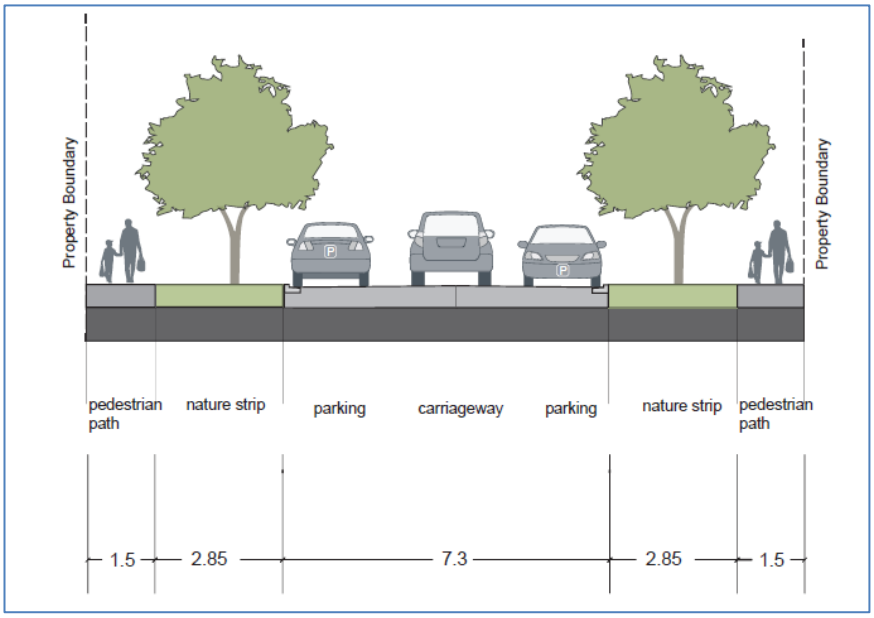


Figure 9 – Local Road Profile – Road Reserve 16m
(Not to scale)

<u>*Network Path*</u>

The Structure Plan identifies a key opportunity for "improving accessibility to all members of the community by better connecting key destinations with where people live through the enhancement of public transport services and improvements to key pedestrian / cycle connections that provide for safe, convenient and direct movement".

The shared path network proposes to route the shared path interface underneath the bridge to the east of Settlement Road and connect to the existing shared path along the north of Princes Highway that facilitates pedestrian connectivity to Sale.

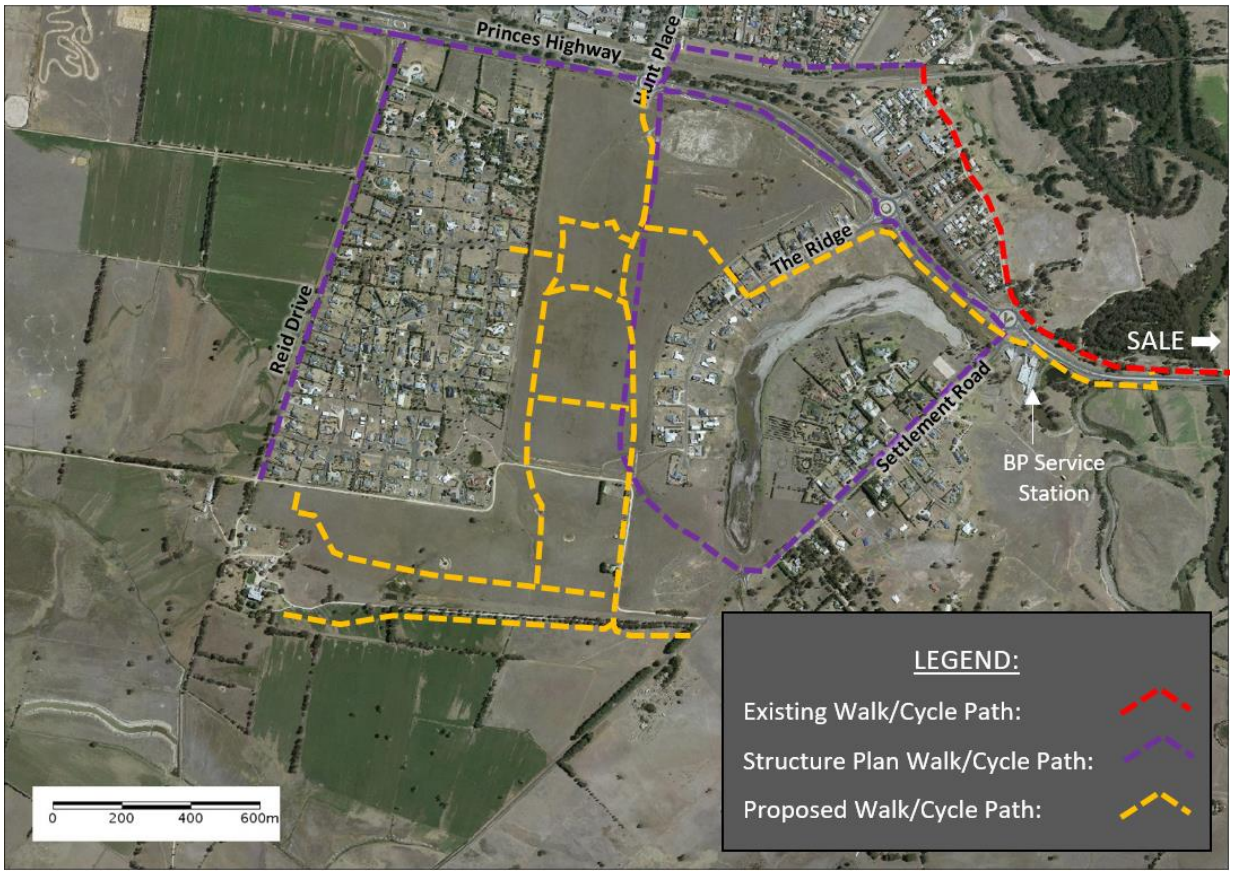


Figure 10 – Share Path Network

(Not to scale)

Kilmany Park - Settlement Road intersection

It is proposed to move the intersection with Settlement Road to the south side of the existing main entrance to Kilmany Park Estate. The relocation of the entrance allows for the preservation of the oak trees to the current driveway entrance and results in the proposed road being the boundary between the General Residential Zone 1 and the Low Density Residential Zone.

3.3 Stormwater Drainage

A Concept Stormwater Management Strategy (SWMS) has been prepared by Beveridge Williams for the site. A copy can be found in Appendix E: .

The report provides a conceptual drainage strategy for the development plan – the aim for the strategy are to:

- 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.

Throughout the development, underground drainage infrastructure will need to be designed for the 20% AEP storm, and the road reserves cross section are to have capacity to convey the gap flow up to the 1% AEP storm. The report defines the overland flow paths and requirements to ensure the roadways have capacity.

To satisfy the requirements to retain post-development stormwater runoff to pre-development level, 3 retarding basins have been proposed throughout the site. The total volume required is 45,780 m3. Locations can be seen in **Figure 11** below.

To meet stormwater quality Best Practice Environmental Management Guidelines (BPEMG), stormwater quality treatment needs to achieve the following targets:

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

All stormwater outfall directed to the southern retarding basin will outfall to a 40mL stormwater re-use dam associated with the Kilmany Park Farm, which sits to the west of the development. All water sent to this dam will be reused for irrigation on the farm, with some being pumped to another 15mL reuse dam at the southwest corner of the intersection of Reid Drive and Princes Highway. Any excess stormwater outfall that is not required for irrigation will be directed from the 15mL reuse dam to the Thomson River via an existing pipe that passes under the Princes Highway and through an easement. This outfall will enjoy a gravity feed to the river. This stormwater reuse method will meet the overall treatment requirements for the estate, as outline above.

The proposed development requires 3 sedimentation basins with total drainage reserve area of 47,370m², and 2-kL rainwater tanks to service each lot to satisfy these requirements. The basins will be located within the proposed retarding basins. Locations can be seen in **Figure 11** below. It is noted that flows from the north east catchment are discharged directed to the lagoon system south of The Ridge bypassing any treatment or detention basins. The South East retention basin will over detain its catchment to ensure the overall detention targets are achieved prior to outfall of stormwater from the site.

The downstream receiving waterway is constrained by a levee downstream of Bristows Lane. The WGMA has advised that an increase in flows from the development is likely to increase ponding of stormwater on the adjacent farmland. The redirection and subsequent reuse of stormwater outfall from the southern RB on the Kilmany Park farm will avoid increased outfall to the south and ensure that there are no negative impacts on downstream landowners.

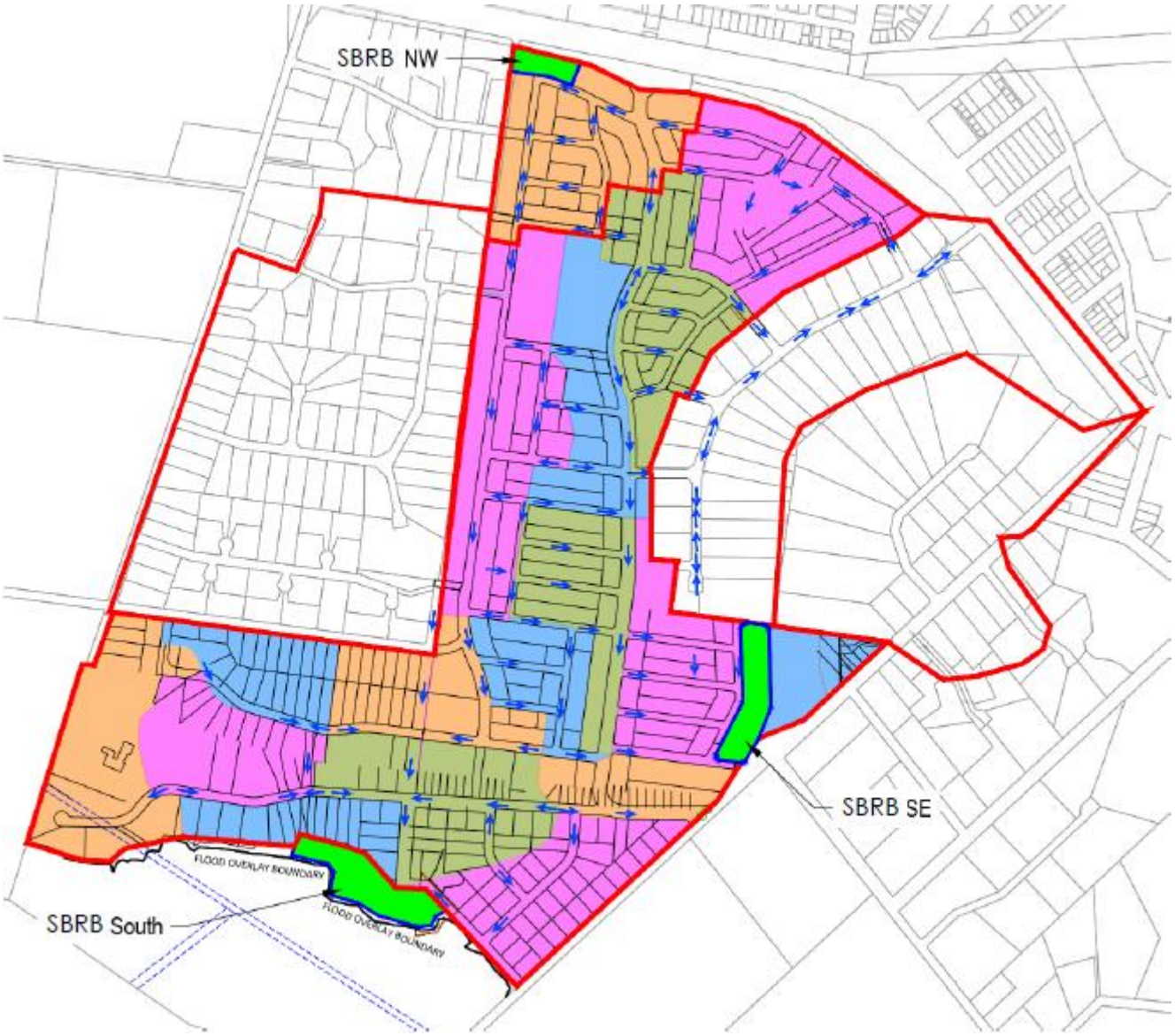


Figure 11 - Wurruk Drainage Catchments and WLRB locations
(Not to scale)

3.4 Sewer

Gippsland Water is the responsible authority for sewerage assets in the area.

The DBYD response confirms that there is no existing reticulated sewer infrastructure abutting the site. The surrounding lots are Low Density Residential Zoned and utilise onsite wastewater treatment and dispersal.

A sewer pump station is located at the intersection of Princes Highway and Settlement Road. A 300 diameter reticulation sewer extends from the pumping station through the existing Wurruk township terminating in Hunt Place just north of the existing railway crossing. From the sewer pump station, sewerage is pumped to Sale via a rising main.

As part of the land rezoning, Kevin Hart (Engineer) prepared a report outlining the provision of water and sewer for this site. A copy of the report 'Wurruk South Water & Sewer Strategy" (April 2013) is attached in Appendix D: . The strategy outlined 4 options to service the development with sewer. The preferred option 1 requires the following major sewer works:

- Construction of 300mm and 225mm diameter gravity sewer to connect approximately 230 lots in the northeast catchment of the development plan area to the existing pump station at the corner of the Princes Highway and Settlement Road;
- Extend 300mm diameter sewer in Hunt Place to service approximately 180 lots in the north west catchment of the development plan area.
- Construct a new pump station to service the southern portion of the development plan area. The new pumping station will be connected to the existing pump station via a new 150mm diameter rising main.

Refer **Figure 12** below

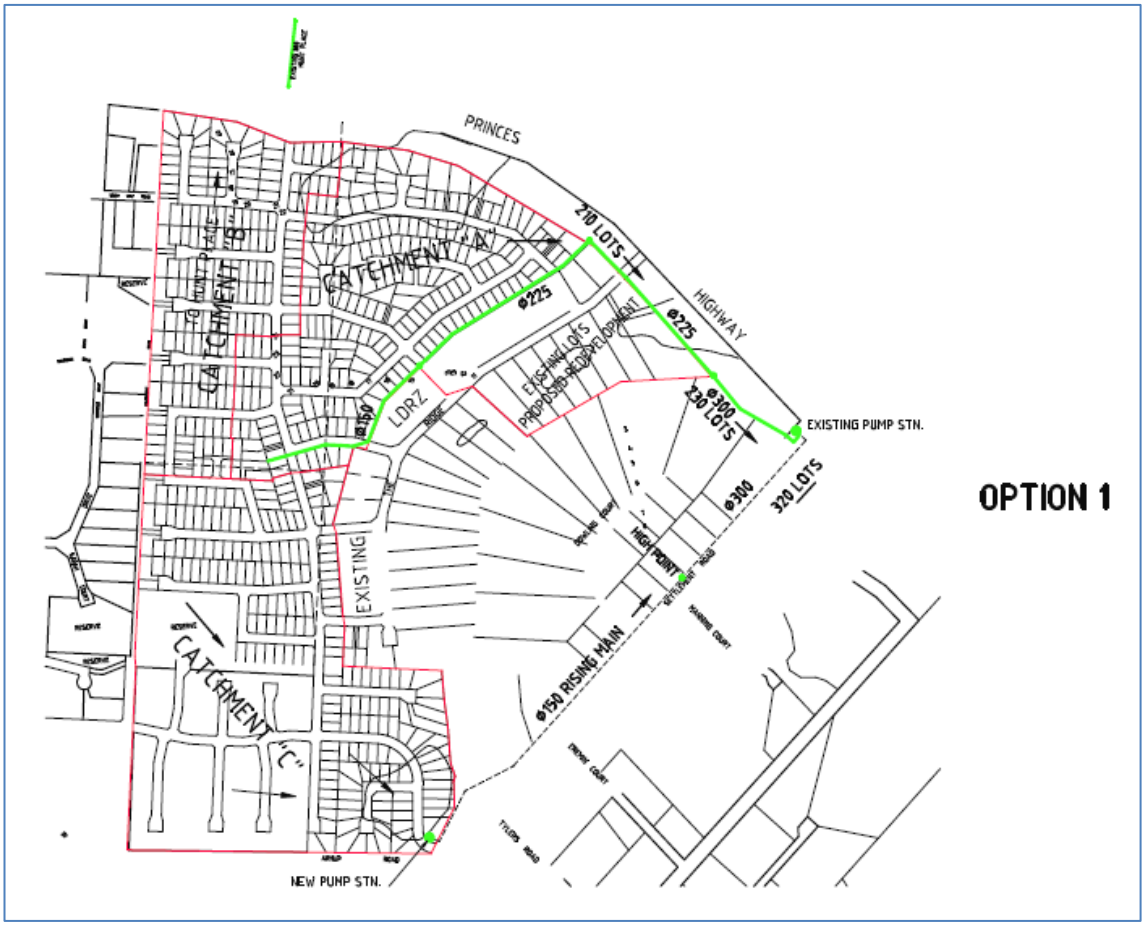


Figure 12 - Wurruk Proposed Sewer Network – Option 1
(Not to scale)

The lot yield has increased since the servicing report prepared in 2013. The infrastructure sizings and costs may therefore increase.

Other servicing options (such as sending sewer from the southern portion of the DP to the Hunt Place pumping station) will be investigated as part of functional design.

Detailed design plans will need to be prepared for each stage, and a developer works deeds signed with Gippsland Water. Construction of any mains will need to be completed by an accredited Gippsland Water Contractor. Reimbursement of works from Gippsland Water for mains larger than 225mm diameter should be investigated.

3.5 Water

Gippsland Water is the responsible authority for water assets in the area.

The DBYD response confirms that there is an existing PVC Main running along the north side of the Princes Highway, as well as an AC main running along Settlement Road to the intersection with Tylers Road where it changes to PVC pipe and turns up Tylers Road. Mains Water does service the estates to both the east and west side of the development. A copy of this information is attached as Appendix C: .

Existing water services along the Princes Highway also includes a booster pump station between The Ridge and Reid Drive to increase supply to West Sale when needed.

As part of the land rezoning, Kevin Hart prepared a report outlining the provision of water and sewer for this site. A copy of the report 'Wurruk South Water & Sewer Strategy" (April 2013) is attached in Appendix D: .

According to the servicing advice, the development will require a 225mm diameter main looping through the site from The Park Ridge Estate at the northeast (200mm diameter pipe) and tying into the existing main in Settlement Road to the southeast (150mm diameter pipe). All other reticulated water internal to the subdivision will be 100mm diameter pipe or a 150mm diameter pipe. To ensure minimum pressure requirements are maintained in the highest parts of the residential area, the water main along Settlement Road will require duplication with a 225mm diameter main from the Princes Highway to Arnup Road. This main will connect to the 225mm main mentioned earlier, which connects to The Ridge providing a loop.

To service the Low Density Residential Zoned land at the end of Reid Drive, a 150mm diameter main will be required as an extension to the service in Settlement Road. Should this main be extended it cannot be connected to the mains from The Ridge or Settlement Road as it is part of the West Sale booster pump system.

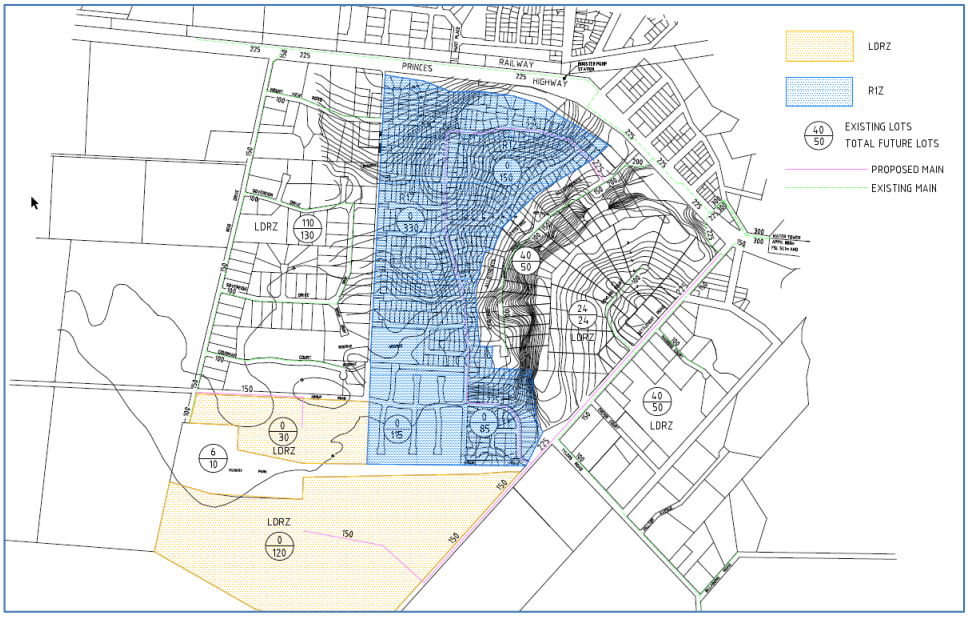


Figure 13 - Wurruk Proposed Water Reticulation Network
(Not to scale)

Other servicing options will be investigated as part of functional design, such as: main distribution watermain feed coming from Hunt place (under Freeway crossing), downstream of Wurruk Booster TWPS and no interconnections to existing infrastructure on Settlement Road, and interconnections into existing LDRZ land to the west. This is based on Gippsland Water's anticipated hydraulic restrictions in the future; Having these areas connected downstream of Wurruk Booster TWPS will delay upgrades required to distribution mains back to the Sale WTP.

Detailed design plans will need to be prepared for each stage, and a developer works deeds signed with Gippsland Water. Construction of any mains will need to be completed by an accredited Gippsland Water Contractor. Reimbursement of works from Gippsland Water for mains larger than 225mm diameter should be investigated.

3.6 Recycled Water

Recycled water is not available and will not be required for this site.

3.7 Gas

APT O&M Services P/L (APA Networks), operating as a subsidiary of APA Group, manages and operates the gas reticulation assets within Southern regional area, on behalf of Australian Gas Networks (AGN).

A DBYD enquiry confirms that APA Group assets are readily available surrounding the site:

- A 125mm high pressure distribution gas main runs along the Princes Highway
- A 63mm high pressure distribution gas main runs along The Ridge
- A 63mm high pressure distribution gas main services Mount View Road
- A 50mm high pressure distribution gas main services Sovereign Drive
- A 63mm high pressure distribution gas main services Counahan Drive
- A 50mm high pressure distribution gas main runs to the Arnup Road – Settlement Road intersection

APA Networks have provided the following preliminary servicing advice:

- The current reticulation will have sufficient capacity for the proposed increase in density and connections.
- It would appear that we have a reasonable amount of capacity on this side of Sale township and it is likely that we would be able to supply these estates off the existing 125mm main in the Princes Hwy.
- We are unable to provide any advice on a cost until we have a formal application and we know where the estates will commence.
- The validity of this advice should be limited to 6 months from receipt of this email. Beyond this timeframe, or if there are any changes to the number of lots to be serviced, updated advice should be sought.

A gas supply application will need to be made to APA for each estate/develop after a planning permit is issued. An evaluation by APA can then be completed as to the amount of any contributions required to be made by developers for this extension. Given the size of the development it is expected that there will be no developer contribution required for internal works. Advice from APA regarding any upgrades to their network to support this development is still to be received.

The developer is required to complete trenching for the gas main, and APA's contractor will lay the gas main. Gas plans are prepared by APA and may include multiple extensions/connections from surround roads.

Gas is currently connected to the Kilmany Park Estate from Settlement Road.

APA Group existing gas assets information are provided in Appendix G: APA Group Asset Plans below.

3.8 Electricity

Ausnet Services is the responsible authority for the provision of electricity to the proposed development site.

A DBYD enquiry confirms that Ausnet Services assets are readily available surrounding the site:

- Overhead High Voltage (HV) along the south site of Princes Highway
- Overhead HV part of the way along Arnup Road
- Overhead HV along Mount View Road
- Overhead HV is also available on Settlement Road.
- Underground HV in surrounding streets (The Ridge, Sovereign Drive and Counahan Drive)
- Underground low voltage (LV) in surrounding streets (The Ridge, Sovereign Drive and Counahan Drive)

This site location is well situated to be serviced by electricity. The most suitable point for connection is from the overhead HV in Princes Highway; followed by two good conductors to the south of the development. The electricity

conductor on Settlement Road is located close to the proposed intersection where the collector road accesses the development. Starting the development in the middle of the site would present challenges as the existing HV cables installed in adjacent estates are only sized to support low density rural land subdivisions.

The majority of the site is sized as 'residential' (and not 'rural'),

The following will need to be completed as part of this development:

- at initial master planning for electricals, the timing and servicing of the sewer pump station needs to be considered;
- the power pole and associated overhead HV at the Hunt Place – Princes Highway intersections needs to be relocated;
- the overhead HV along Arnup Road needs to be removed and new underground servicing provided; and,
- with over 1,000 lots proposed for the site and 5Mw added to the grid, AusNet Services System Planning group will need to be notified so they can ensure their network can support the new demand

Under AusNet Services' supply policy guidelines, the Developer will be required to pay authority fees and the cost of extending/upgrading the power supply, if required.

To develop the site, AusNet Services will require the developer to provide electrical substations with a reserve to accommodate the infrastructure. The cost of the sub stations and internal high voltage works will be reimbursable, with the HV rebate but the provision of land for substation reserves is not. It is estimated that the site will require 15-20 new kiosk substations.

Existing AusNet Services' electricity assets information are provided in Appendix H: Ausnet Services Electricity Plans. An overview of AusNet Services network and suitability for connection is shown in **Figure 14** below.

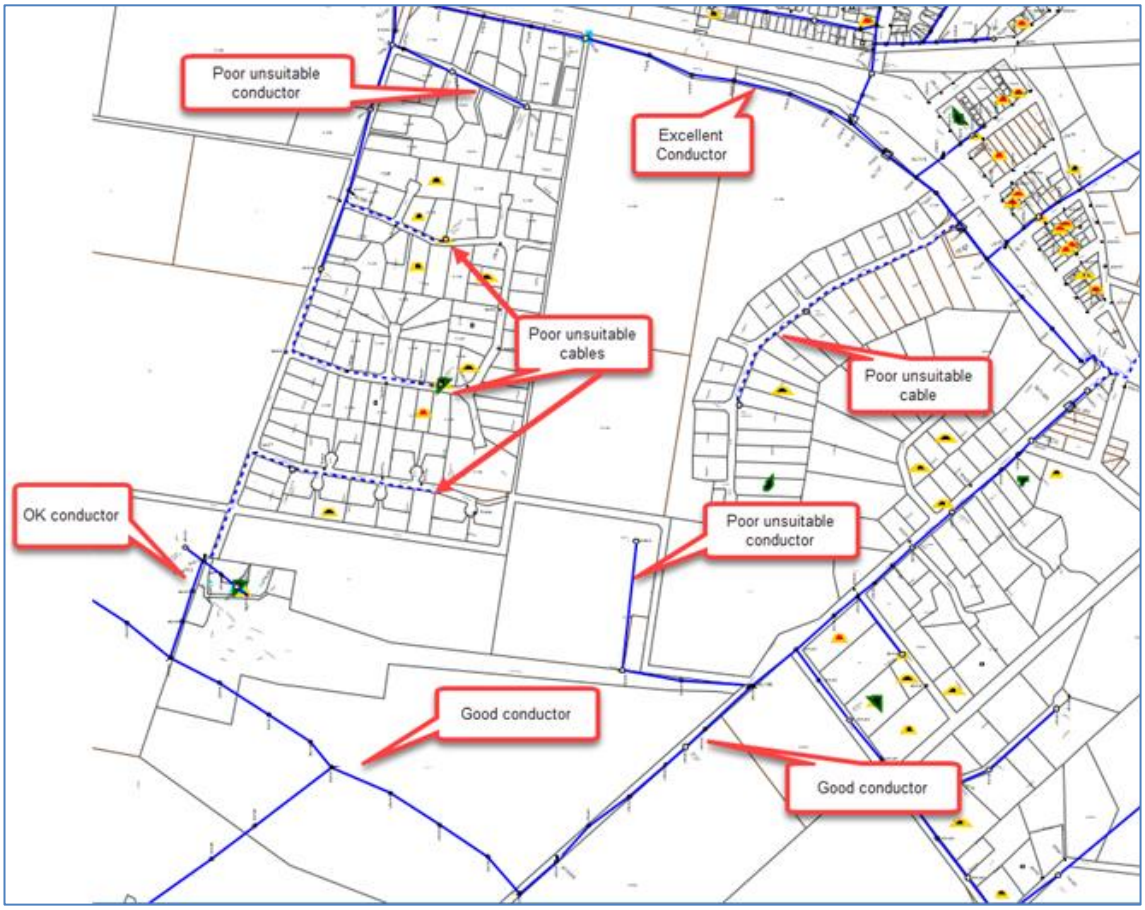


Figure 14 - Conductor suitability for network extension
(Not to scale)

3.9 Telecommunications

Telecommunications in the surrounding area is available via fixed service and wireless service.

A DBYD enquiry confirms that NBN and Telstra assets are readily available surrounding the site:

- North side of Princes Highway;
- The Ridge Estate to the east;
- Sovereign Estate to the west (Mount View Road, Sovereign Drive and Conahan Drive); and,
- Settlement Road.

The Telstra DBYD information shows there is optic fibre cabling along the north side of the highway and to the west side of the development from Reid Drive, which is shown as Other Carrier (OC). This indicates that the pit and pipe is owned by Telstra but being used by NBN as the carrier. There are also standard copper cable services in Settlement Road and Arnup Road that do not yet seem to have fibre optic. Refer to ***Figure 14*** below.

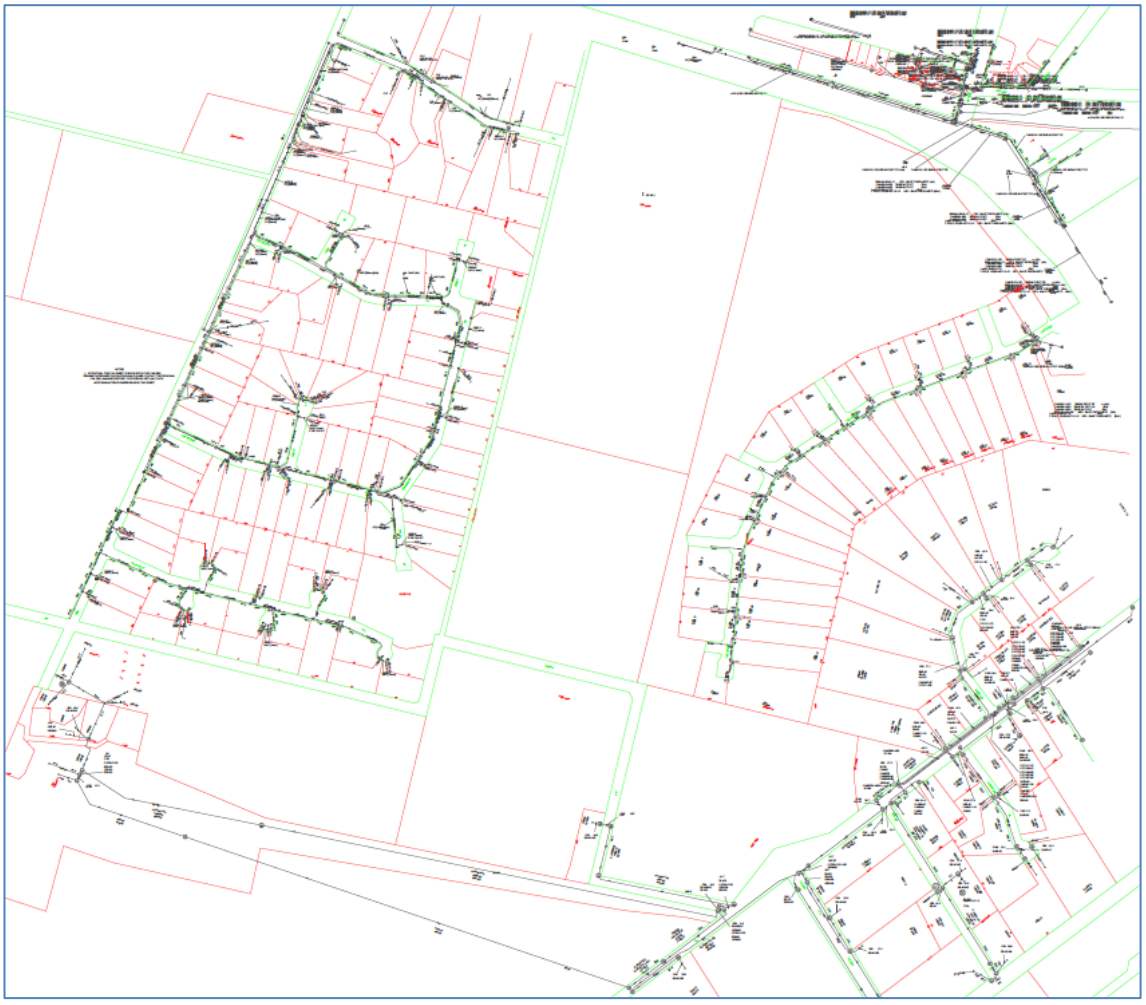


Figure 15 - Optic Fibre Cabling (NBN/Telstra)
(Not to scale)

NBN Co is the responsible agency for the delivery of the National Broadband Network (NBN). Telecommunication design and installation in new residential estates greater than 100 lots will generally be administered through the NBN Co system.

The figure below shows the rollout of NBN – it indicated that north of Princes Highway, and in the existing Low Density Residential Zoned development to the west, lots are serviced by a fixed service (hatched areas); A other areas are shown to be wireless service (dots).

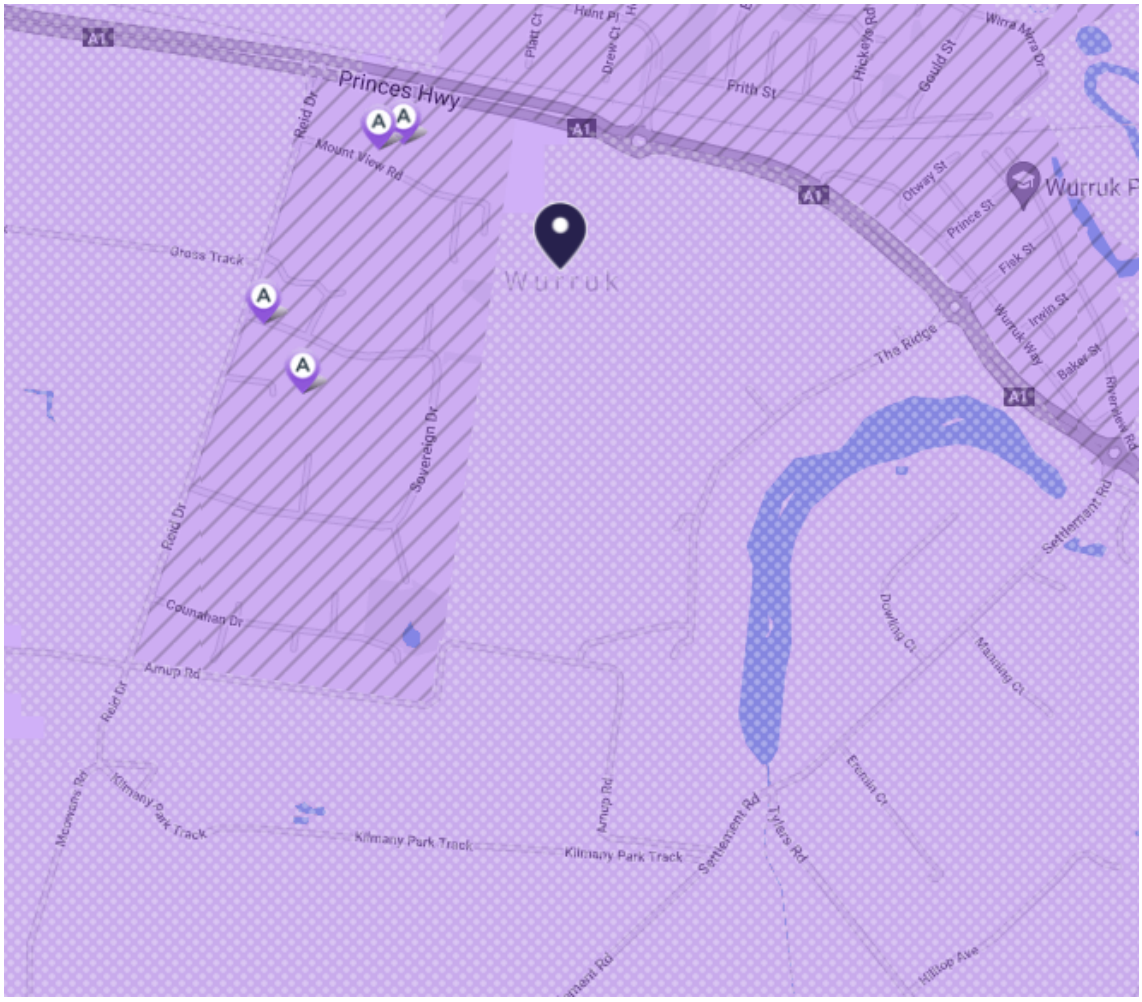


Figure 16 – NBN Rollout Map
(Not to scale)

An application will need to be made to NBN for each estate/develop after a planning permit is issued. An evaluation by NBN can then be completed as to the amount required for backhaul (extending fibre to the site), and a per lot fee. The developer is required to design the NBN pit and conduit for each stage, install pit and pipe conduit, complete as-builts and pass NBN's auditing progress. NBN will later provide fibre to the site.

Preliminary advice from NBN is that it is unlikely there would be backhaul costs, however more detailed assessments would be required to confirm this. For a development of this size, NBN would extend their fixed line boundary and deploy new fibre to each of the estates. Under normal circumstances if the 5 developers applied to NBN separately, it is likely they would attract the standard $600 per lot charge. NBN have also advised that the site servicing could be reviewed as a single development. This would likely reduce the per lot charge and also present a much stronger argument around backhaul (if any).

Existing Telstra and NBN asset information is provided in Appendix F: Telstra and NBN Co Asset Plans.

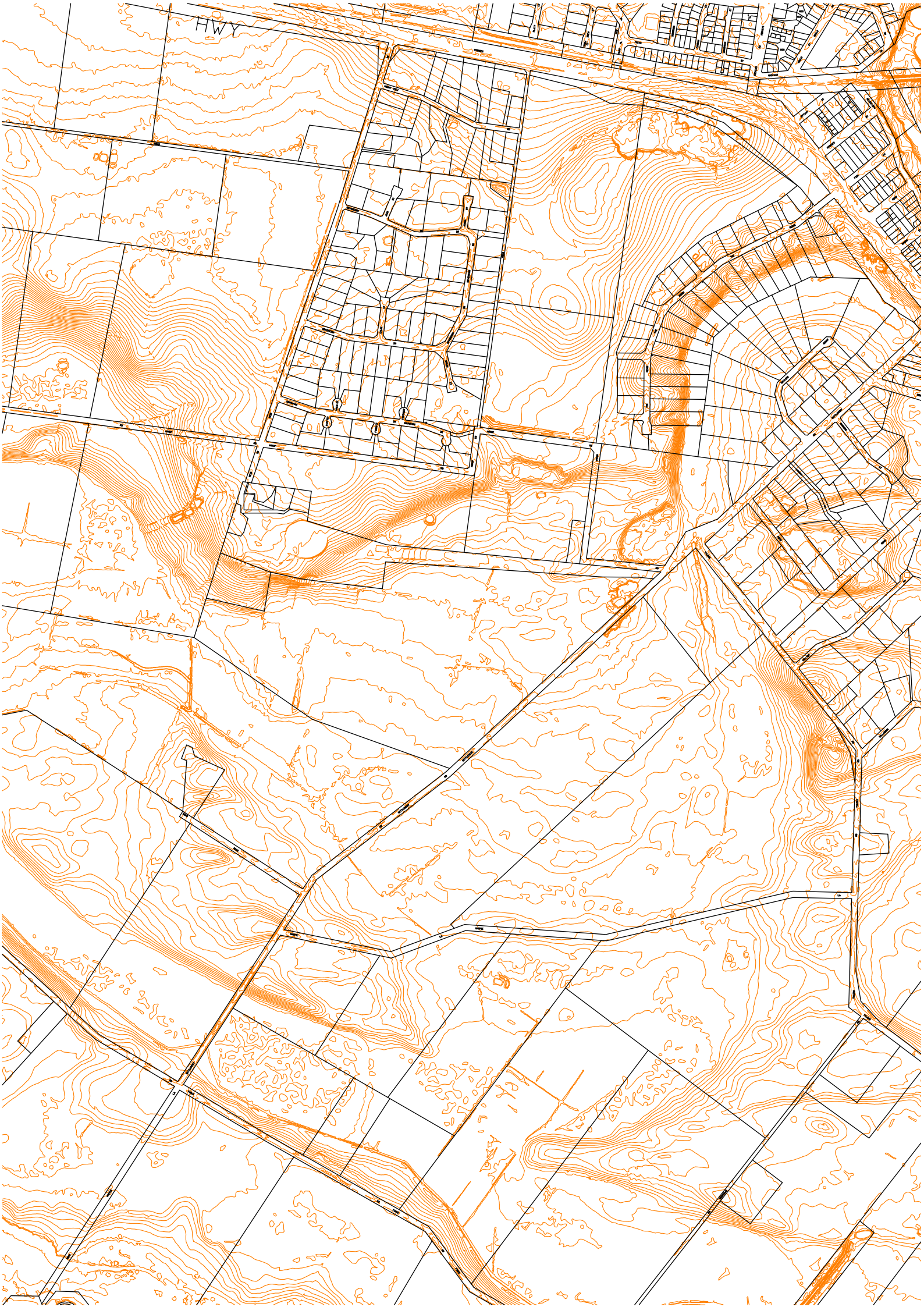
4 CONCLUSION

The subject site is located within the Wellington Shire Council area and is within the Sale, Wurruk and Longford Structure Plan.

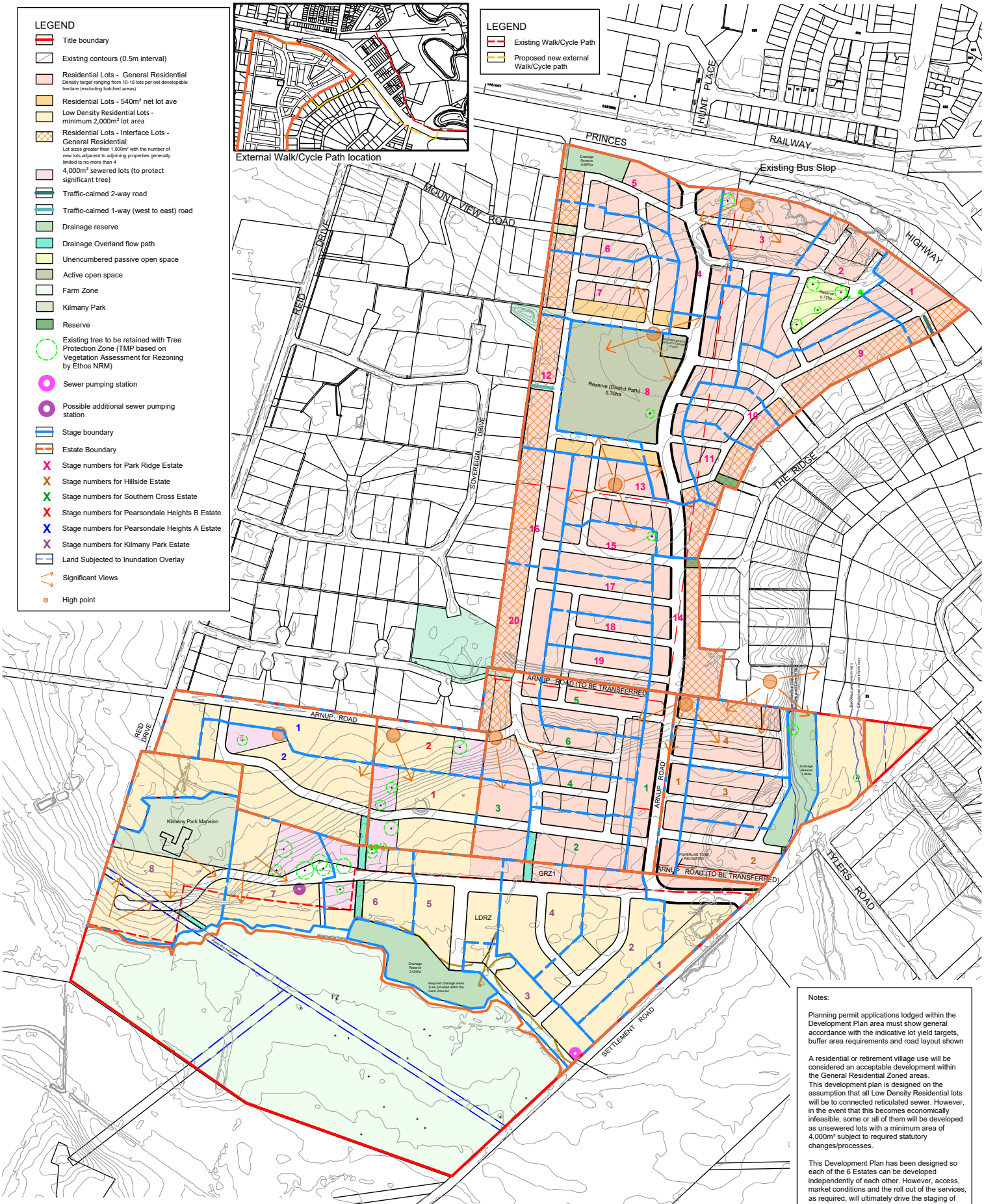
The planning for the servicing infrastructure for the development is well understood, and all relevant services are available either abutting the site or able to be extended as needed. A sewer pump station is required including the construction of a rising main external to the site. Upgrades/extension for external water is also required.

Beveridge Williams confirms that the extension of all services for development of the site can be achieved through known and proven techniques and standard agreements with service providers and recommends that the site is suitable for residential development as proposed from a servicing perspective.

APPENDIX A: CADASTRE AND CONTOUR INFORMATION


HWY

APPENDIX B: INDICATIVE DEVELOPMENT PLAN



DRAFT

FOR DISCUSSION PURPOSES ONLY

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
02	26.02.21	Updated courtbowl and review higher density sites	WB/KT	DRAFT
03	30.04.21	Amedments to include updated drainage reserves and staging	MJ	WEB
04	10.05.21	Amedments to include significant views	MJ	WEB
05	13.10.21	Amedments as per Council comments	MJ	WEB
06	19.10.21	Amedments as per Council comments	MJ	WEB

Date: 19.10.21
Version No: 06
Job No: 1400147
Scale (A1): 1:3750
(A3): 1:7500

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APPENDIX C: GIPPSLAND WATER INFORMATION – WATER & SEWER SUPPLY

GIPPSLAND WATER

Sequence No: 102664854
Job No: 20397919
Location: Settlement Road, Wurruk VIC 3850

DIAL BEFORE YOU DIG www.1100.com.au
The Essential First Step.

Legend

- Electrical Cables
- Hydrant
- Water Valve
- Sewer Manhole
- Water Main (Critical)
- Water Main
- Sewer Main (Critical)
- Sewer Main
- Decom Water Main
- Decom Sewer Main

Scale: 1:1000

N

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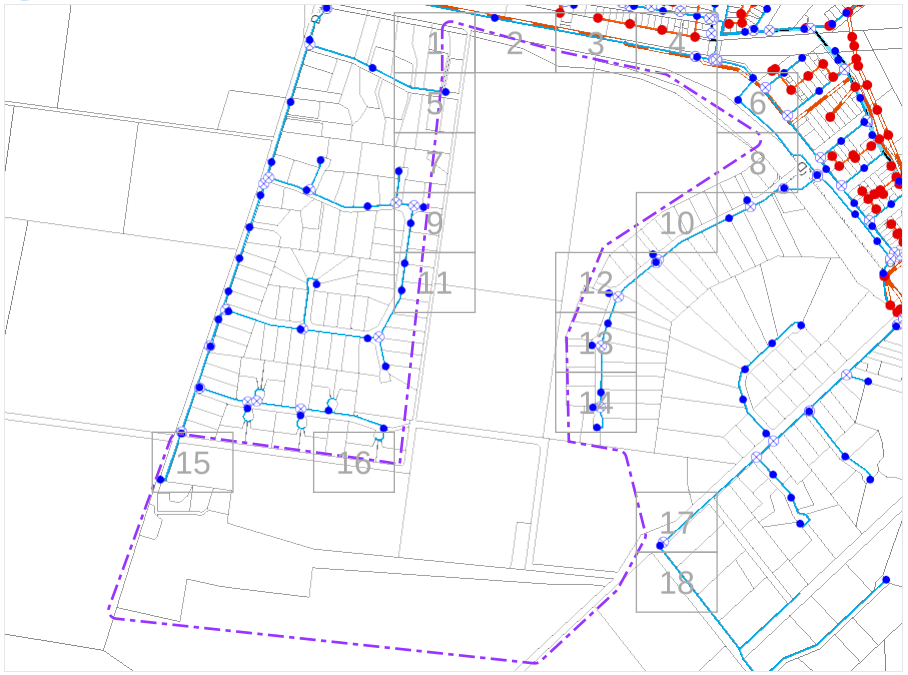

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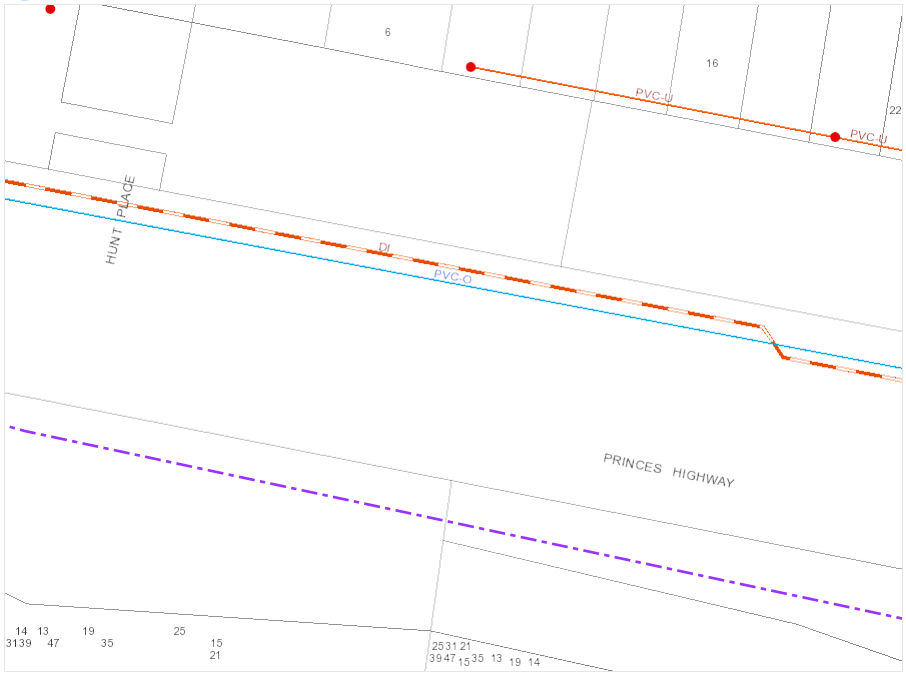

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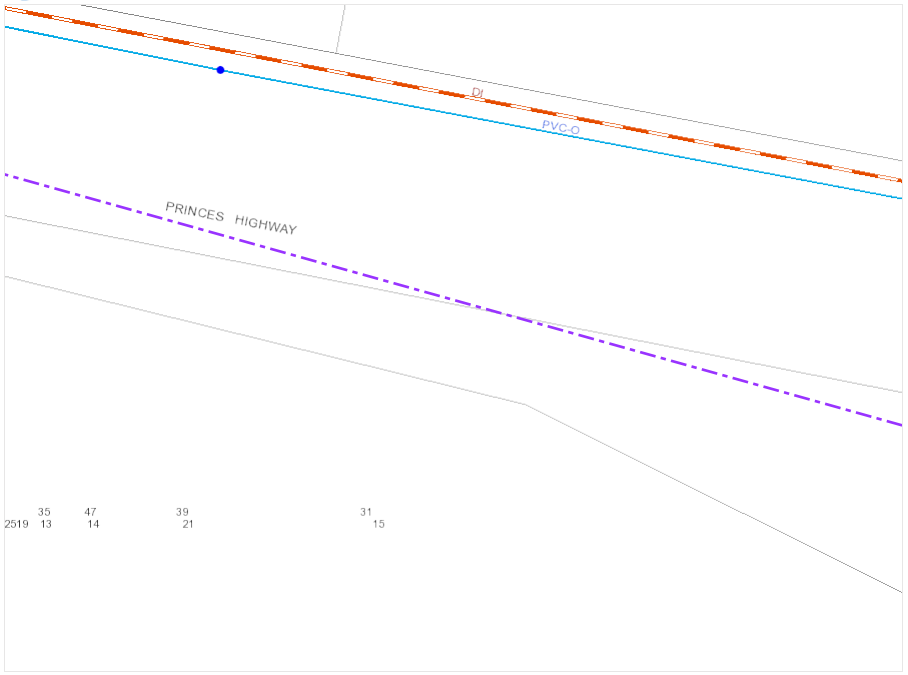

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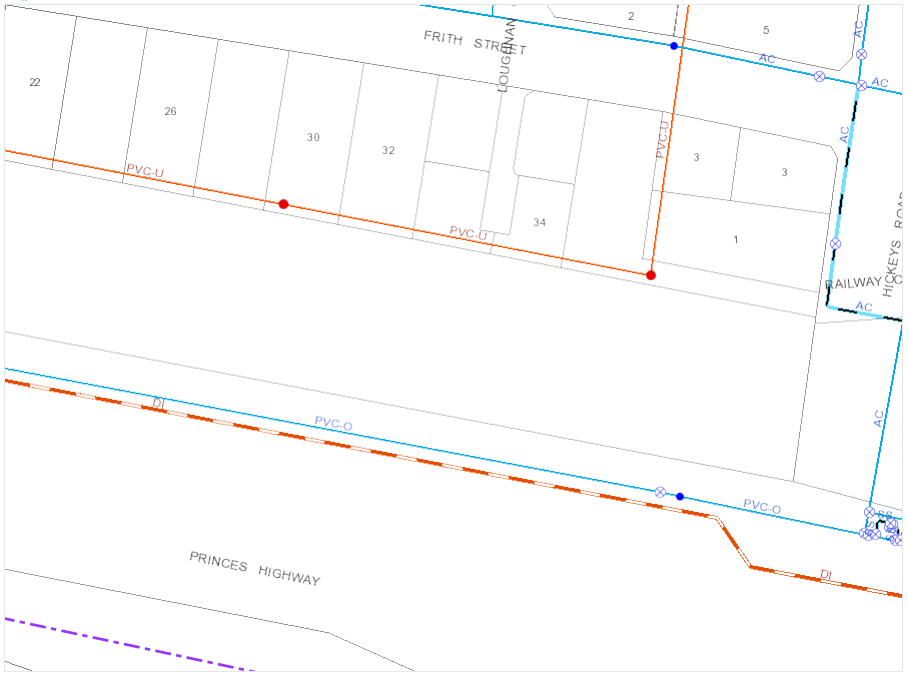

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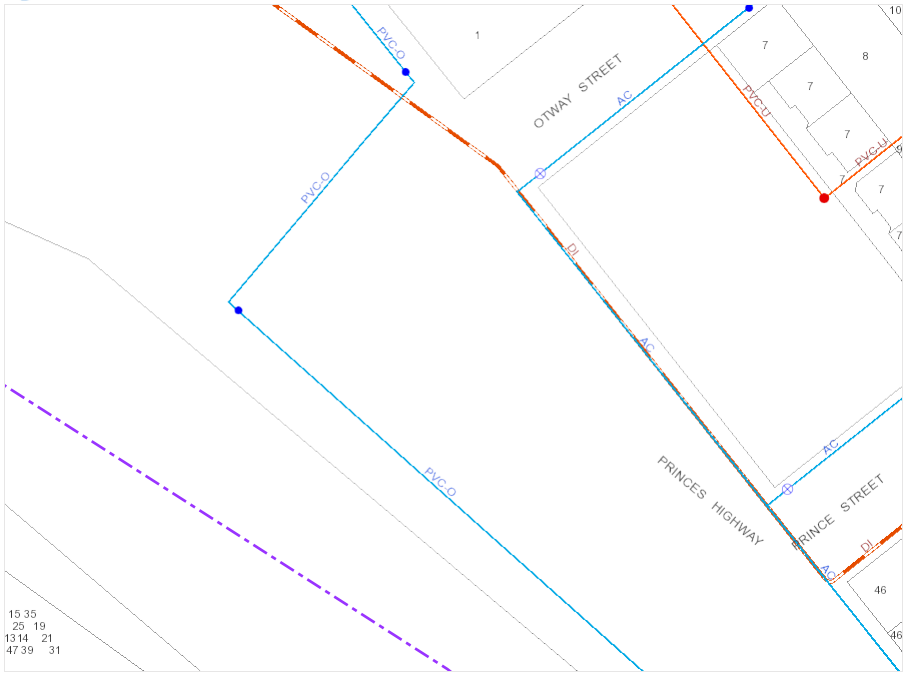

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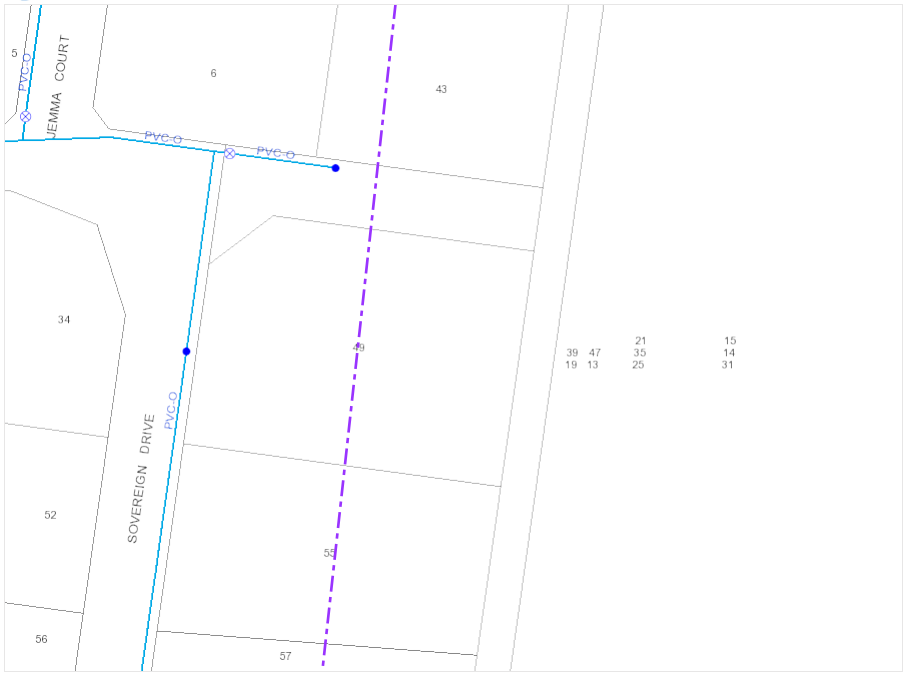

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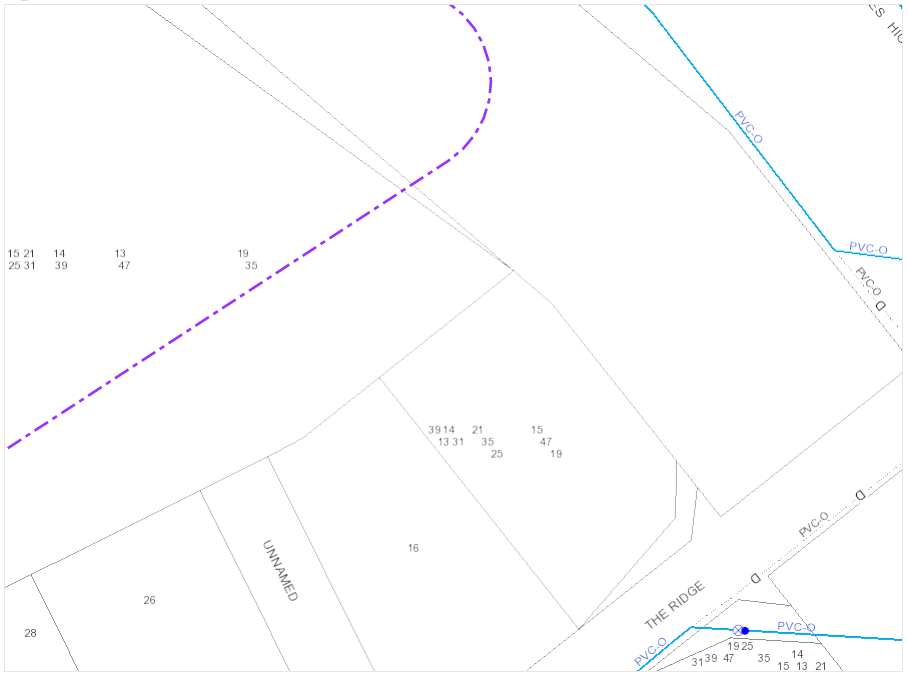

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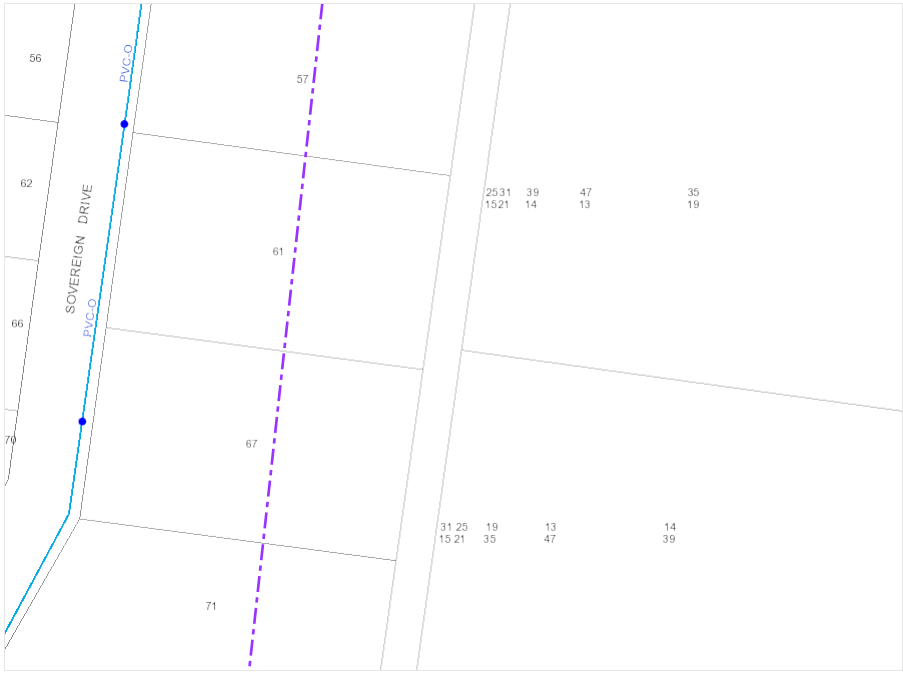

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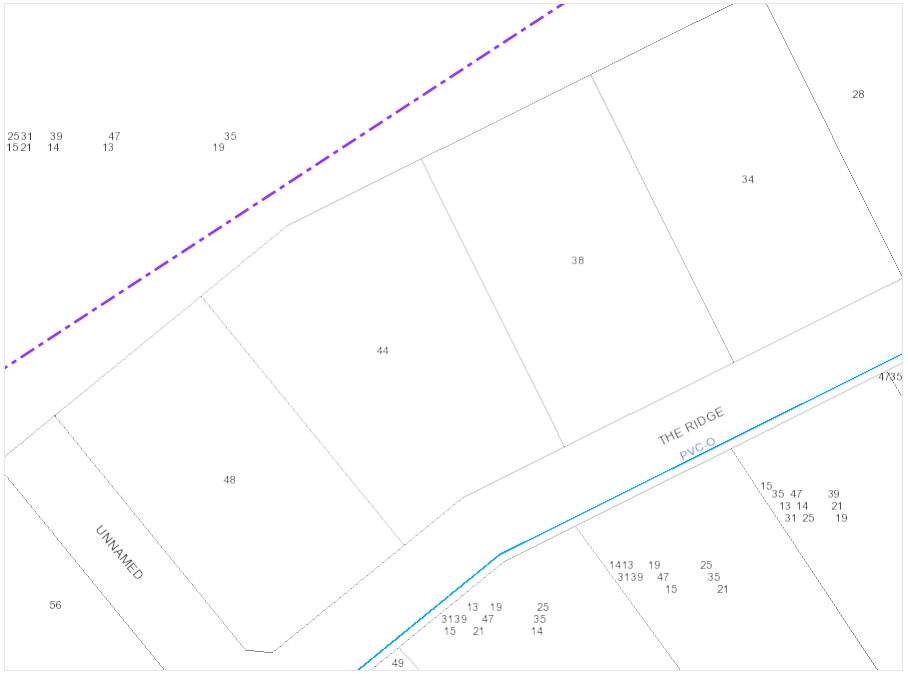

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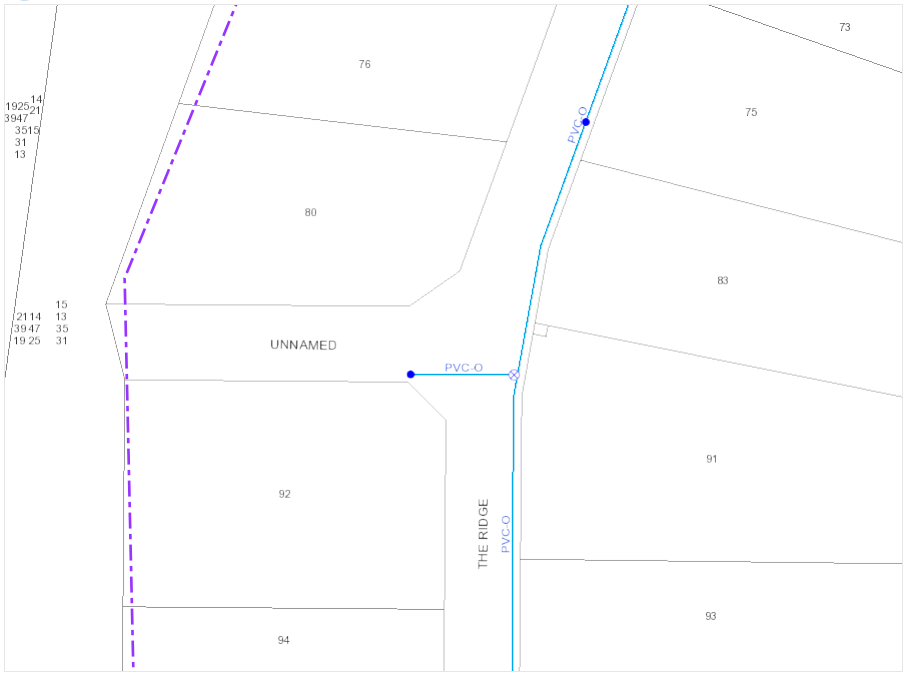

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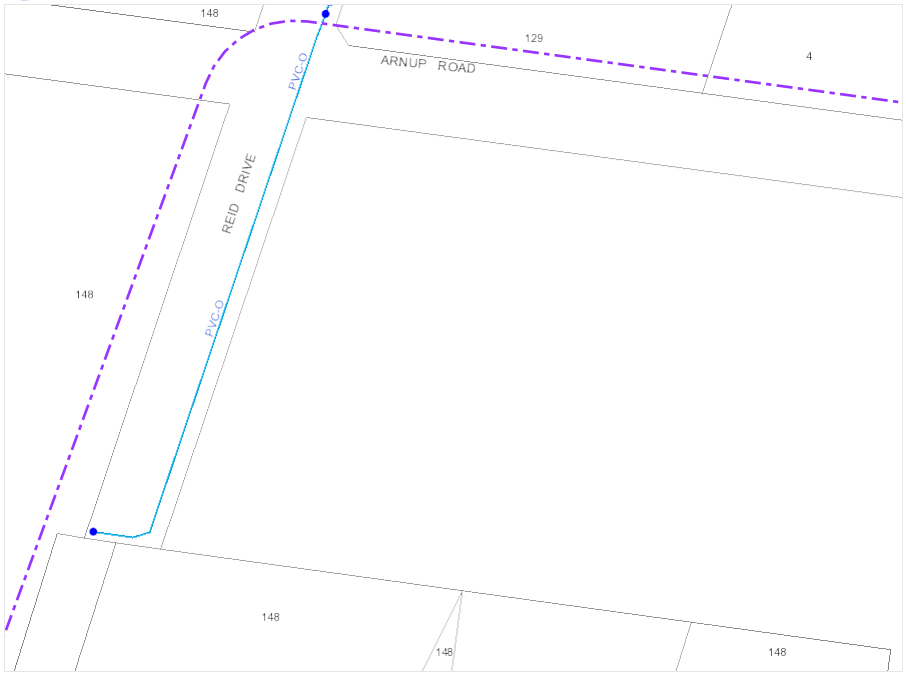
GIPPSLAND WATER

Sequence No: 102664854
Job No: 20397919
Location: Settlement Road, Wurruk VIC 3850

DIAL BEFORE YOU DIG www.1100.com.au The Essential First Step.



Legend

- Electrical Cables
- Hydrant
- Water Valve
- Sewer Manhole
- Water Main (Critical)
- Water Main
- Sewer Main (Critical)
- Sewer Main
- Decom Water Main
- Decom Sewer Main

Scale: 1:1000

N

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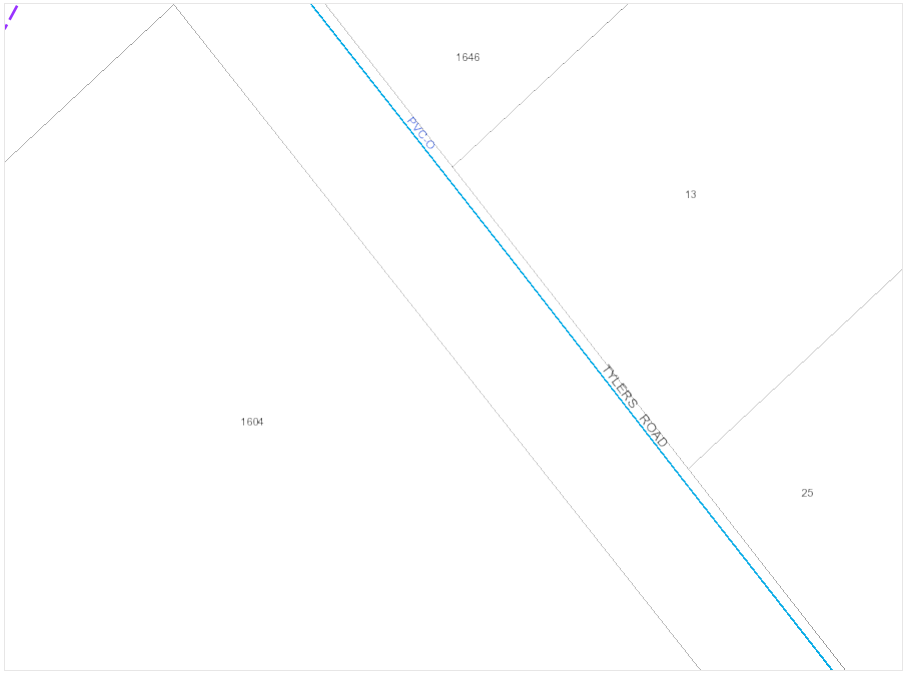

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APPENDIX D: GIPPSLAND WATER INFORMATION – PRELIMINARY SERVICING ADVICE

GIPPSLAND WATER **16 April 2013**

WURRUK SOUTH WATER & SEWER STRATEGY

1. INTRODUCTION

Wellington Shire Council is proposing to rezone several parcels of land south of the Princes Highway for residential(R1Z) and for low density residential(LDRZ) development.

Existing water and sewerage services will both need to be upgraded to service the R1Z land and water services only will also be require upgrading to service the LDRZ land.

Gippsland Water has requested this study to plan the provision of future water and sewerage services to cater for these rezonings.

2. STUDY AREA

The study area is bounded by the Princes Highway on the north, Settlement Rd on the east, a floodplain to the south and Reid Drive on the west.
Part of the area has already been developed as low density served by existing water mains.
The proposed R1Z land fronts the Princes Highway and is located between existing low density developments off Reid Dr and The Ridge.
The proposed LDRZ land is in two parts surrounding Kilmany Park, one off Reid Dr and Arnups Rd and one off Settlement Road.
Existing development, proposed rezonings & existing land ownership are shown on Drg No A1-53925

3. WATER SERVICES

3.1 EXISTING WATER SERVICES

The existing Wurruk township is supplied from the Sale water tower via twin 300 dia supply mains with a 225 dia feeder main along the Princes Highway extending to West Sale Aerodrome and the Sale Correctional Facility.
A 225 main feeds a 150 main along Settlement Rd. A 200 dia main feeds into the The Ridge and a 150 main serves development along Reid Drive.
There is a booster pumping station on the Highway between The Ridge and Reid Drive to boost supply to West Sale when required.

/2

3.2 TOPOGRAPHY

Topography in the Wurruk South area is slightly higher than Sale varying between 10 and 25 m AHD. The full supply level in the Sale water tower is 51.1 m AHD.
The size and location of reticulation mains therefore need to be selected to minimize pressure losses and balance pressure distribution.

3.3 PROPOSED WORKS

A 225 main is proposed through the RIZ land commencing at the existing 200 dia in The Ridge and connecting with the existing 150 main in Settlement Rd
This main can be constructed progressively as the R1Z land is developed.

A 150 main is proposed to extend along Settlement Rd to service the LDRZ land.
This main can be constructed progressively with development of the LDRZ land.

As the R1Z and LDRZ lands develop additional supply will be required to maintain minimum pressures particularly in the higher elevations of the R1Z land.

Modelling of several options carried out by Gippsland Water concludes that duplication of the main along Settlement Rd with a 225 main from Princes Highway to Arnups Rd is most effective in maintaining minimum pressure requirements in the highest parts of the R1Z land. This main will form a closed loop with the proposed 225 main through the R1Z land.

The proposed LDRZ development at the end of Reid Dr can be serviced by extending a 150 main from the existing 150 main in Reid Dr.

The existing Reid Dr main is supplied downstream of the West Sale booster pump and cannot be interconnected with the R1Z or Settlement Rd supply mains.

The attached Drg No A1 -53926 shows the layout of existing and proposed mains

4. SEWERAGE SERVICES

4.1 EXISTING SEWERAGE SERVICES

Wurruk township is currently served by a pumping station located at the intersection of Princes Highway and Settlement Rd with a rising main to the main pump station in Sale.

A 300 dia reticulation sewer extends from the pumping station through the existing Wurruk township terminating in Hunt Place just north of the existing railway crossing.

4.2 PROPOSED WORKS

The topography of the R1Z land enables it to be divided into three catchments

Catchment A – Gravitates to the existing Pumping Station

This catchment comprises land in two ownerships with approx. 230 lots.

Works required will include 300 and 225 gravity sewers.

Catchment B – Gravitates to the existing 300 Sewer in Hunt Place

This catchment comprises land in one ownership with approx. 180 lots.

Works in this catchment would be reticulation works only.

Catchment C – Requires a new pumping Station in the vicinity of Settlement Rd and Arnups Rd.

This catchment comprises land in three ownerships with approx. 320 lots.

Several options were considered for the location of the pumping station, rising main and main sewers as shown on Drg No A1-53928.

Estimated costs of the various options are set out in Appendix A.

The recommended option is Option 1.

Works include a new pumping station, 150 rising main and 300 gravity sewer to the existing pumping station as shown on Drg A1-53927.

5. DRAWINGS

The following drawings are included in this report

A1-53925 Plan of Proposed Rezonings and Existing Land Ownerships

A1-53926 Layout Plan of Proposed Water Supply Works

A1-53927 Layout Plan of Proposed Sewerage Works

A1-53928 Plans of Sewerage Options

Kevin Hart

APPENDIX A

WURRUK SOUTH SEWER STRATEGY – CATCHMENT C OPTIONS

MAJOR WORKS

OPTION 1

PUMPING STATION 320 Lots	$ 500,000	
RISING MAIN 150 DIA 760 m	$ 76,000	
300 DIA GRAVITY SEWER 680 m	$ 204,000	
	TOTAL	$ 780,000

Allows Page/Hollonds to proceed independent of Park Ridge/Brightcon

OPTION 2

PUMPING STATION 320 Lots	$ 550,000	
RISING MAIN 150 DIA 1000 m	$ 100,000	
300 DIA GRAVITY SEWER 1400 m	$ 420,000	
	TOTAL	$ 1,070,000

Page/Hollonds are dependent on Park Ridge/Brightcon proceeding

OPTION 3

PUMPING STATION 320 Lots	$ 500,000	
RISING MAIN 150 DIA 1140 m	$ 114,000	
300 DIA GRAVITY SEWER 760 m	$ 228,000	
	TOTAL	$ 842,000

Page/Hollonds are dependent on Park Ridge/Brightcon proceeding

Provides larger area of lot control for redeveloped lots

OPTION 4

PUMPING STATION 550 Lots + Existing Wurruk	$ 650,000	
RISING MAIN 225 DIA 500 m	$ 60,000	
300 DIA GRAVITY SEWER 1320 m	$ 396,000	
ABANDON EXISTING PUMP STATION	$ 50,000	
	TOTAL	$ 1,156,000

Several third party easements required through private property

Page/Hollonds are dependent on Park Ridge proceeding

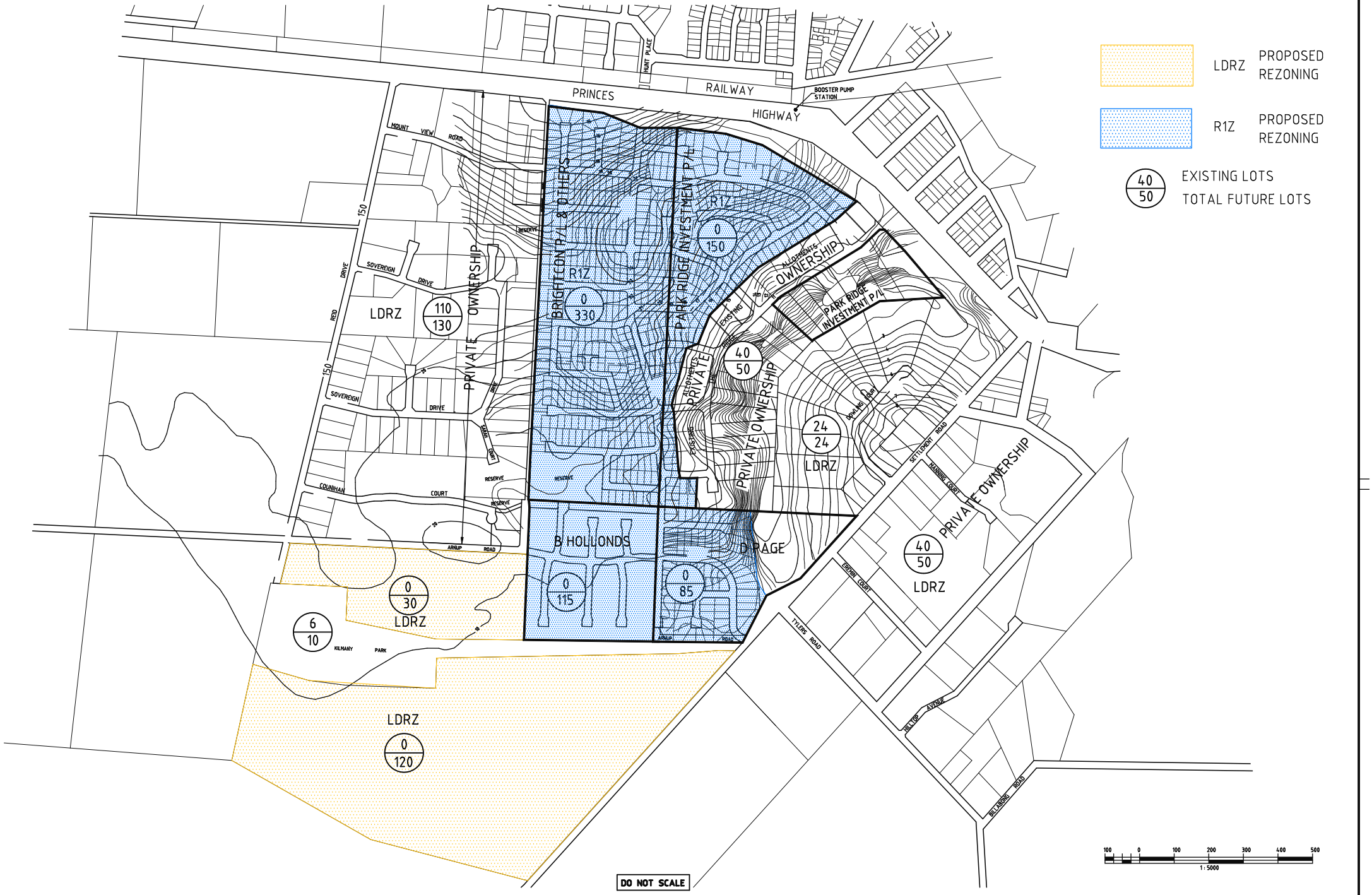
Provides full lot control for redeveloped lots

Provides service to existing low density development

Requires existing pump station to be abandoned

SUMMARY

Option 1 is the recommended option



REFERENCES

PLAN No.	TITLE

REVISIONS

No.	DATE	DESCRIPTION	APP'D

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Mobile 0419 373 059
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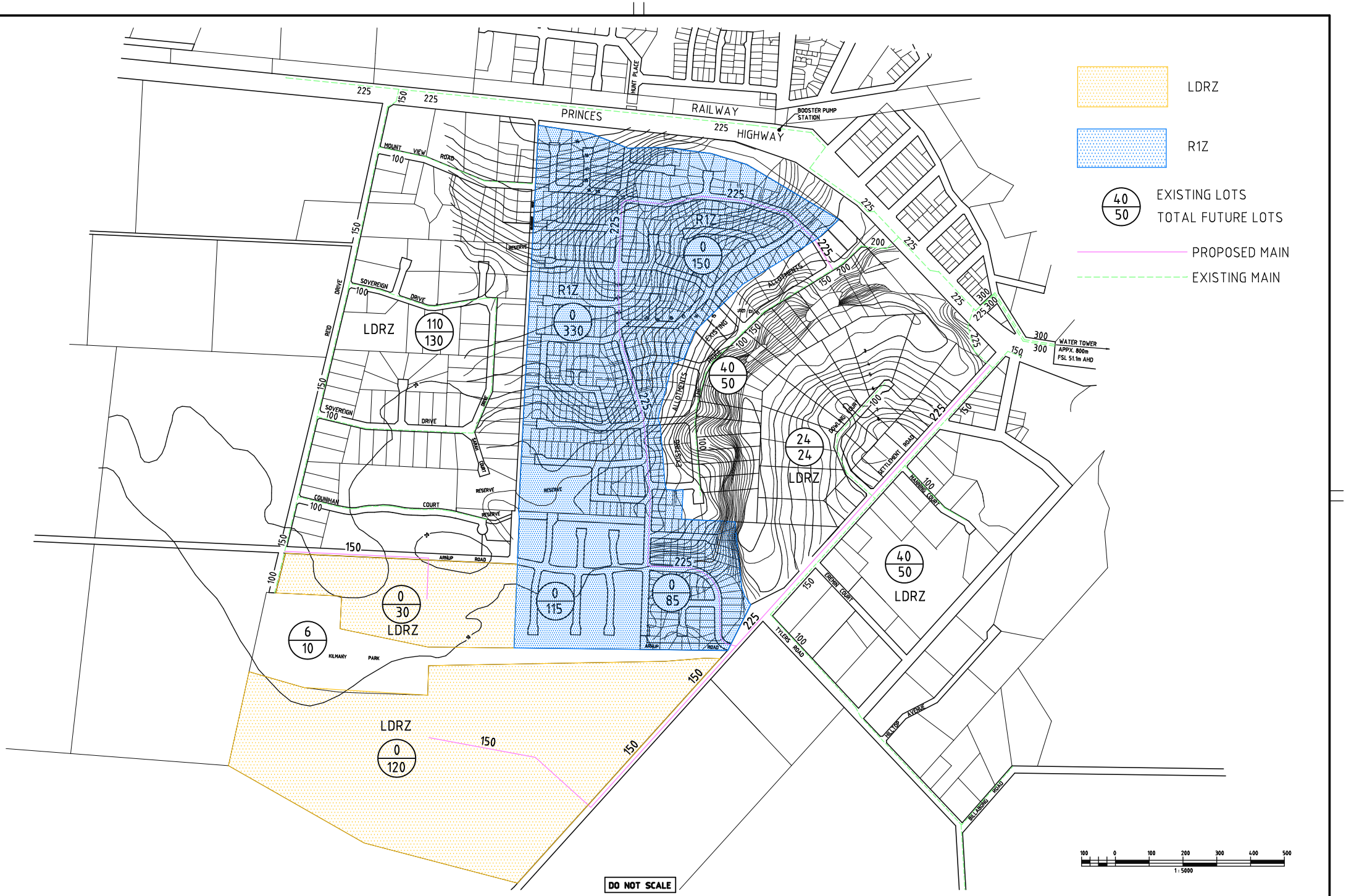
CERTIFICATION OF COMPLIANCE WITH GIPPSLAND WATER'S DESIGN & DRAFTING REQUIREMENTS.

DESIGNED. 4/02/13 K. HART.
DRAWN. 6/02/13 B. HUTTON.
CHECKED. 7/02/13 K. HART.

GIPPSLAND WATER

DRAWING No. A1-53925 REV. A

WURRUK SOUTH WATER & SEWERAGE STRATEGY
PROPOSED REZONINGS & EXISTING OWNERSHIP



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GIPPSLAND WATER

DRAWING No. A1-53926 REV. A

WURRUK WATER RETICULATION
WURRUK SOUTH WATER STRATEGY
LAYOUT OF PROPOSED WORKS

NOTE: CONTOURS ARE TO SALE SEWERAGE DATUM
FOR AHD SUBTRACT 0.35m

100 0 100 200 300 400 500

1 : 5000

DO NOT SCALE

REFERENCES		
PLAN No.	TITLE	

REVISIONS			
No.	DATE	DESCRIPTION	APP'D

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DRAWN: 5/04/13 B.H.
CHECKED: 6/04/13 K.H.

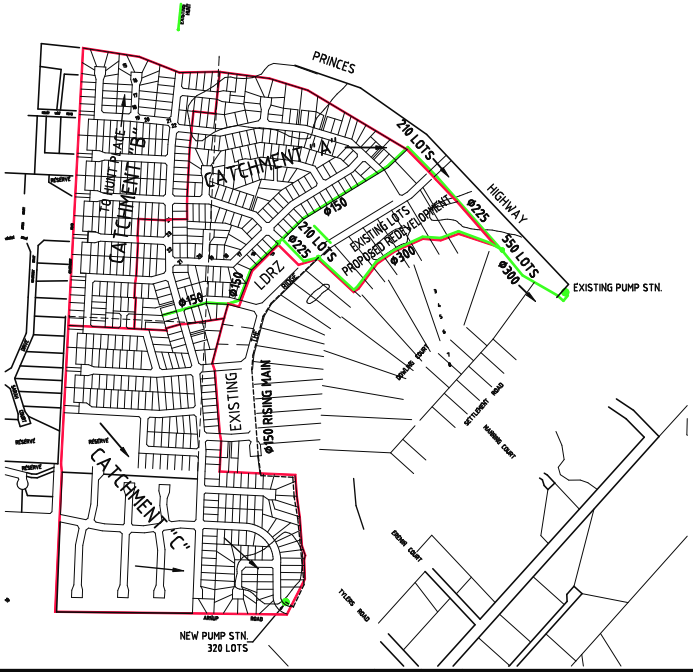
GIPPSLAND WATER

DRAWING No. A1-53927 REV. A

WURRUK SEWERAGE RETICULATION
WURRUK SOUTH SEWER STRATEGY
LAYOUT OF PROPOSED WORKS

OPTION 1

OPTION 2



OPTION 3

OPTION 4

NOTE: CONTOURS ARE TO SALE SEWERAGE DATUM
FOR AHD SUBTRACT 0.35m

75 0 75 150 225 300

SCALE 1:7500

DO NOT SCALE

REFERENCES		
PLAN No.	TITLE	

REVISIONS			
No.	DATE	DESCRIPTION	APP'D

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GIPPSLAND WATER

DRAWING No. A1-53928 REV. A

WURRUK SEWERAGE RETICULATION
WURRUK SOUTH SEWER STRATEGY
PLAN OF OPTIONS

APPENDIX E: DRAINAGE INFORMATION

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

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Beveridge Williams

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

Issued: 21/04/2022

Version: H

Prepared by: Jacqueline Woodlock

Checked by: Aram Manjikian

Project Manager: Chris Curnow

Project Number: 1400147

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.

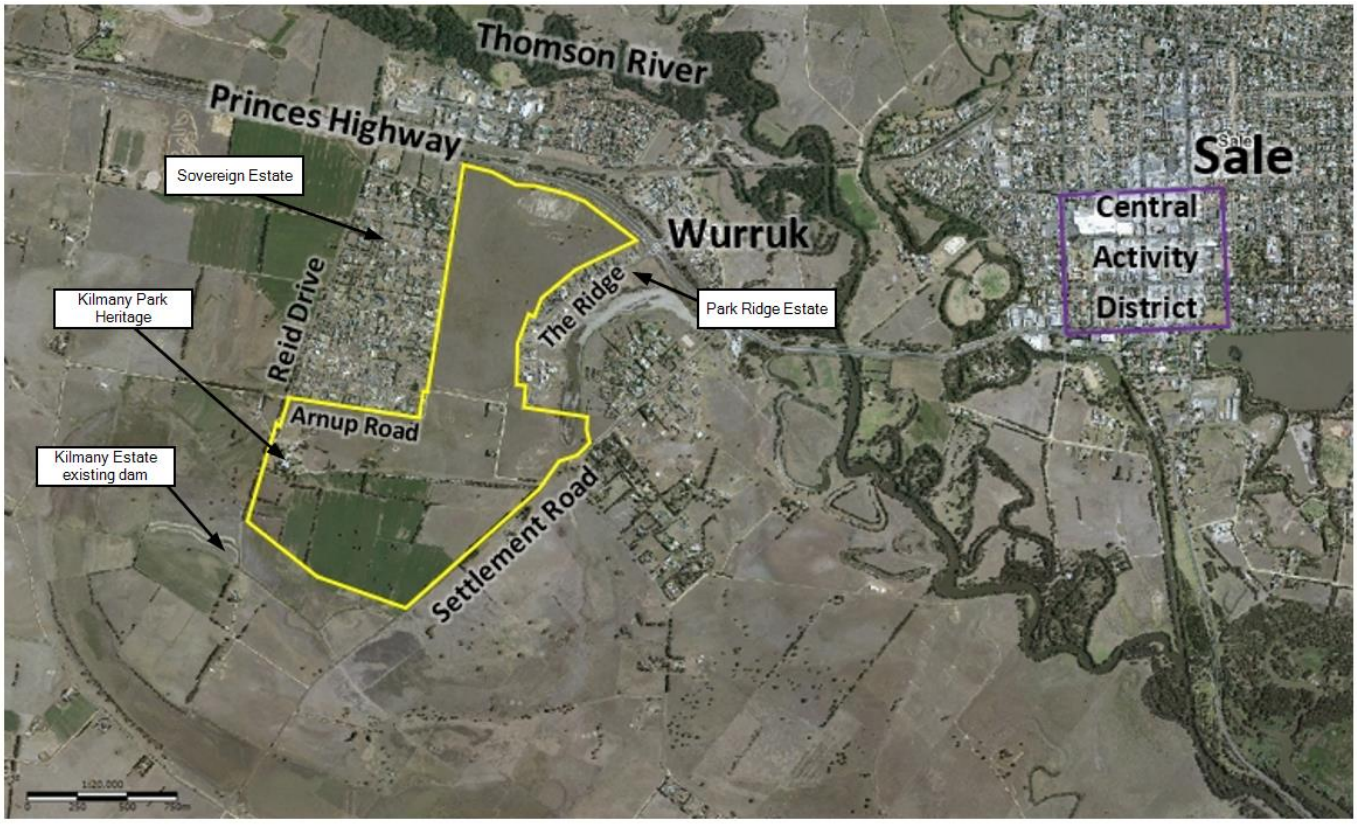

Figure 1: Site Aerial Plan (Not to Scale) (Source: NearMap)

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.

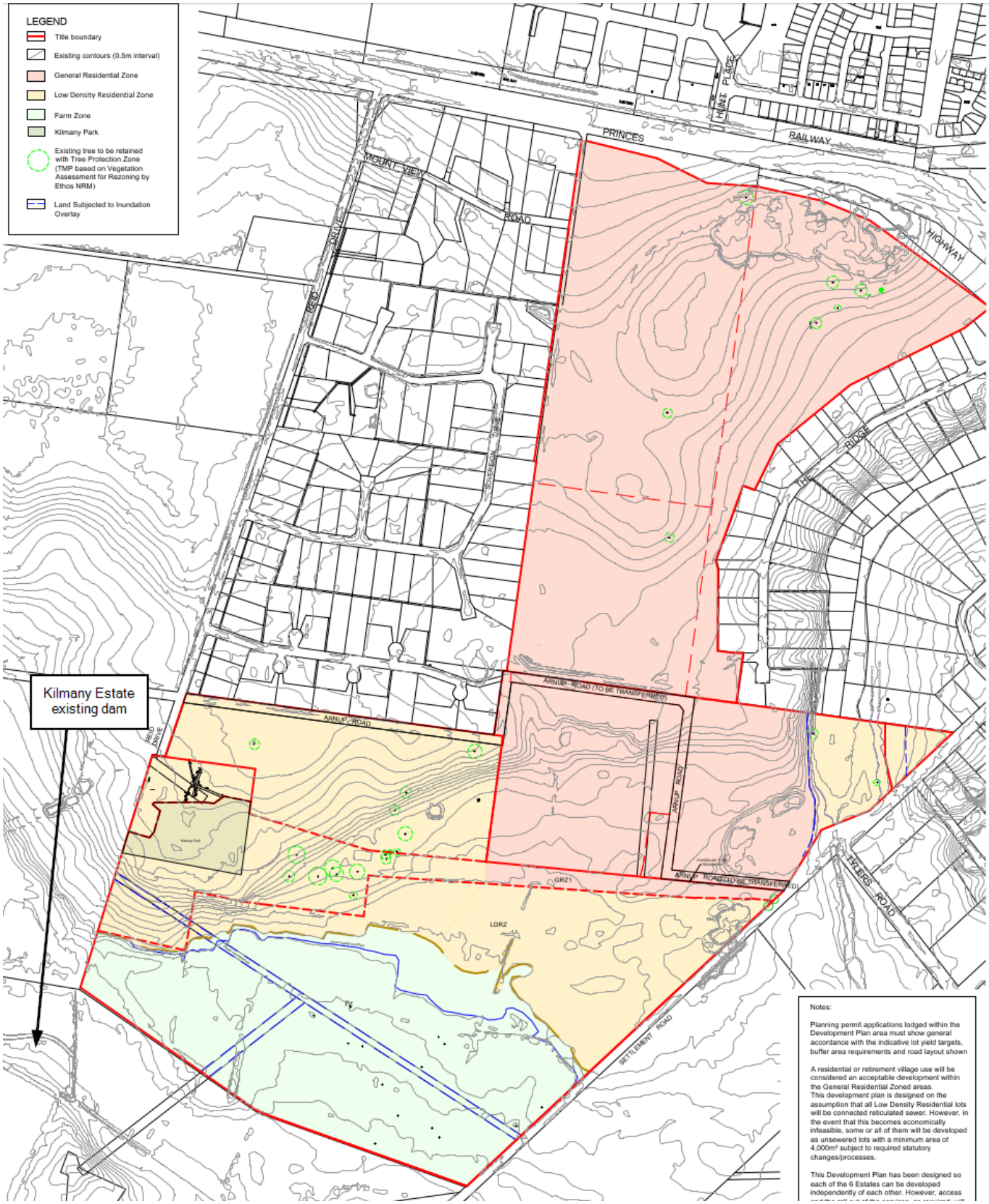

Figure 2: Site Analysis Plan (Not to Scale)

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).

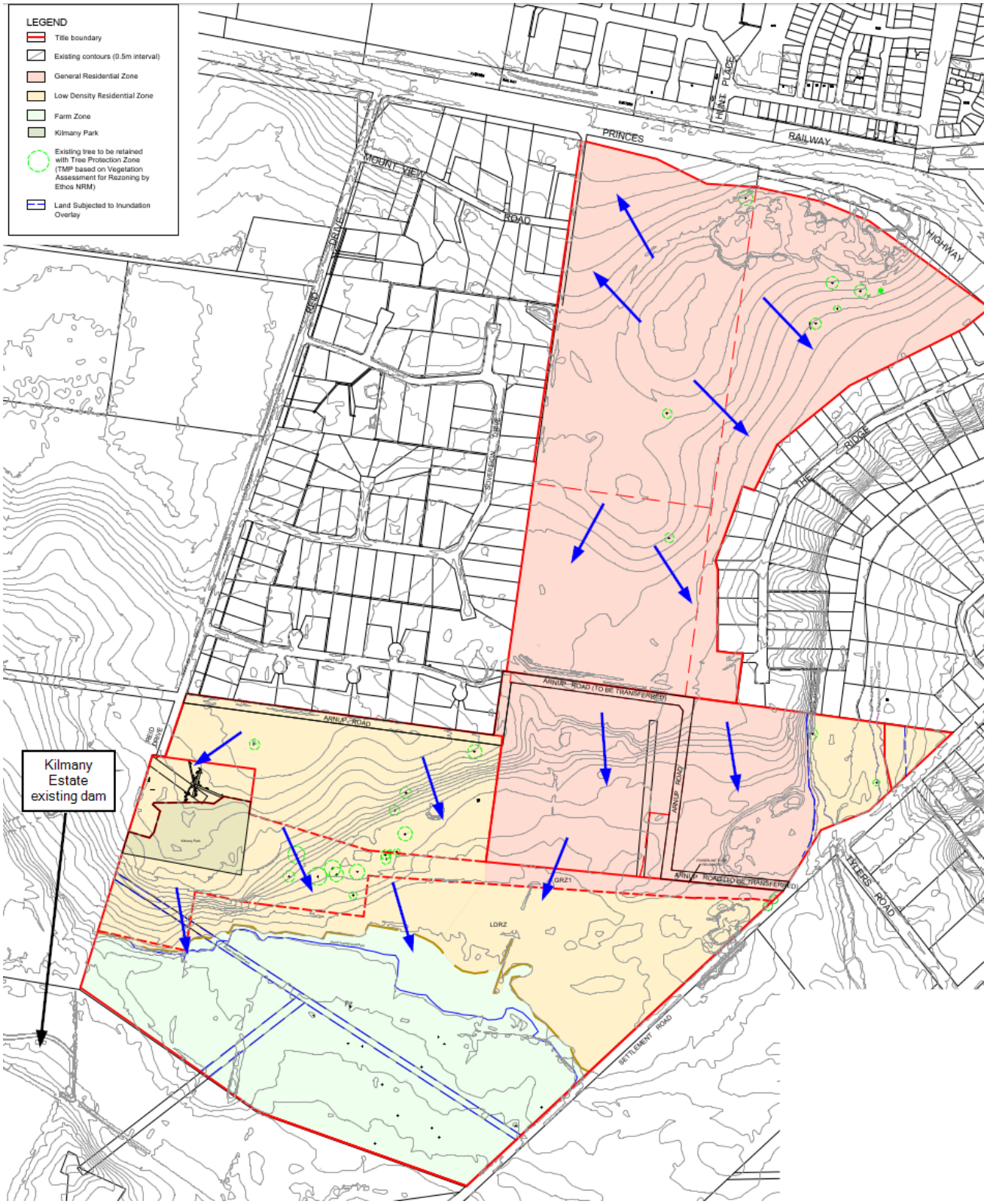

Figure 3: Site Topography Plan (Not to Scale)

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.

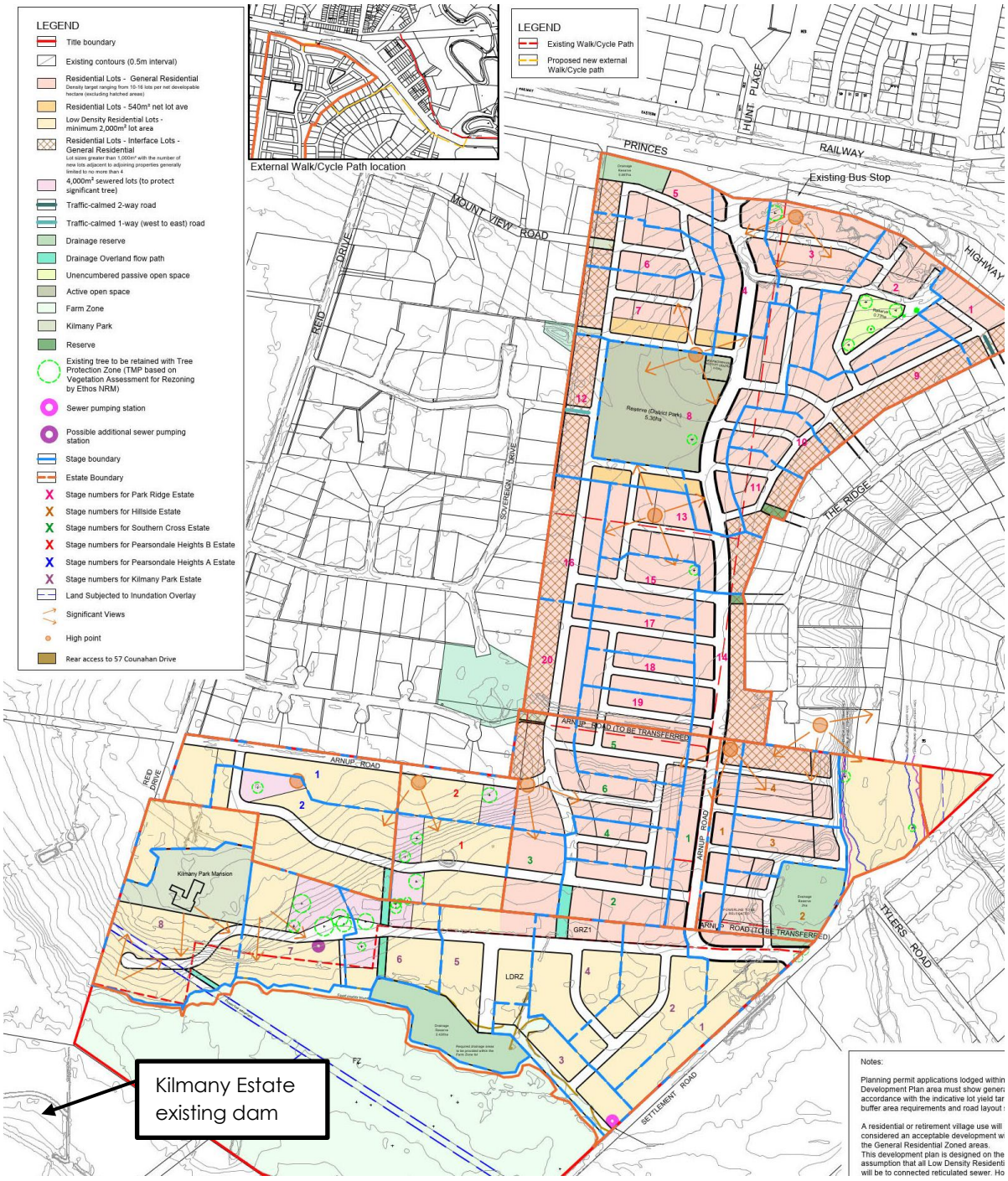

Figure 4: Indicative Subdivision Plan (Not to Scale)

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.

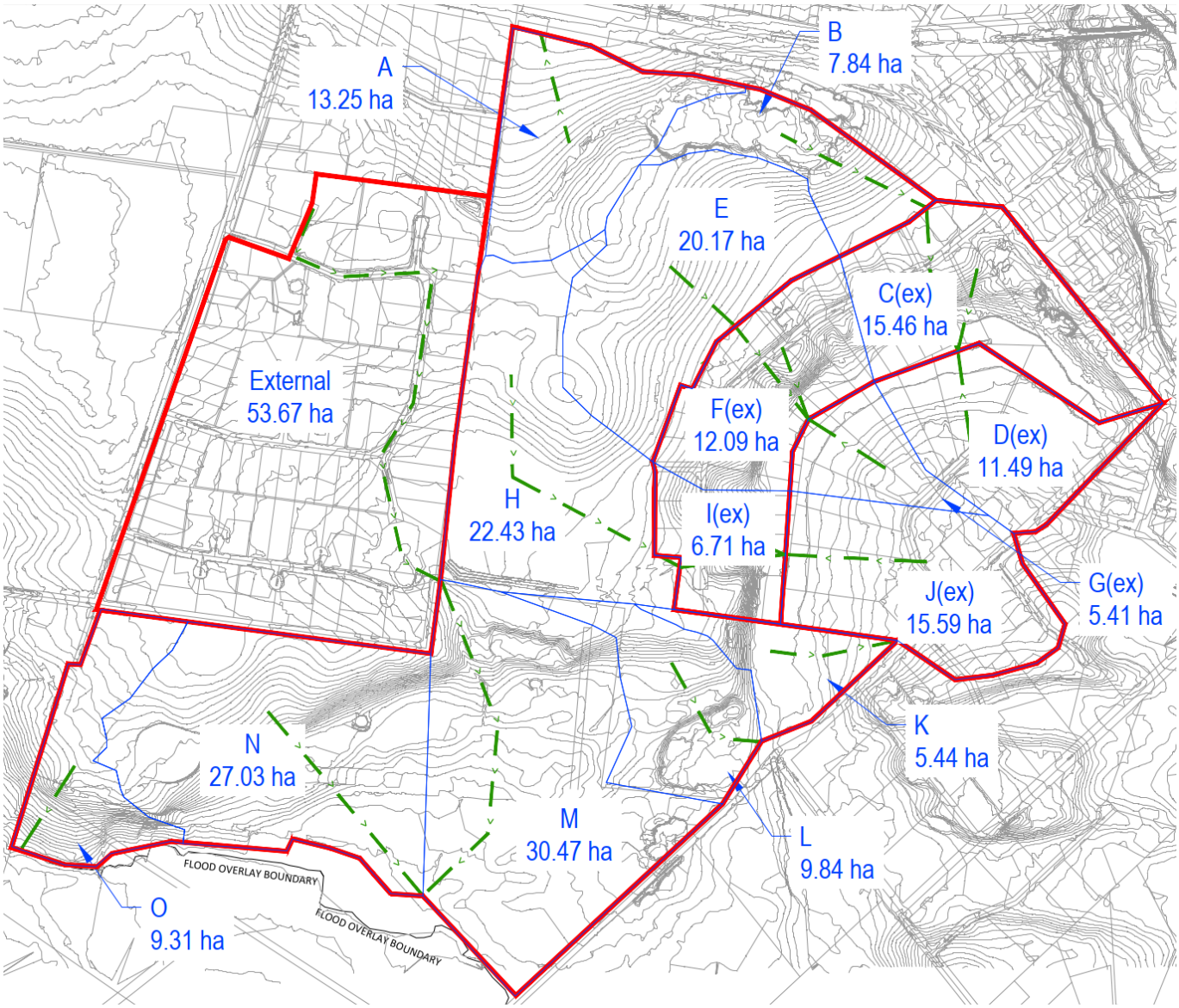

Figure 5: Pre-Developed Catchment Plan (Not to Scale)

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

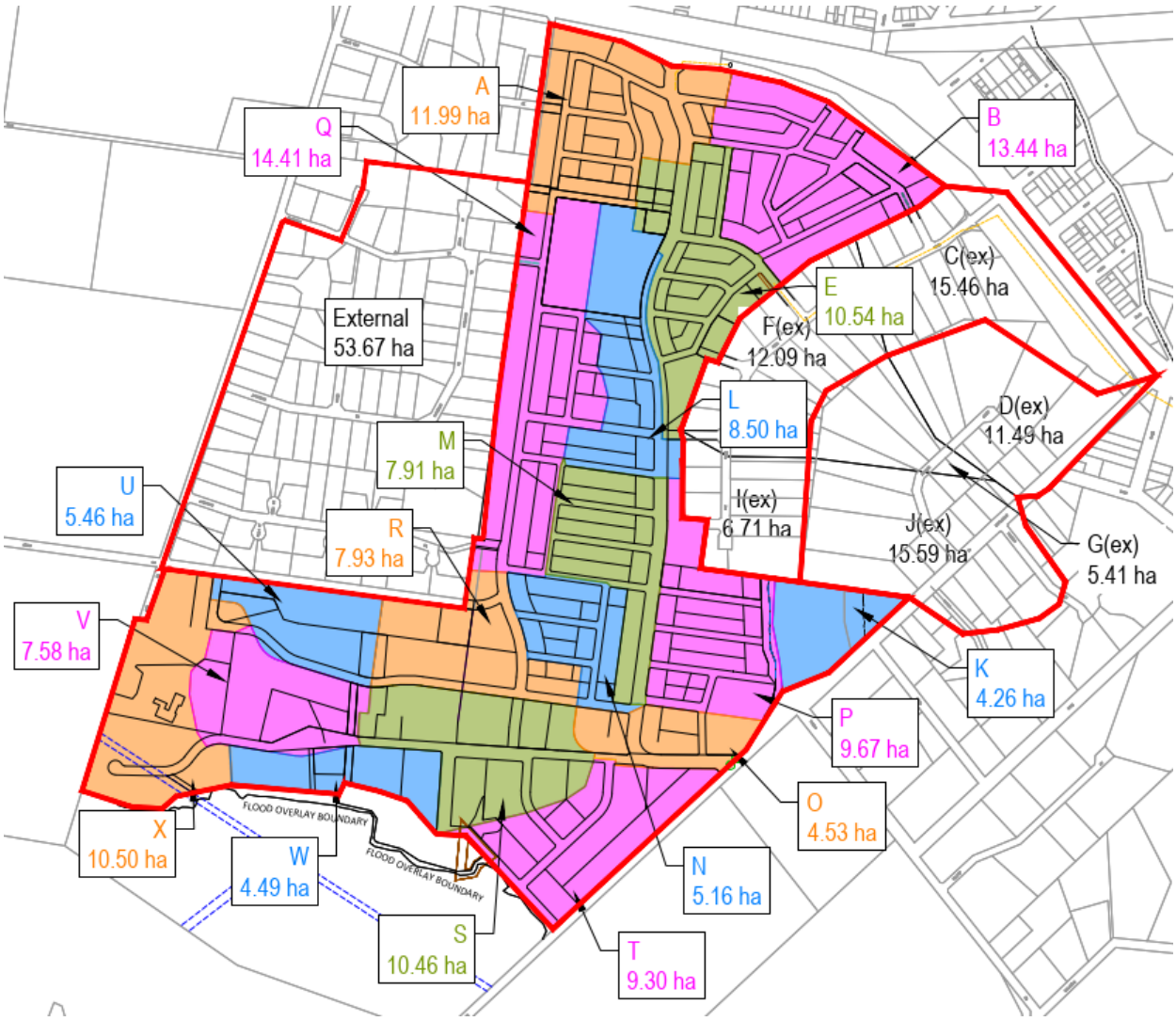

Figure 6: Post-Developed Catchment Plan (Not to Scale)

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).

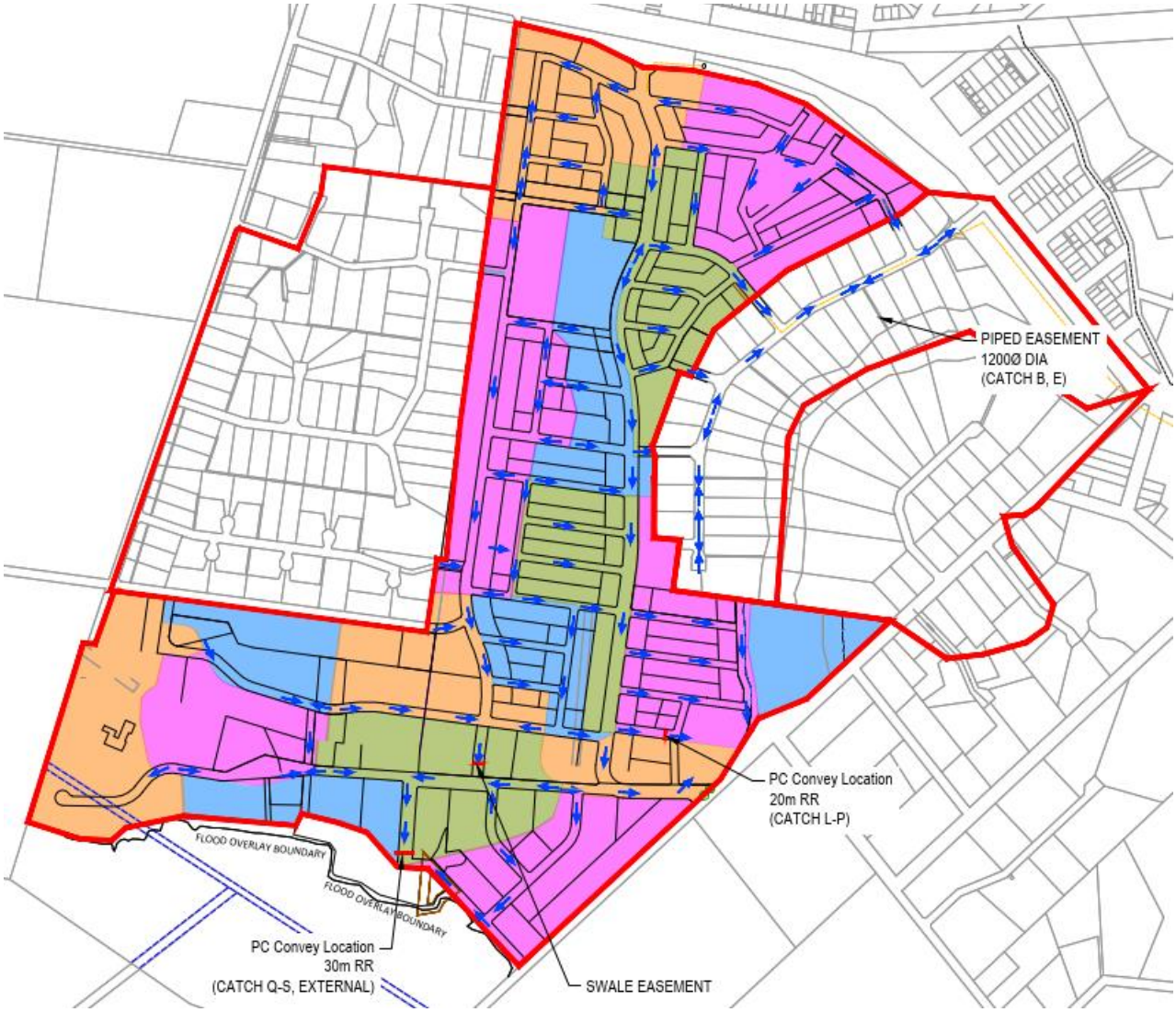

Figure 7: PC Convey Locations (Not to Scale)

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.

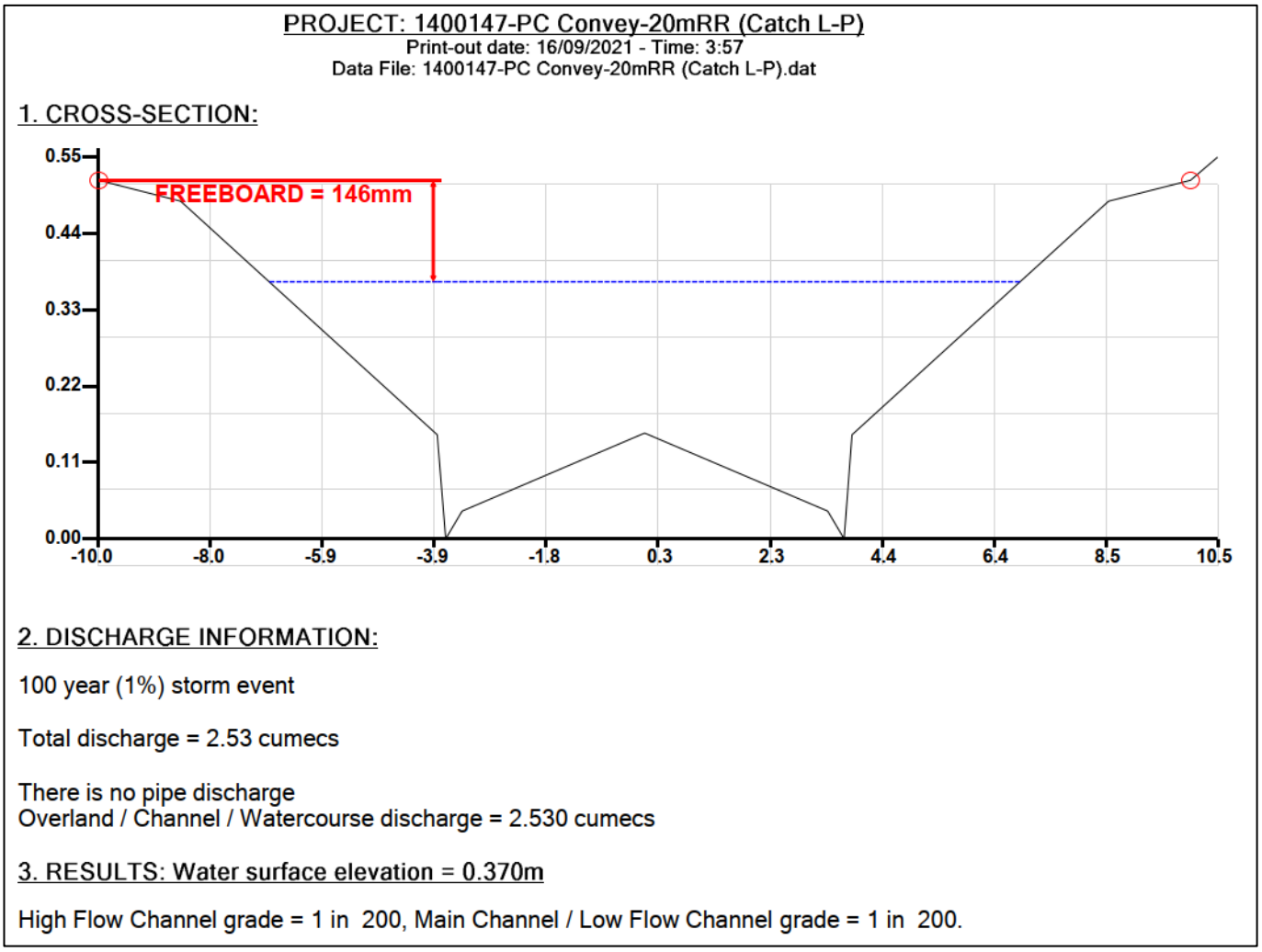

Figure 8: PC Convey Assessment for 20m Road Reserve (Not to Scale)

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

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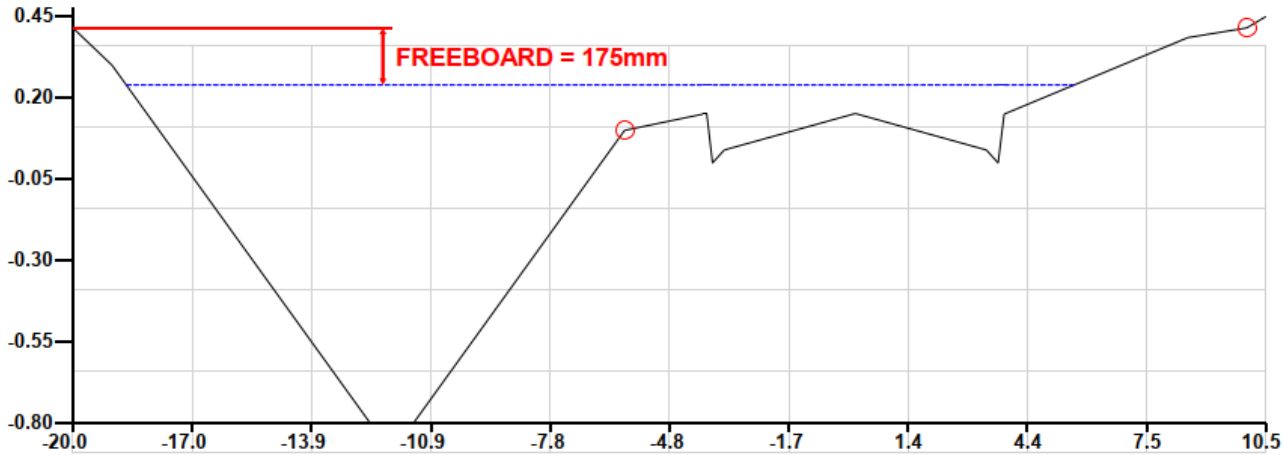

2. DISCHARGE INFORMATION:

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

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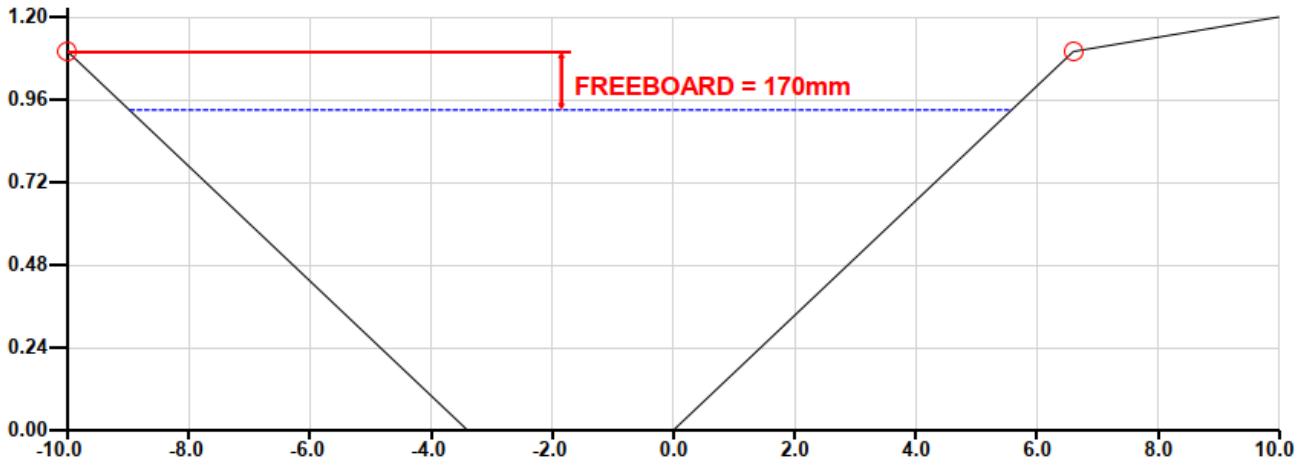

2. DISCHARGE INFORMATION:

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).

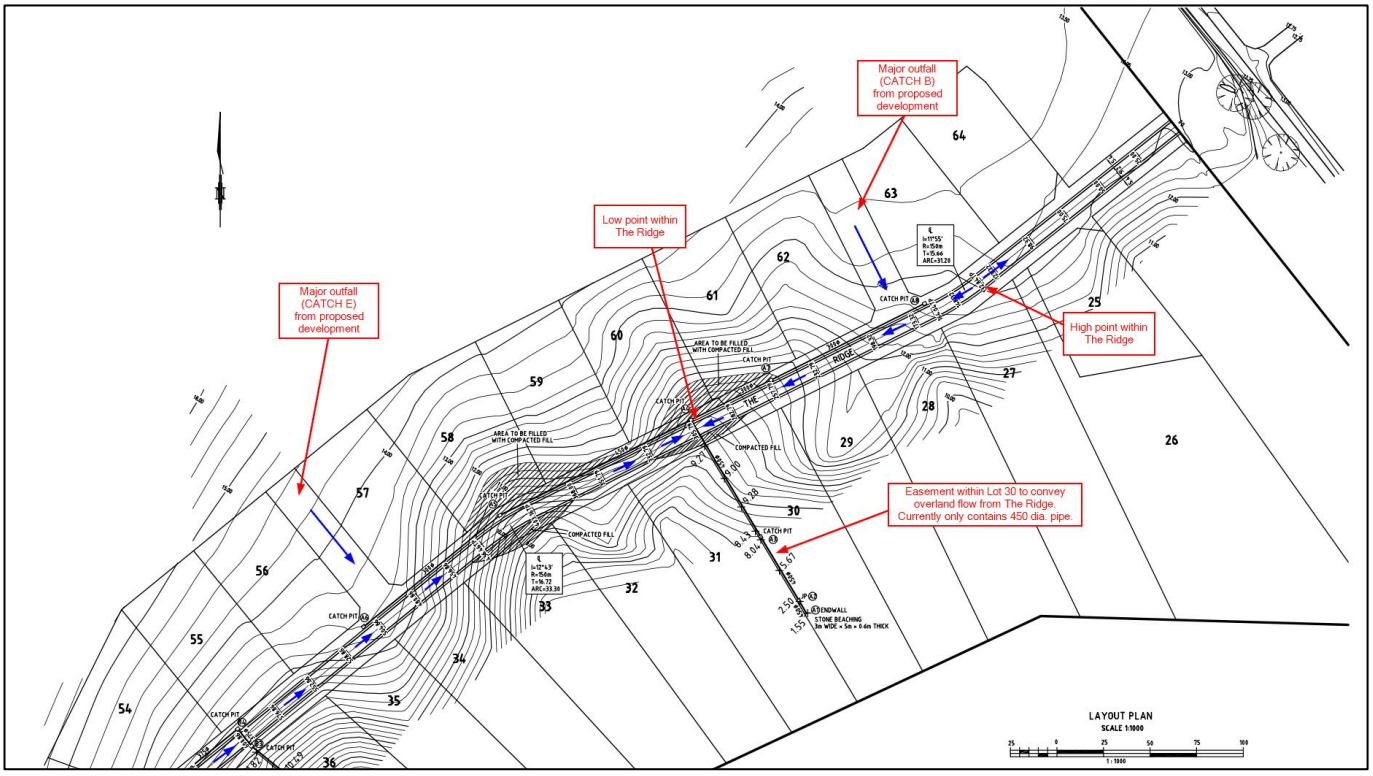

Figure 11: The Ridge Estate located east of proposed development (1 of 2) (Not to Scale)

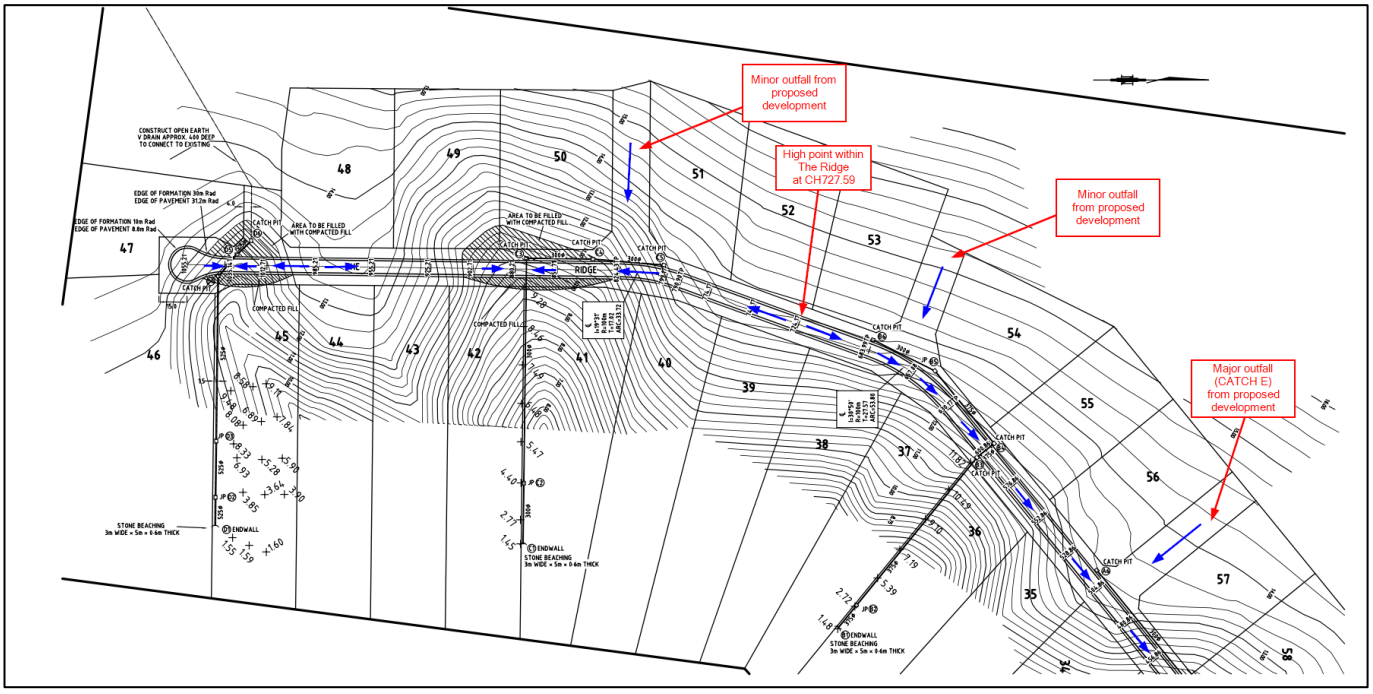

Figure 12: The Ridge Estate located east of proposed development (2 of 2) (Not to Scale)

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.

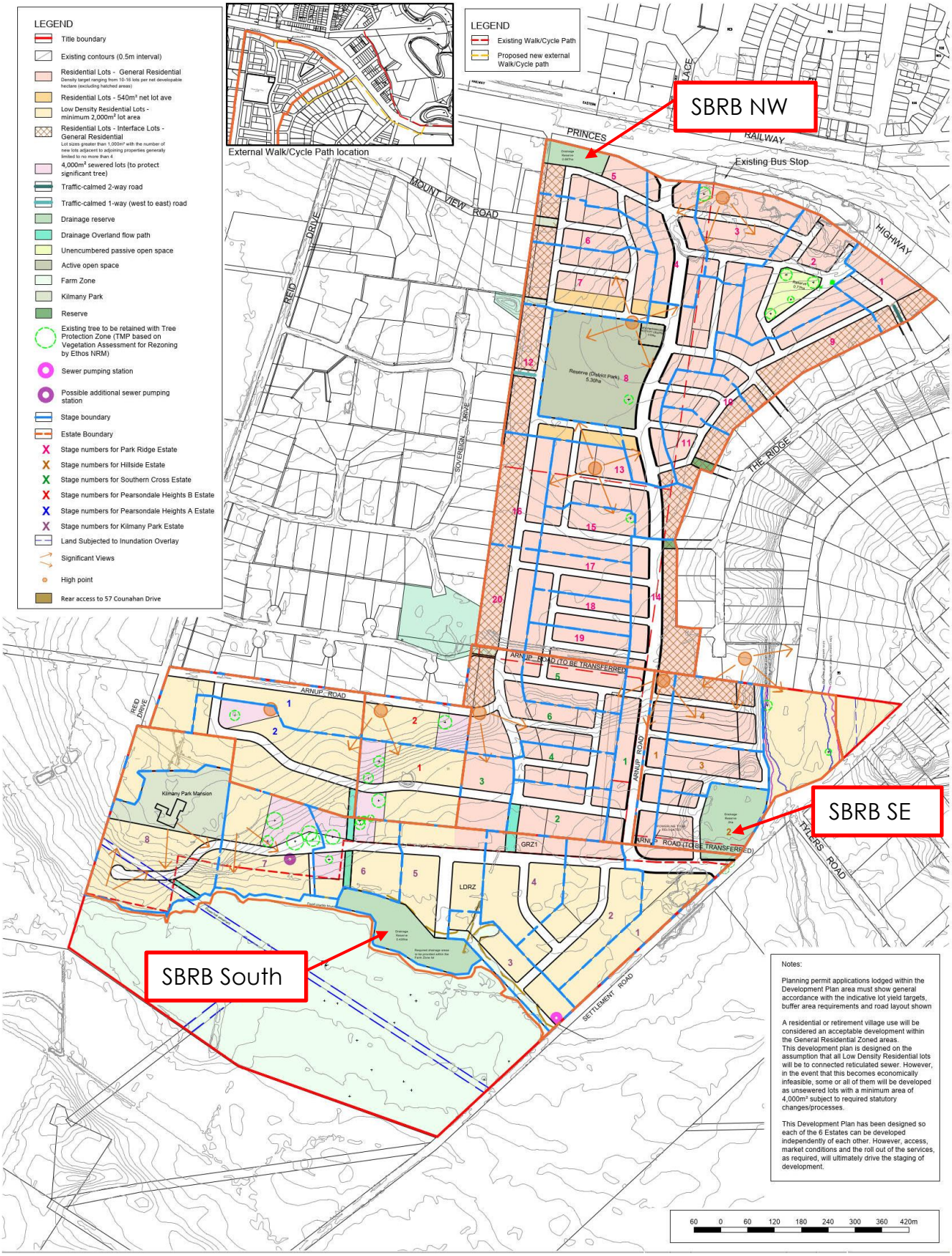

Figure 13: Location of SBRB's (Not to Scale)

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.

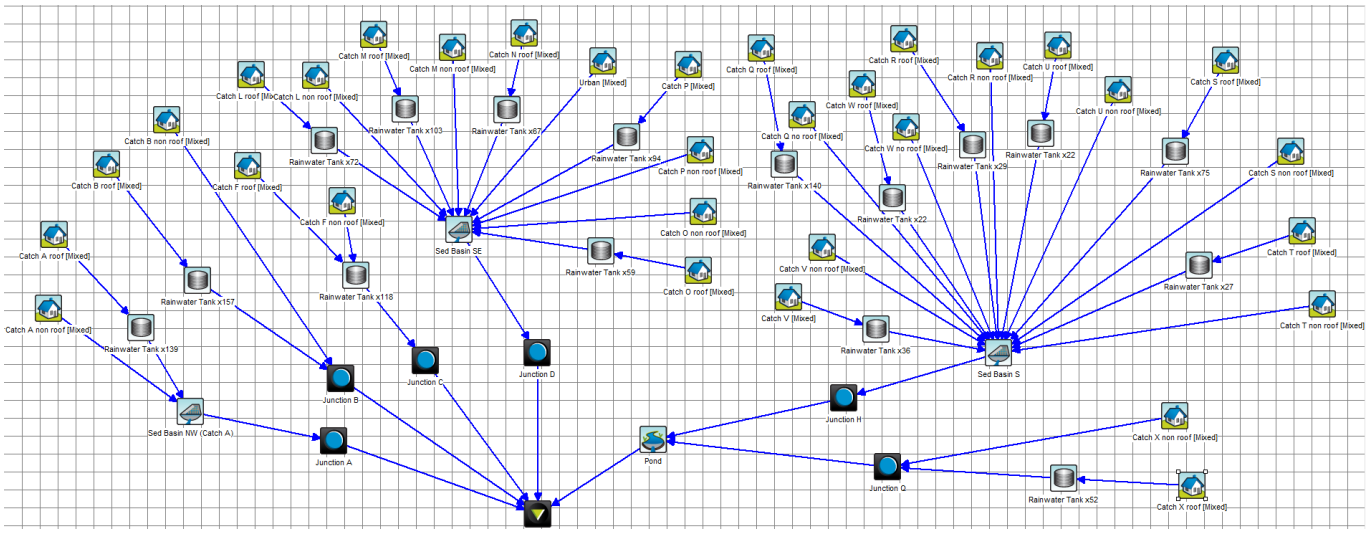

Figure 14: MUSIC Model Layout

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.

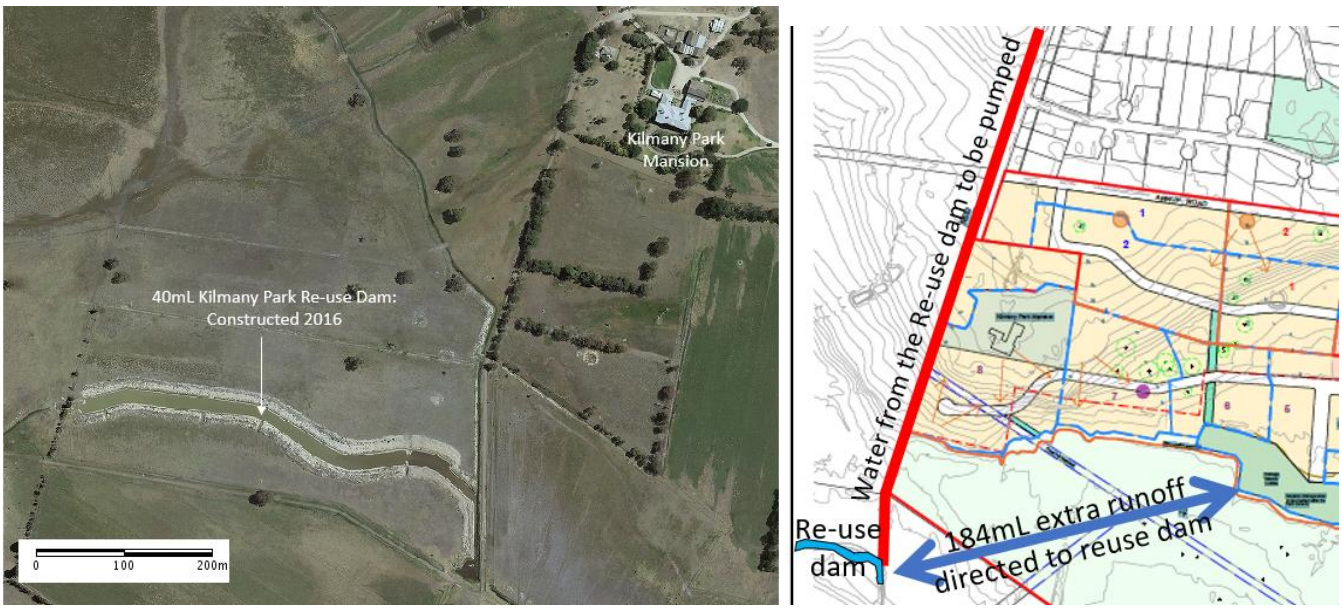

Figure 15: Existing dam located adjacent to Kilmany Park Heritage site

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.

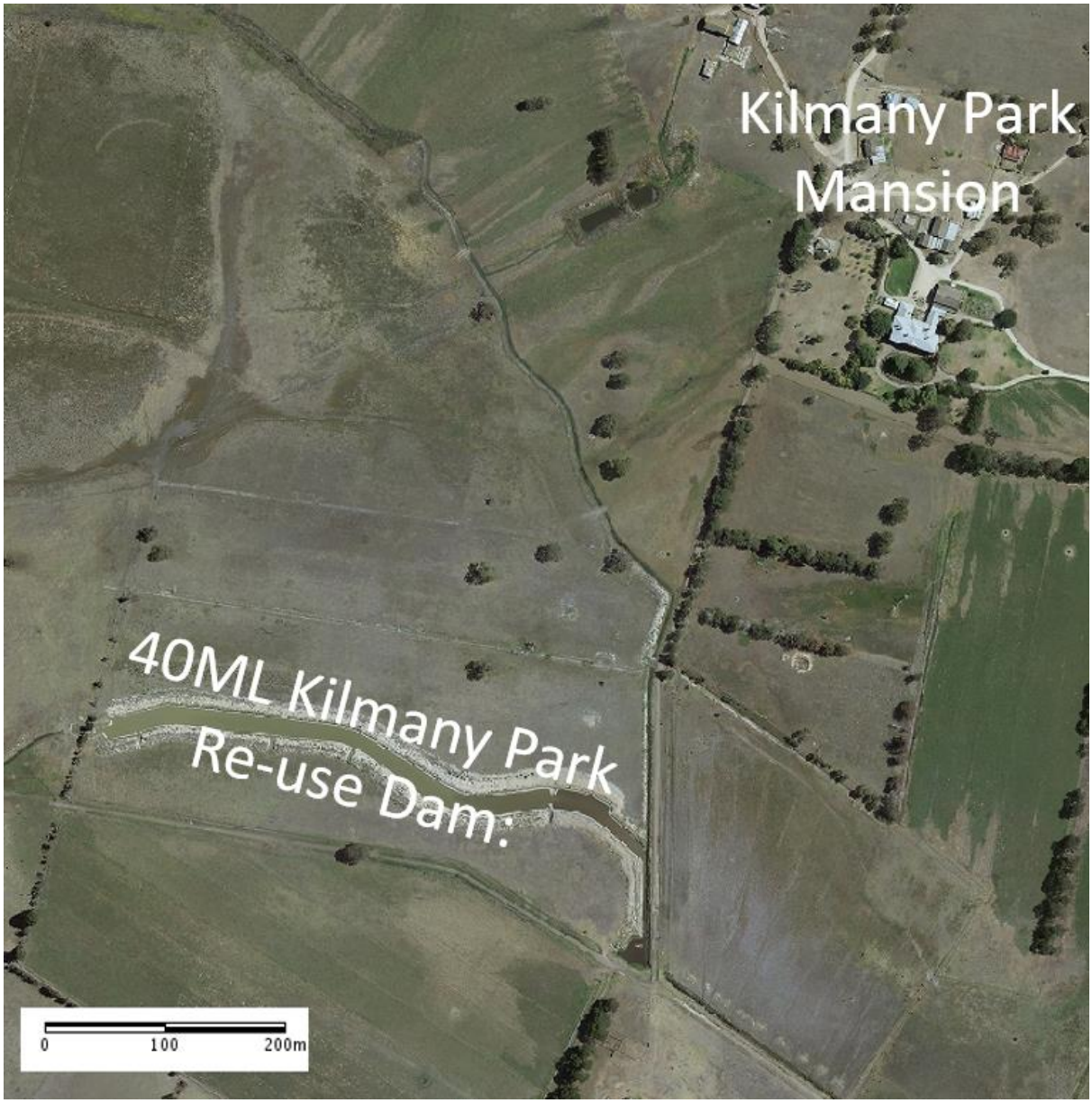

Figure 16: Aerial photo showing the location of the existing farm re-use dam located to the south of the Kilmany Park Mansion

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***.

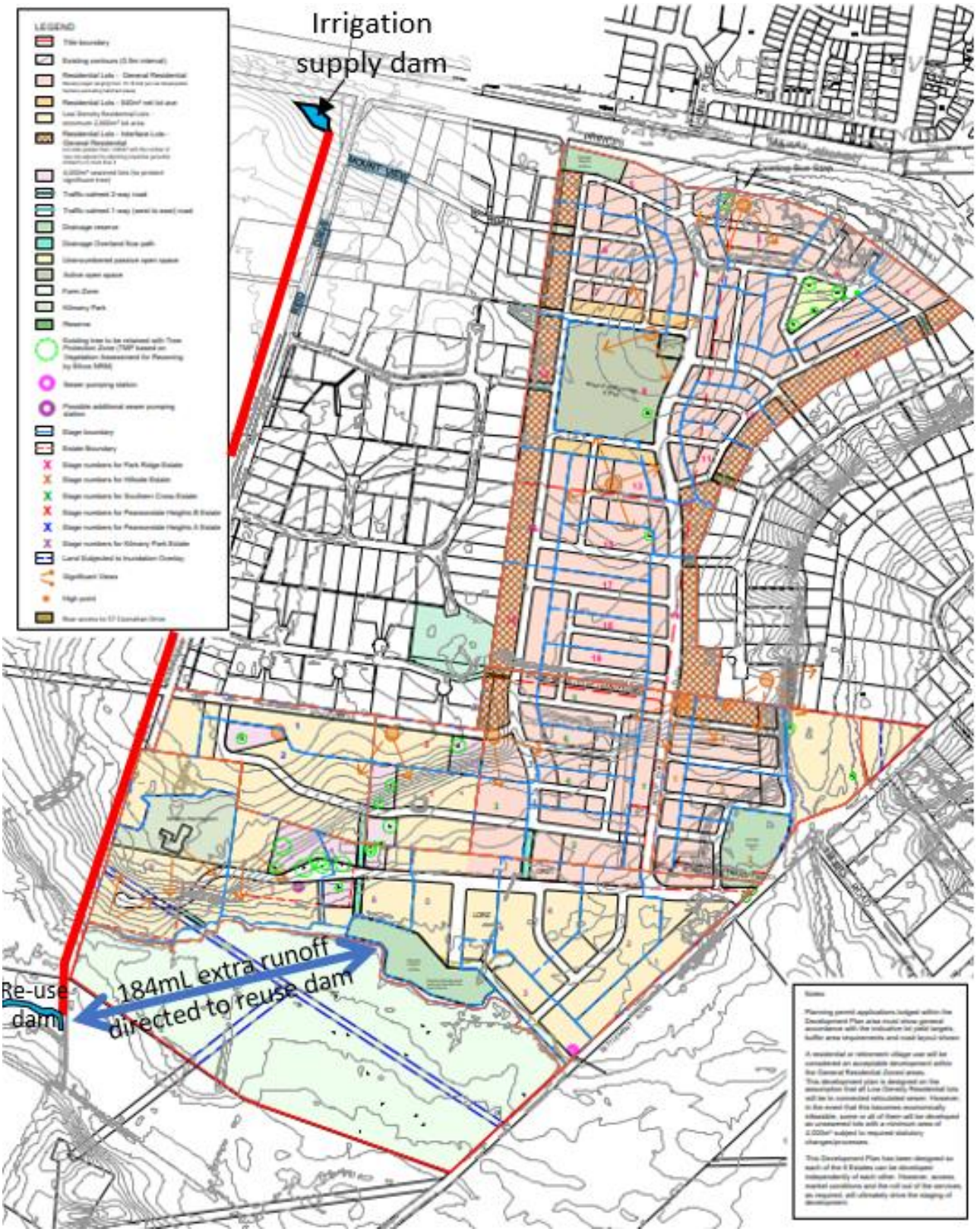

Figure 22: Map showing how stormwater will be directed from the southern retarding basin to the existing southern re-use dam and then pumped north to allow irrigation on the Kilmany Park dairy farm

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.

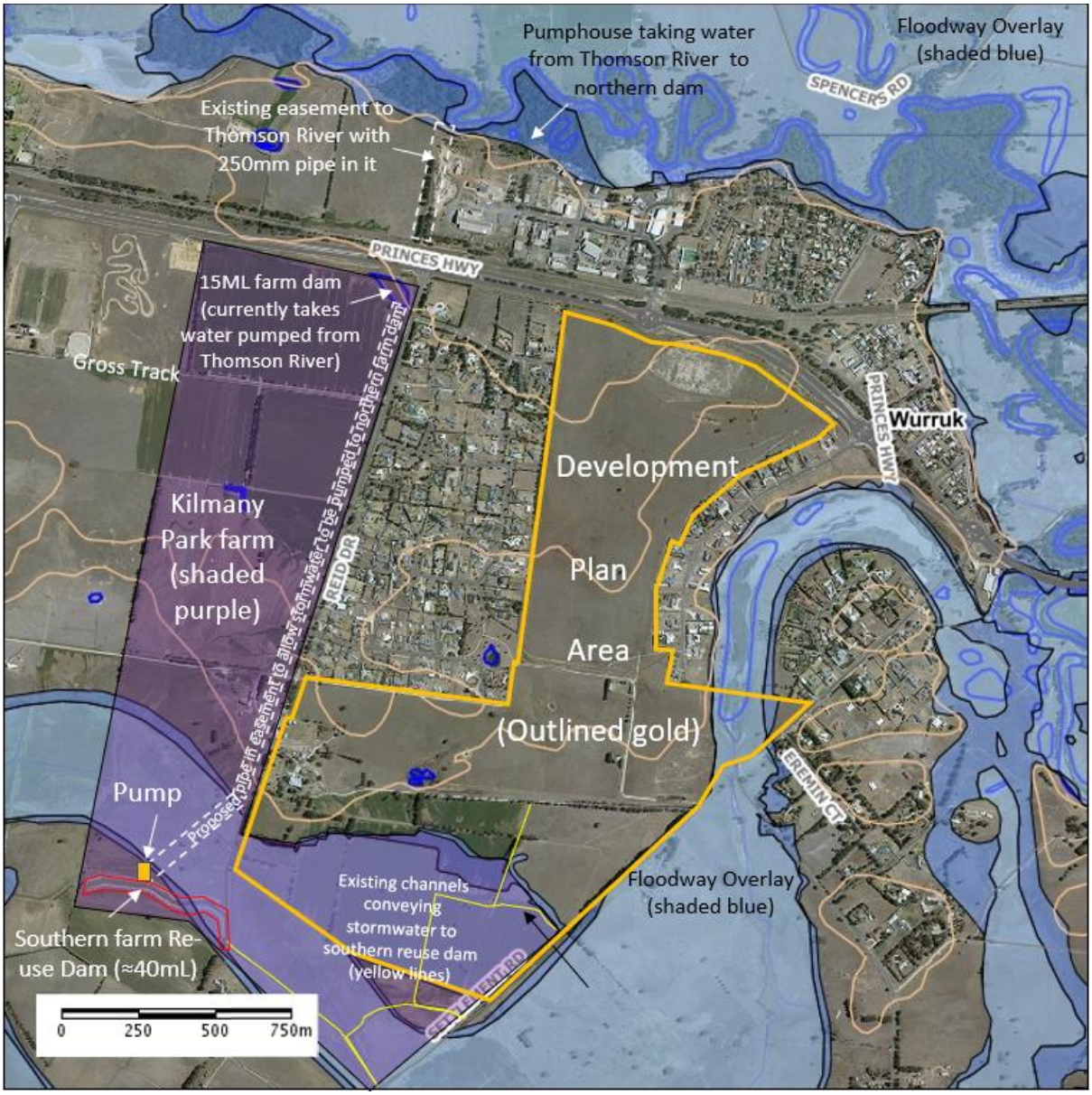

Figure 23: Map showing how the stormwater harvesting system will operate within the existing irrigation system on the Kilmany Park dairy farm

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

Prepared by

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Water Resources Engineer

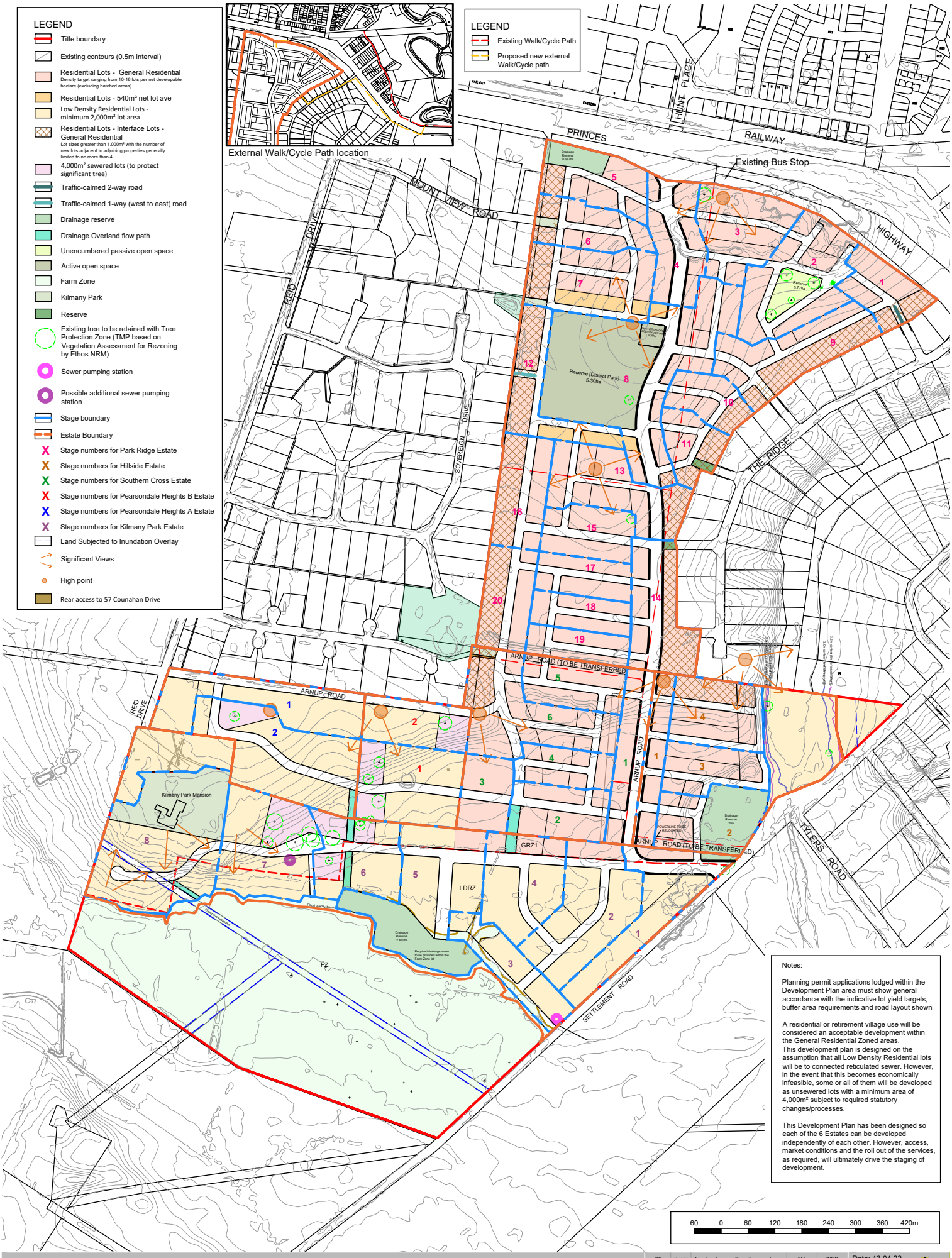
Reviewed by

Aram Manjikian
Water Resources Engineering Manager

Approved for issue by

Chris Curnow
Project Manager

APPENDIX A: INDICATIVE SUBDIVISION PLAN



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.

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 :

$$C^1_{10} = 0.1 + 0.0133\left(I^{10}_1 - 25\right)$$

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

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													

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													

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

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  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)
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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\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												

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

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

```
  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
```

```
  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								

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								

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		

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
  2
 Run,    Representative hydrograph
  3
 Run,    Representative hydrograph
  4
 Run,    Representative hydrograph
  5
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 12
 Run,    Representative hydrograph
 13
 Run,    Representative hydrograph
 14
 Run,    Representative hydrograph
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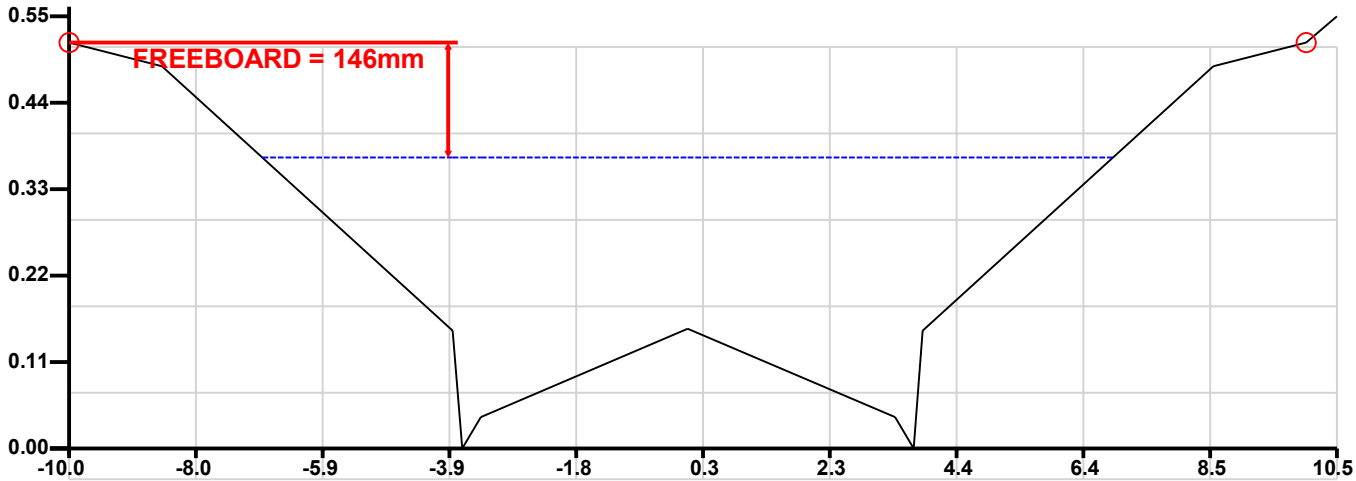
 15
 Run,    Representative hydrograph
 16
 Run,    Representative hydrograph
 17

Elapsed Run Time (hh:mm:ss) = 00:01:32
```

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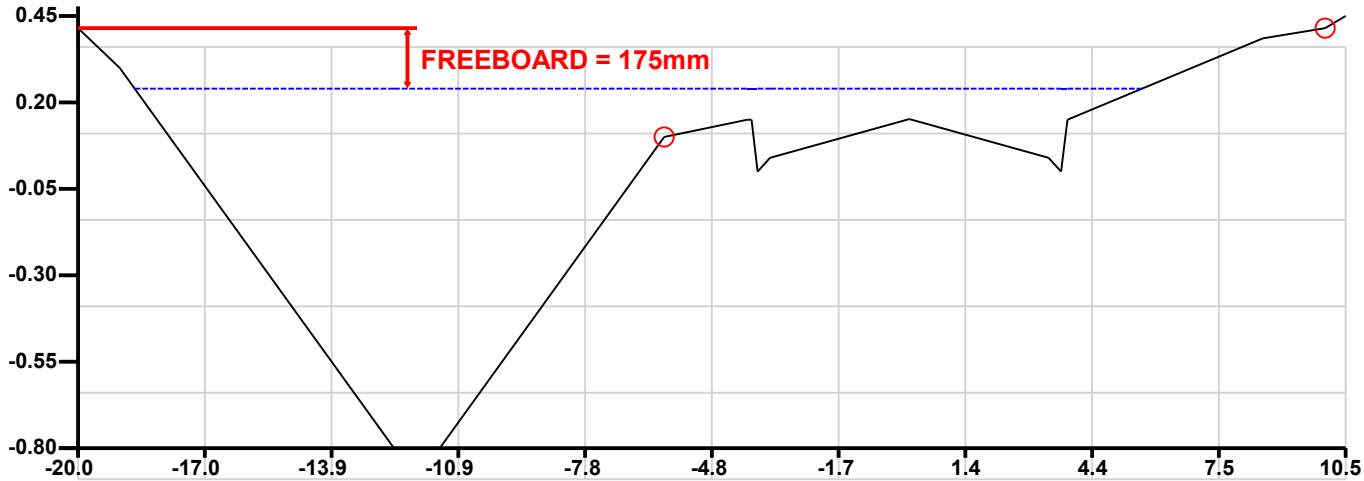
PROJECT: 1400147-PC Convey-30mRR with Swale
Print-out date: 06/04/2022 - Time: 12:51
Data File: 1400147-PC Convey-30mRR with Swale.dat

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

4. CROSS-SECTION DATA: (continued)

	LEFT HAND POINT		RIGHT HAND POINT		
SEGMENT NO.	CHAINAGE (m)	R.L. (m)	CHAINAGE (m)	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

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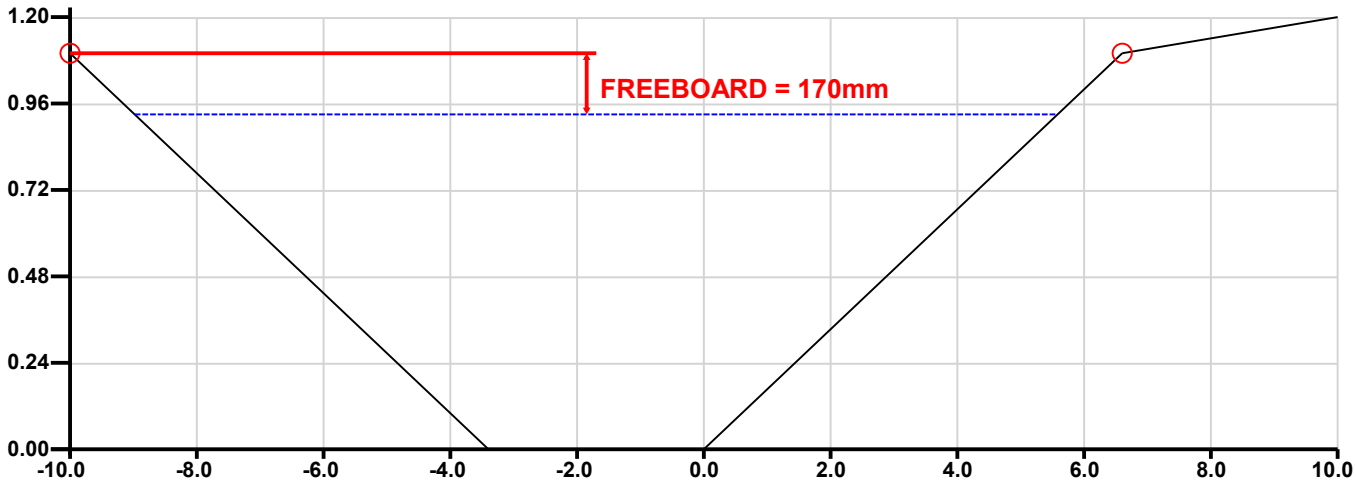

2. DISCHARGE INFORMATION:

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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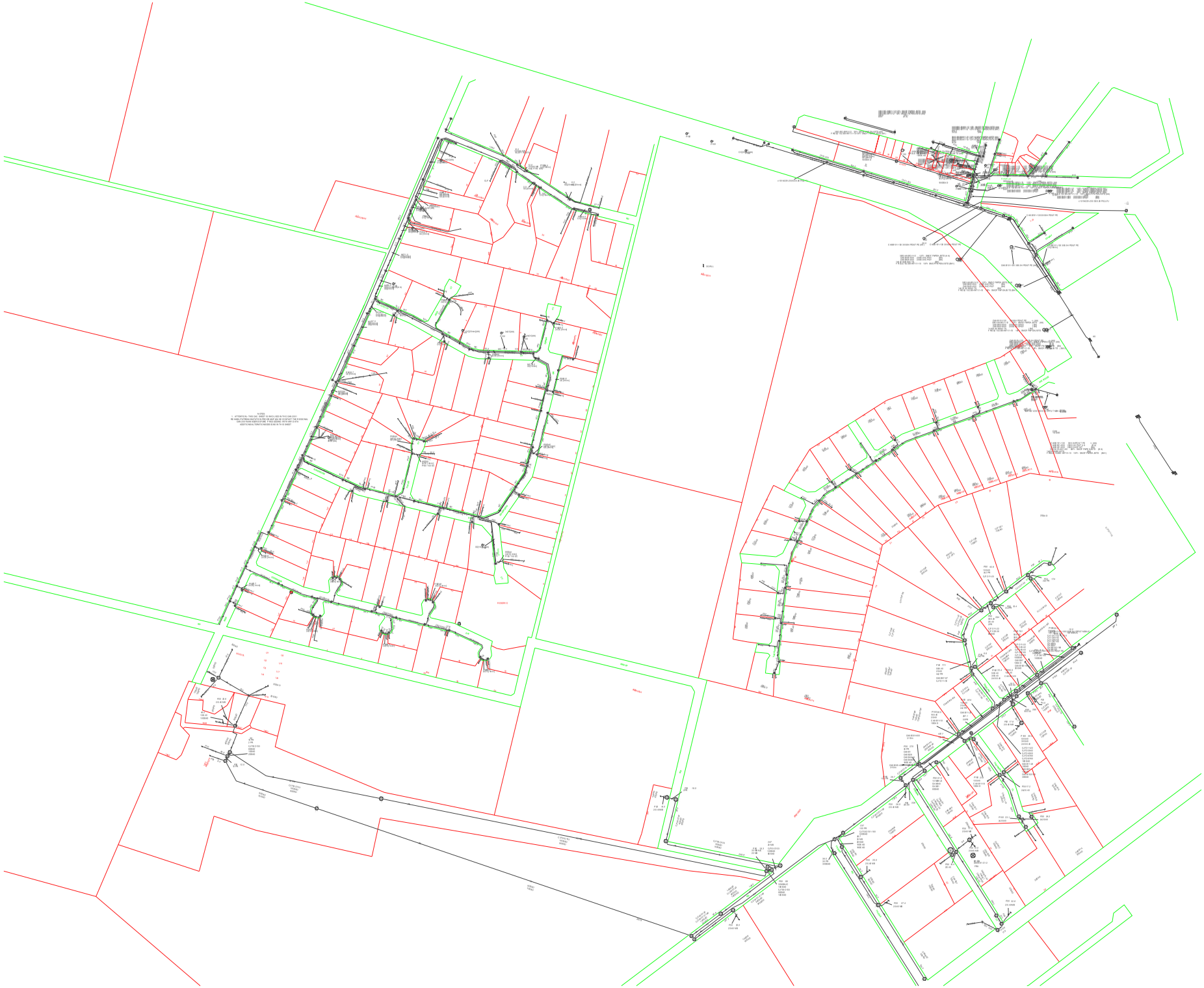
APPENDIX G: FLUX FILE RESULTS

	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

APPENDIX F: TELSTRA AND NBN CO ASSET PLANS



APPENDIX G: APA GROUP ASSET PLANS

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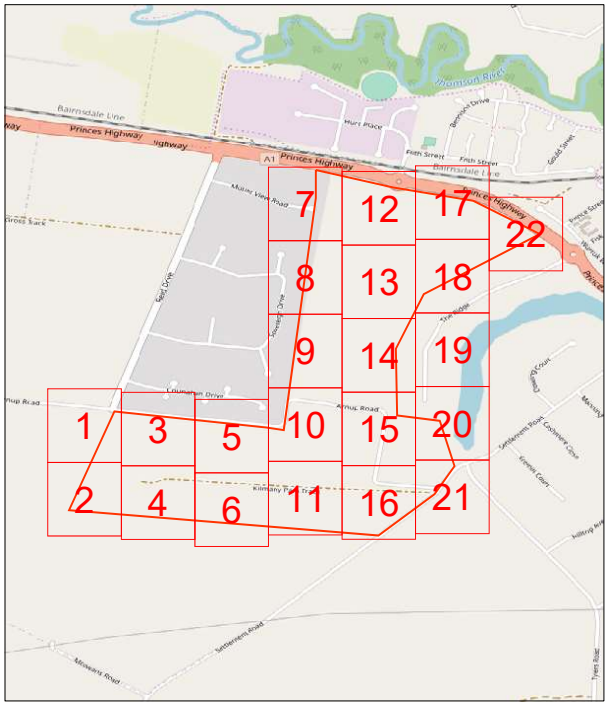
operated by apa

Site Address	Settlement Road Wurruk 3850	Sequence No	102664853
Name	Ms Lauren McKay		
Email	mckayl@bevwill.com.au		



Scale 1: 14000 | NORTH | Enquiry Area | Map Key Area

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Email	mckayl@bevwill.com.au	Map Reference	Vicroads 692F8,692F9,692G6,692G7,692G8,692G9,692H6,692H7,6

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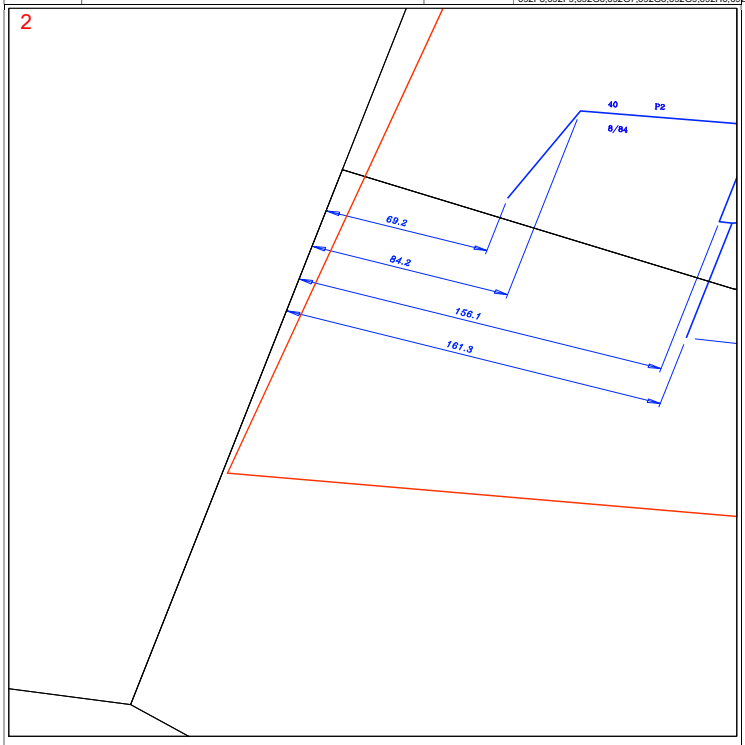

ITEM	SYMBOL	TERMS	SYMBOL	ITEM	SYMBOL
LOW PRESSURE		D = BOUNDARY		DIAL BEFORE YOU DIG REQUESTED AREA	
MEDIUM PRESSURE		C = COVER	e.g. C.0.9	PRIORITY MAIN COVERAGE	
HIGH PRESSURE		BOK = BACK OF KERB		CASING (DISPLAYED OVER EXISTING MAIN)	
TRANSMISSION PRESSURE		FOK = FRONT OF KERB		CATHODIC PROTECTION TEST POINT	T
PROPOSED MAIN (COLOUR BY PRESSURE)		JURISDICTION BOUNDARY		CATHODIC PROTECTION UNIT	C
ABANDONED MAIN		EASEMENT		ANODE	A

Map Key

Scale 1:1000 | 0 0.01km | NORTH

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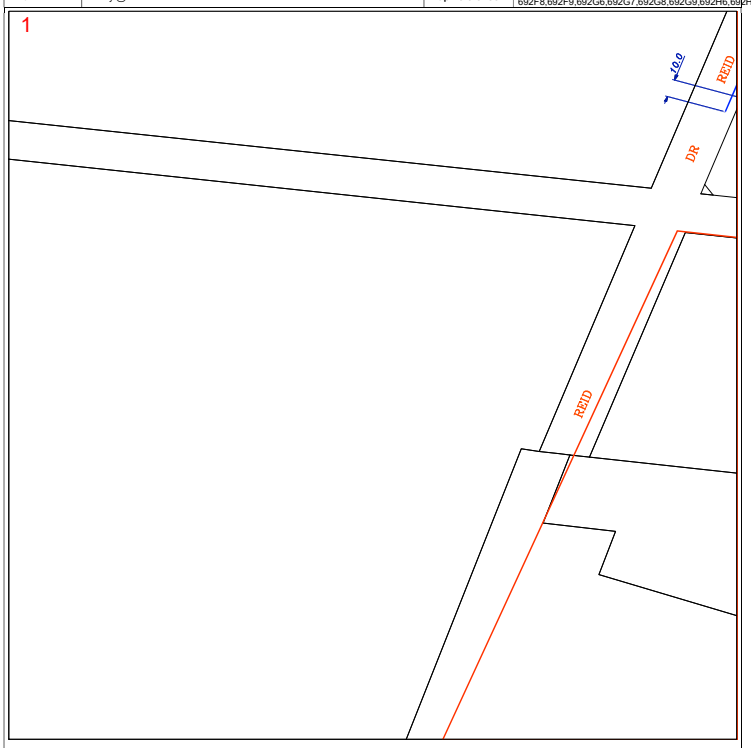

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MEDIUM PRESSURE		C = COVER	e.g. C.0.9	PRIORITY MAIN COVERAGE	
HIGH PRESSURE		BOK = BACK OF KERB		CASING (DISPLAYED OVER EXISTING MAIN)	
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PROPOSED MAIN (COLOUR BY PRESSURE)		JURISDICTION BOUNDARY		CATHODIC PROTECTION UNIT	C
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Map Key

Scale 1:1000 | 0 0.01km | NORTH

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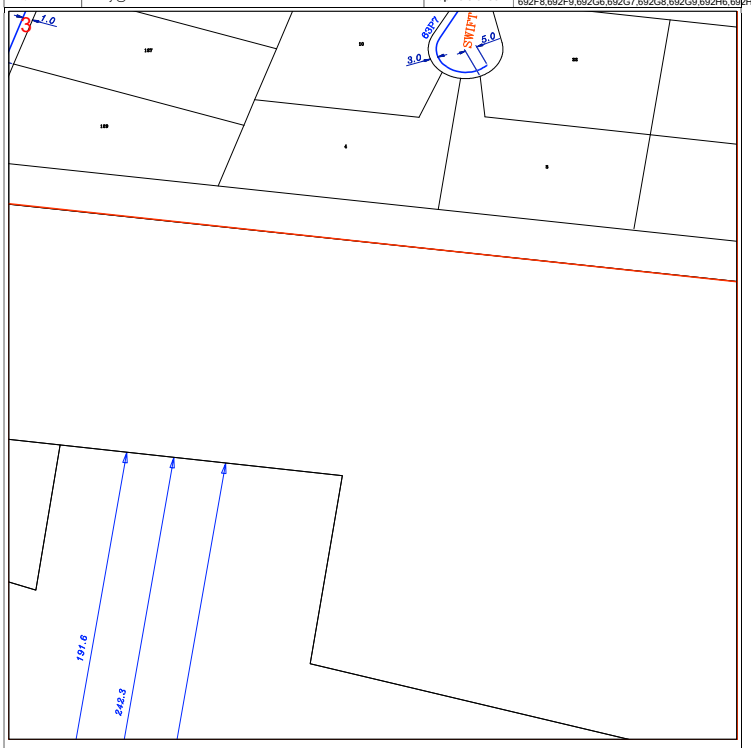

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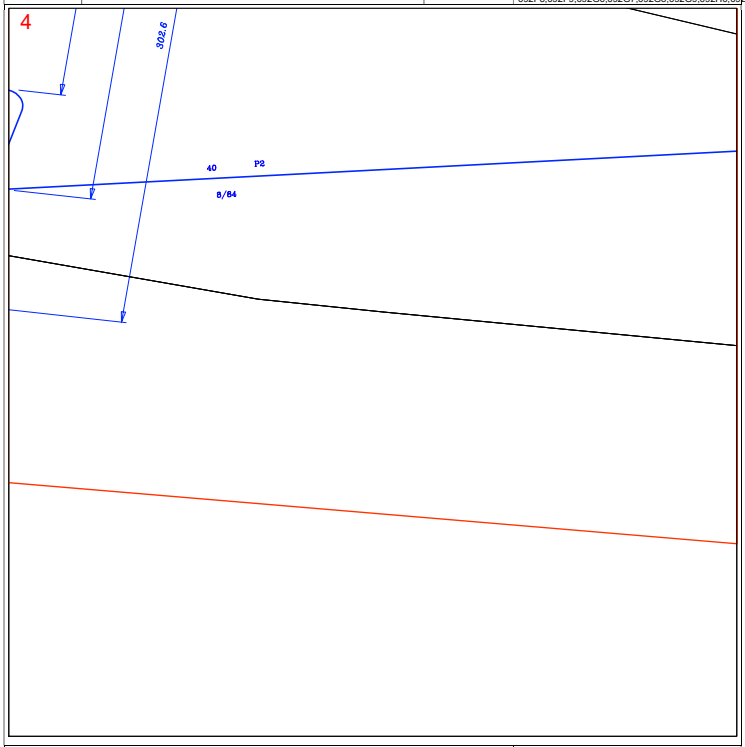

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Map Key

Scale 1:1000

0 0.01km

NORTH

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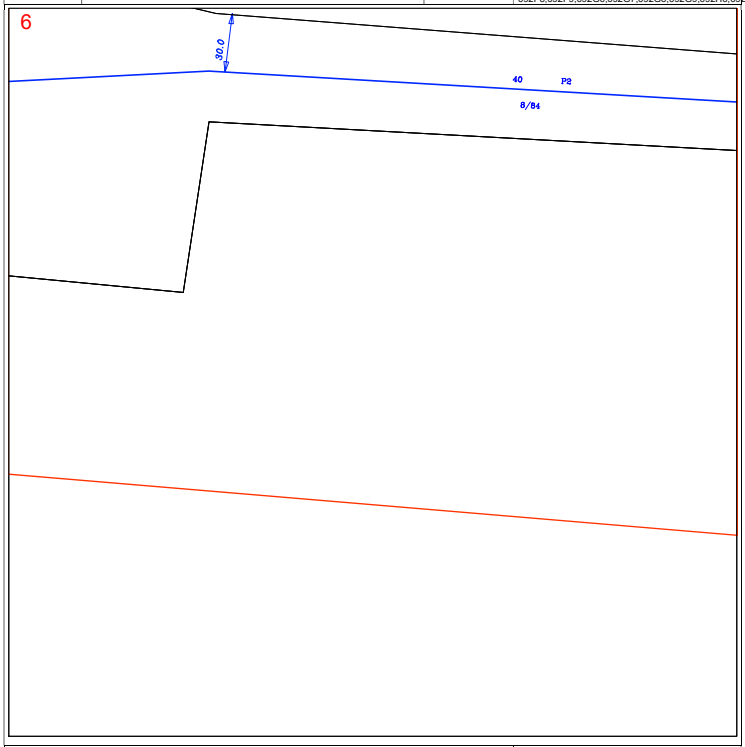

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Map Key

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0 0.01km

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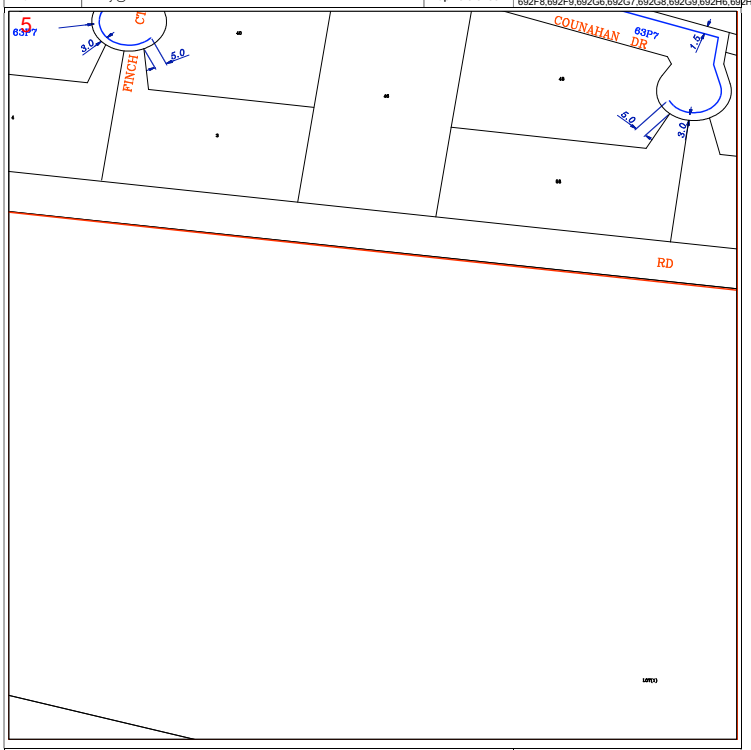

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Map Key

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0 0.01km

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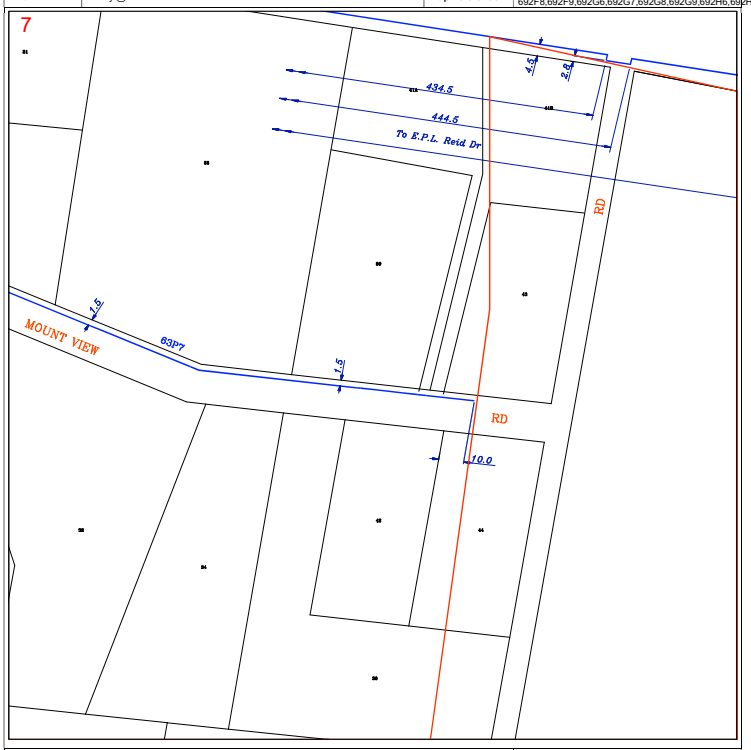

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Map Key

Scale 1:1000

0 0.01km

NORTH

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ITEM	SYMBOL	TERMS	SYMBOL	ITEM	SYMBOL
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MEDIUM PRESSURE		C = COVER	e.g. C.0.9	PRIORITY MAIN COVERAGE	
HIGH PRESSURE		BOK = BACK OF KERB		CASING (DISPLAYED OVER EXISTING MAIN)	
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Map Key

Scale 1:1000

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NORTH

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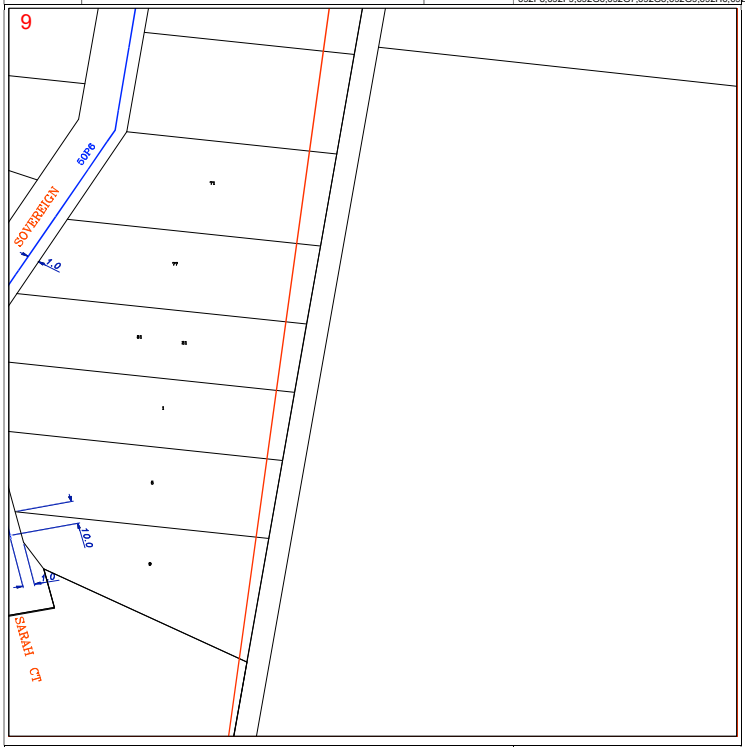

ITEM	SYMBOL	TERMS	SYMBOL	ITEM	SYMBOL
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MEDIUM PRESSURE		C = COVER	e.g. C.0.9	PRIORITY MAIN COVERAGE	
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Map Key

Scale 1:1000

0 0.01km

NORTH

Site Address	Settlement Road Wurruk 3850	Sequence No	102664853
Email	mckayl@bevwill.com.au	Map Reference	Vicroads 692F8,692F9,692G6,692G7,692G8,692G9,692H6,692H7,6

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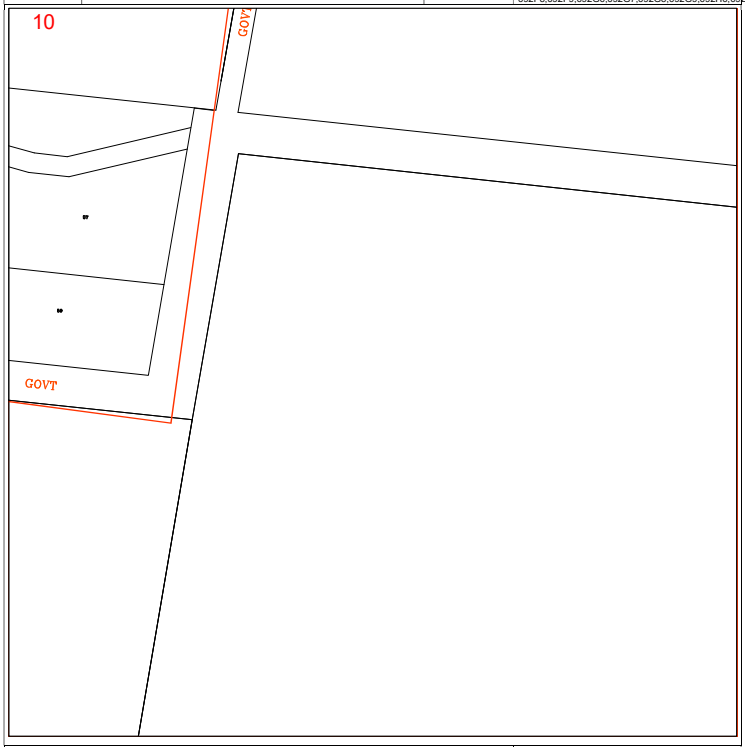

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PROPOSED MAIN (COLOUR BY PRESSURE)		JURISDICTION BOUNDARY		CATHODIC PROTECTION UNIT	C
ABANDONED MAIN		EASEMENT		ANODE	A

Map Key

Scale 1:1000

0 0.01km

NORTH

Site Address	Settlement Road Wurruk 3850	Sequence No	102664853
Email	mckayl@bevwill.com.au	Map Reference	Vicroads 692F8,692F9,692G6,692G7,692G8,692G9,692H6,692H7,6

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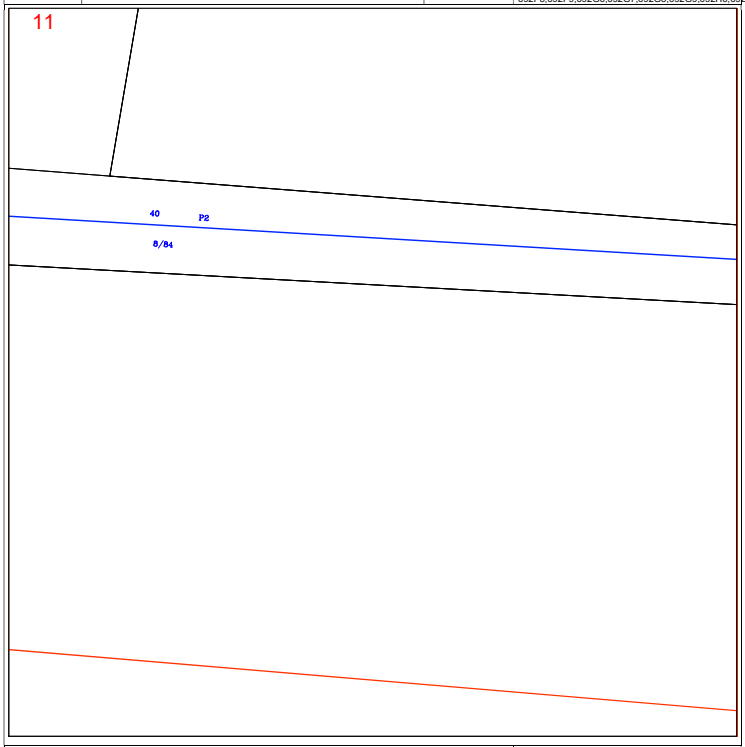

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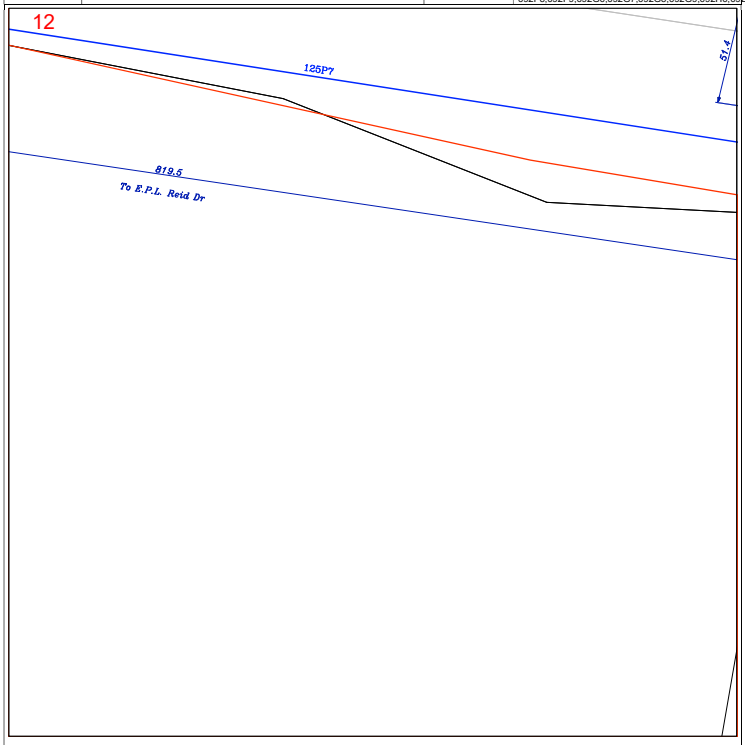

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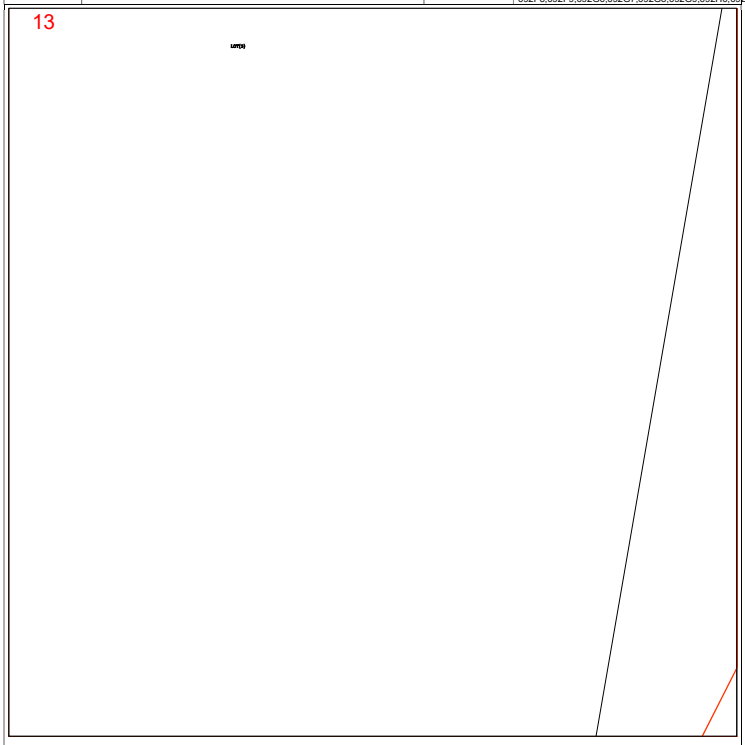

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0 0.01km

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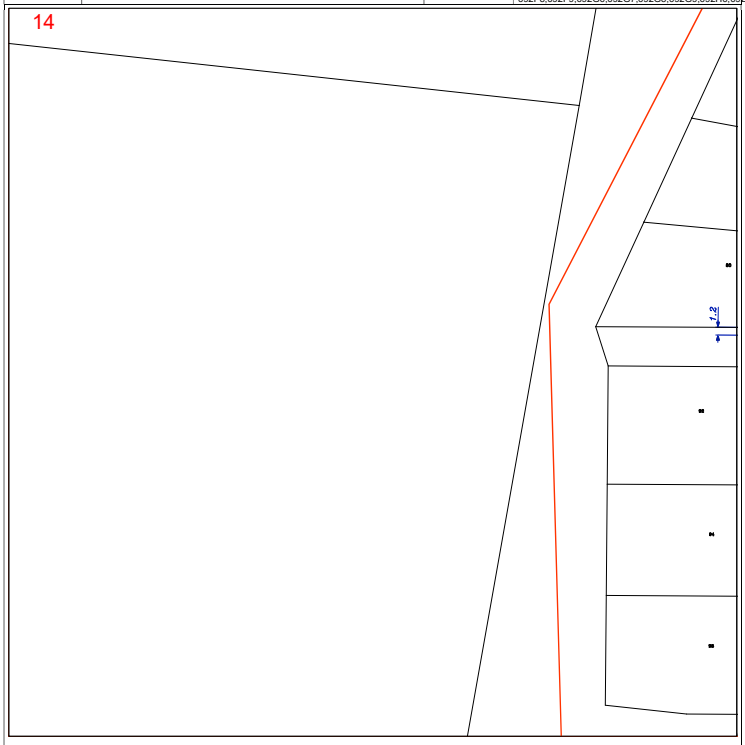

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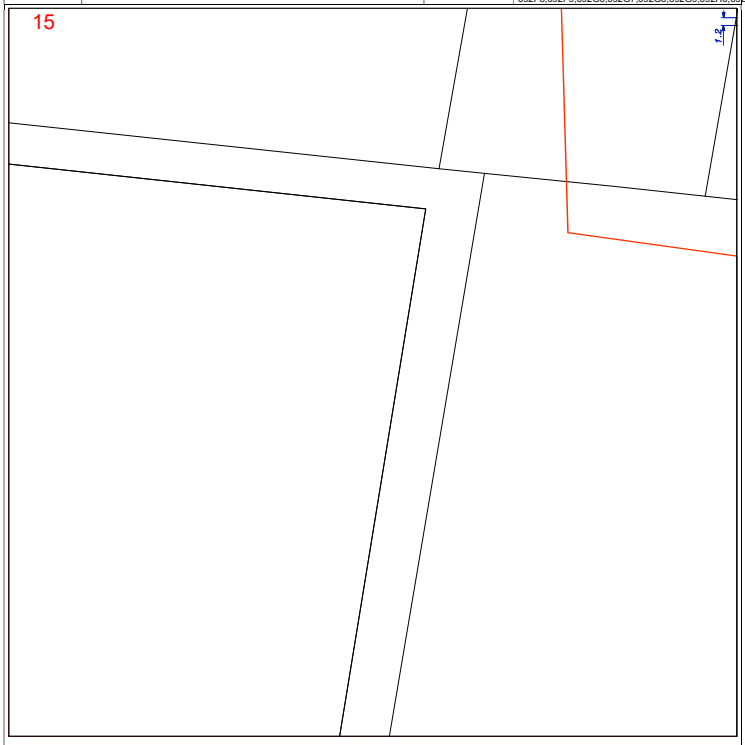

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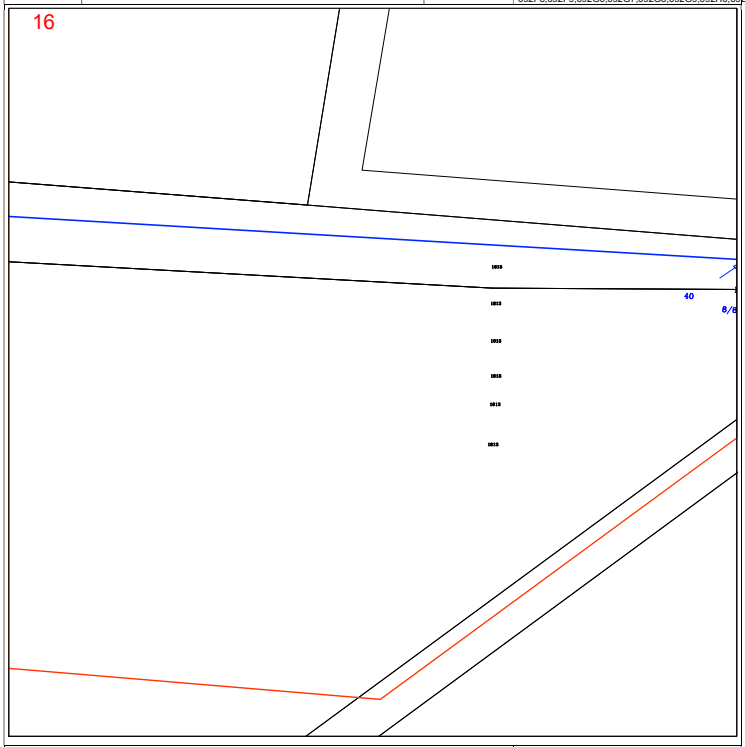

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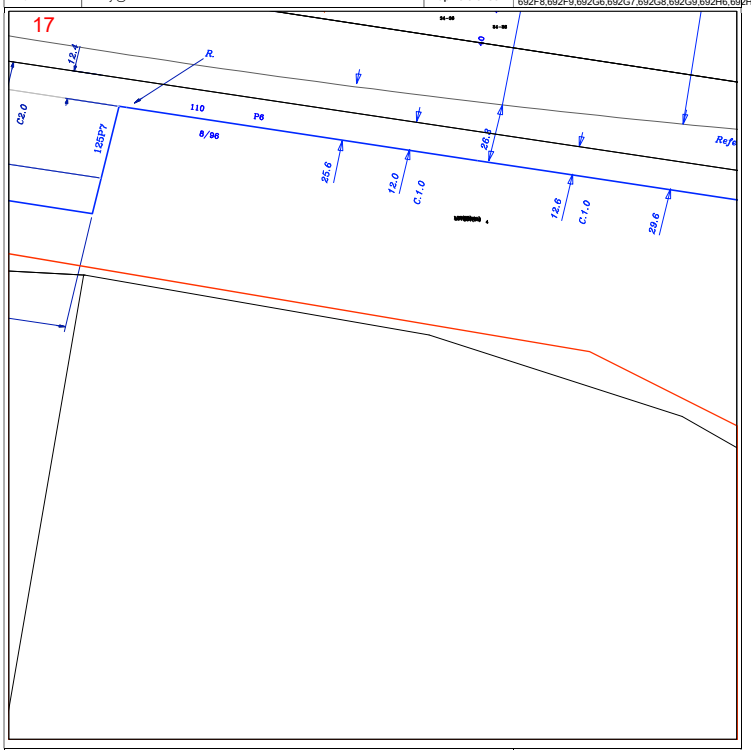

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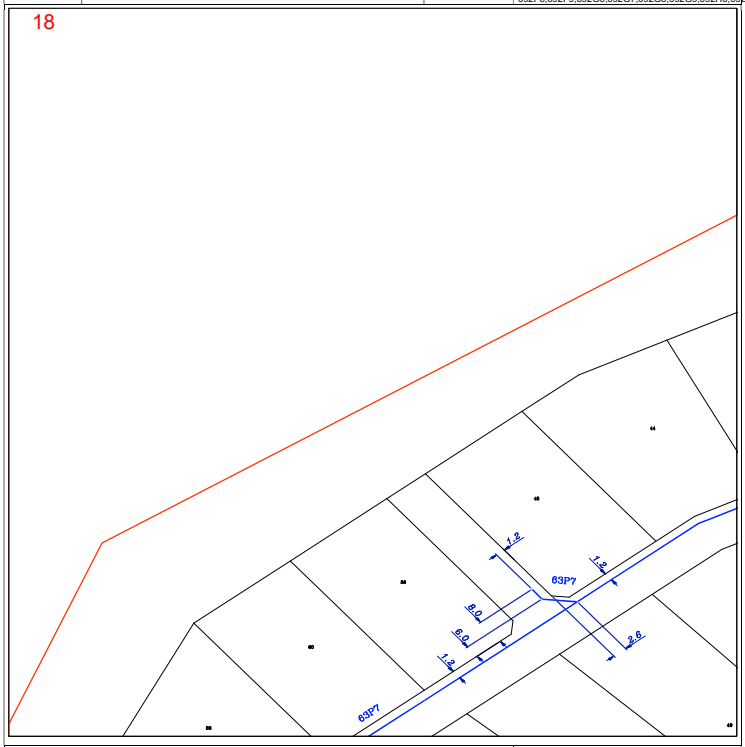

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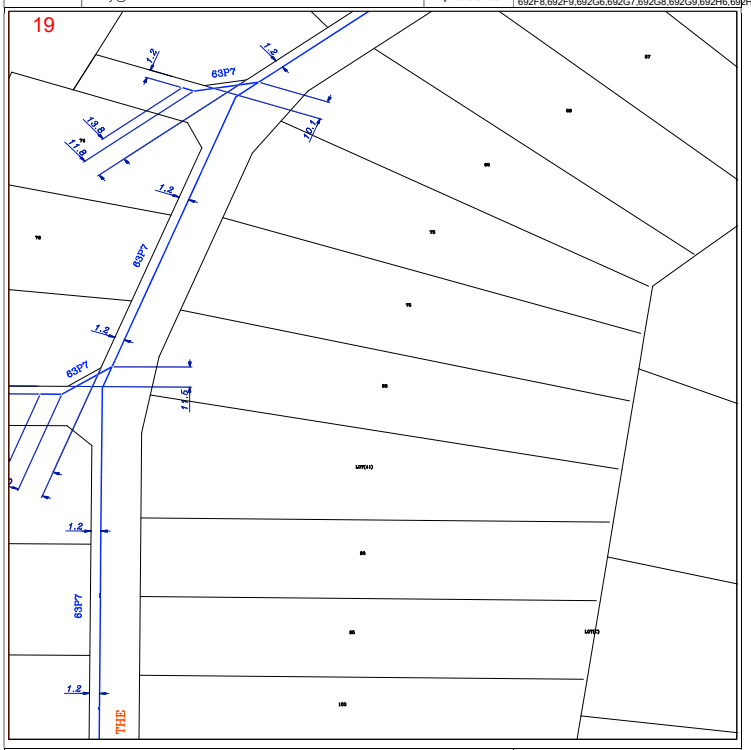

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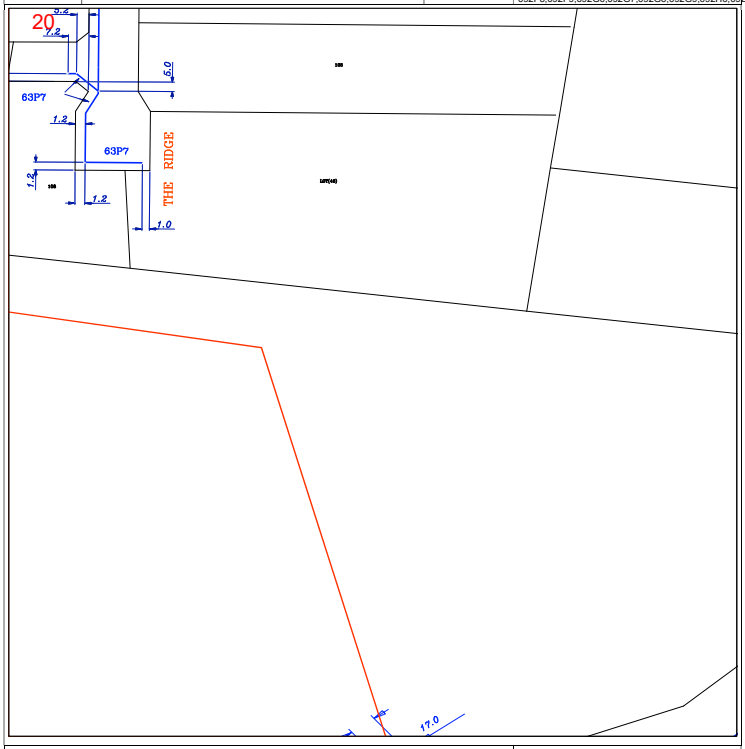

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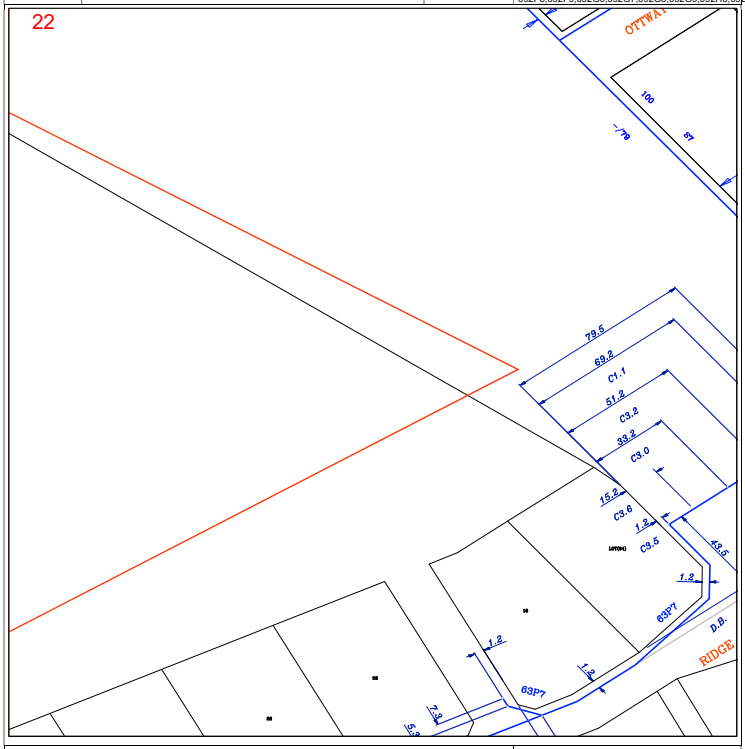

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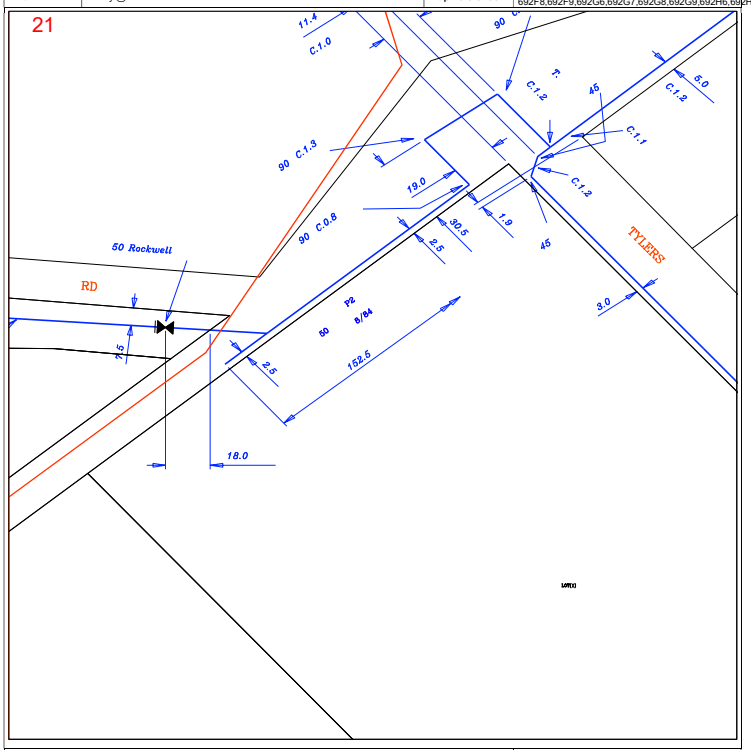

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0 0.01km

NORTH

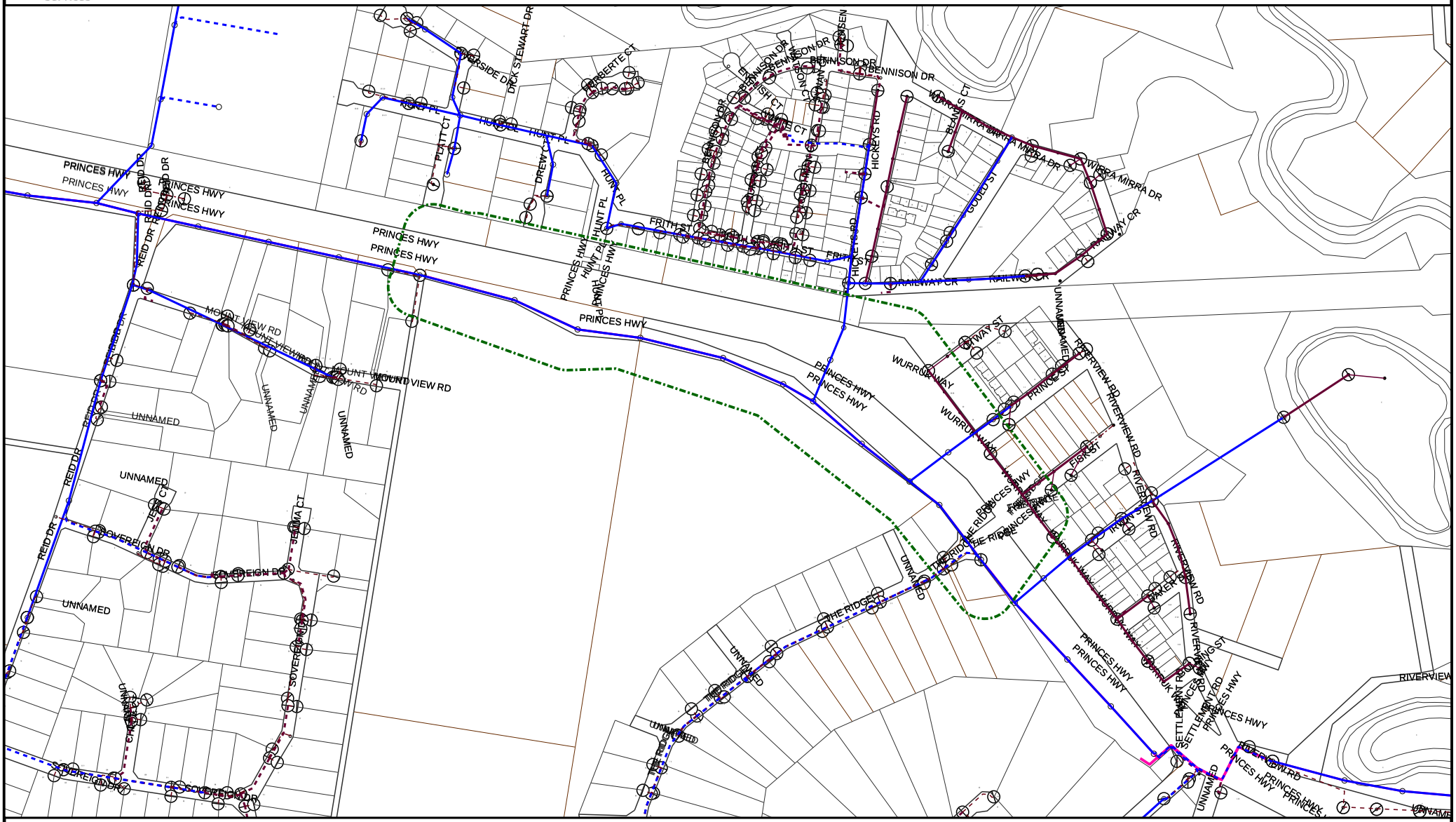
APPENDIX H: AUSNET SERVICES ELECTRICITY PLANS

LEGEND – Overview Plot of Electricity Assets

SYMBOL	NAME
	Low Voltage Underground Cable
	High Voltage Underground Cable
	Underground Cable
	Underground Pit
	Low Voltage Pole to Underground Pit
or	Low Voltage Pole
	Underground Street Lighting Cable
	Underground Street Lighting Cable
	High Voltage & Low Voltage Pole
	22kV High Voltage Pole, 66kV Pole
	High Voltage Overhead Line
	Overhead Line
	High Voltage Overhead Line
	Earthing Overhead Line
P K I G	Substation Pole, Kiosk Substation, Indoor Substation, Ground Type Substation

DIAL BEFORE YOU DIG www.1100.com.au This Legend relates to the Plot provided in response to your DBYD request.
The Plot is to be used as a guide only and not for Excavation purposes.

OVERVIEW ONLY - NOT FOR EXCAVATION PURPOSES



0m 100m 200m 300m 400m 500m 600m

Plot Date: 09/10/2020

Warning!

Please be advised this is a high level representation only and may not indicate all AusNet Services assets in the area or the exact location of identified assets.
This plan must not be used for the purpose of ascertaining asset locations for excavation. Please read all conditions and information on the attached information sheets.

Note: The information contained on this plan is only valid for 28 days from the date of issue.

Directory Reference

Melway No Map Ref

Vic Roads 344 G 6

ESMAP No Map Ref

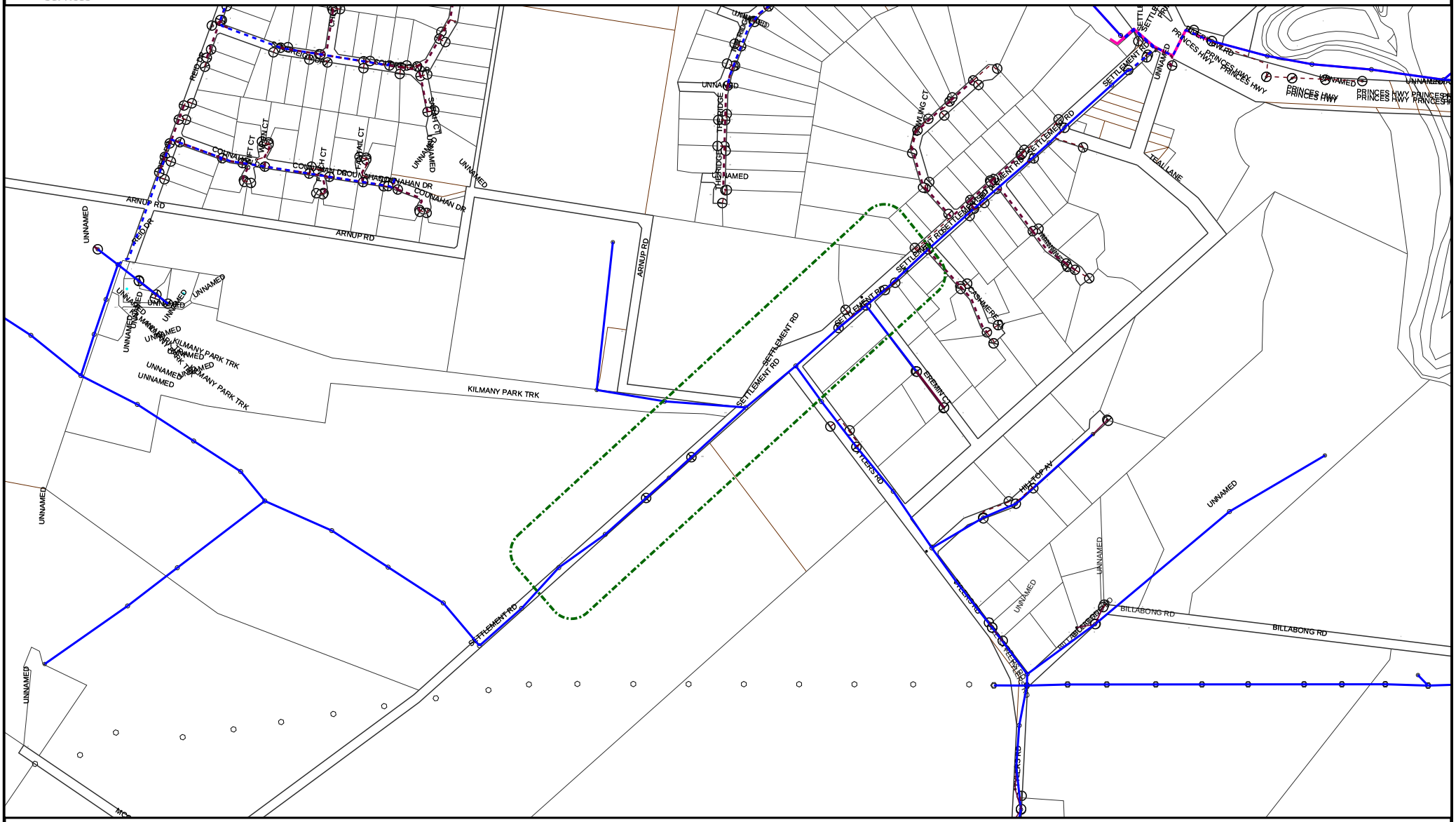
Reeve 2,500/2.18

AMG Extents

SW 501540 E 5781467 N

NE 503997 E 5782881 N

OVERVIEW ONLY - NOT FOR EXCAVATION PURPOSES



0m 200m 400m 600m 800m

Plot Date: 09/10/2020

Warning!

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Directory Reference

Melway No Map Ref

Vic Roads 344 G 9

ESMAP No Map Ref

Reeve 2,500/2.17

AMG Extents

SW 501062 E 5779861 N

NE 504252 E 5781696 N

APPENDIX I: TRAFFIC & TRANPORT ASSESSMENT

Beveridge Williams

Wurruk Growth Area, Princes Highway

Traffic and Transport Assessment

16 March 2022

DOCUMENT CONTROL DATA

	Beveridge Williams Melbourne Office 1 Glenferrie Road Malvern Vic 3144 PO Box 61 Malvern Vic 3144 Tel: (03) 9524 8888 Fax: (03) 9524 8899 www.beveridgewilliams.com.au	**Title**	Wurruk Growth Area, Princes Highway Traffic And Transport Assessment
		Author	Earl Aninipoc
		Checked	Chris Curnow
		Project Manager	Chris Curnow

Reference: 1400147-TR-REP01-5.0.DOCX

Client: Jelaryl Pty Ltd, Park Ridge Investments Pty Ltd, Pearsondale Heights Pty Ltd & Barry Hollonds

Revision Table

Rev	Description	Date	Authorised
1.0	Submission	19/12/2019	Earl Aninipoc
2.0	Client revision	23/12/2019	Earl Aninipoc
3.0	Site layout amendments	13/11/2020	Earl Aninipoc
4.0	Council comments	5/10/2021	Earl Aninipoc
5.0	DoT comments	21/10/2021	Earl Aninipoc
6.0	Site layout amendments	16/03/2022	Earl Aninipoc

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APPENDICES

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1 PREAMBLE

1.1 Introduction

Beveridge Williams has been engaged by Jelaryl Pty Ltd, Barry Hollonds, Pearsondale Heights Pty. Ltd. and Park Ridge Investments Pty. Ltd. to prepare a Traffic and Transport Report and Pedestrian and Cyclist Movement Traffic Study for a residential subdivision on Princes Highway, Wurruk.

The following report sets out the findings of this assessment based on the investigations undertaken by Beveridge Williams.

1.2 Objectives

Based on the scope of Beveridge Williams' engagement the information contained within this assessment has been prepared to respond to the following objectives:

- Traffic Impact Considerations;
- Appropriate use of existing transport-related infrastructure; and
- Access considerations.

1.3 Facts and Matters Relied Upon

In preparing this assessment, Beveridge Williams has relied upon the following facts, matters and information:

- Wellington Planning Scheme;
- Schedule 9 to Clause 43.04 (DPO9) of the Wellington Planning Scheme;
- Sale, Wurruk & Longford Structure Plan;
- Indicative Development Plan Version 7 dated 15/3/2022 prepared by Beveridge Williams; and
- Site inspection observations.

2 EXISTING CONDITIONS

2.1 Subject Site

The subject site comprises the Wurruk Growth Area, which is defined in Schedule 9 to the Development Plan Overlay Clause 43.04 (DPO) in the Wellington Planning Scheme. This area is shown on the 'Concept Plan' within this Clause, which can be seen at ***Figure 1***.

Figure 1: *Concept Plan (Source: Schedule 9 to Clause 43.04; Wellington Planning Scheme)*

The site is presently used largely for unirrigated livestock grazing, although there are some irrigated pastures in the southern portion. There are also two occupied dwellings in the southern portion of the site.

The existing conditions within the subject site and across its immediate surrounds are shown in the recent aerial photograph provided at ***Figure 2***.

Figure 2: *Aerial Photograph of the Subject Site* Source: Nearmap

2.2 Subject Site Context

The subject site is located within the Wellington Shire LGA.

It fronts:

- Princes Highway on its north side;
- Existing low-density residential developments to the east and west;
- Settlement Road on its southeast side;
- Arnup Road and Reid Drive on its west side; and,
- Open farmland to the south.

Otherwise, it is located around 3 kilometres west of the central activity district of the regional centre of Sale.

The site context plan at ***Figure 3*** demonstrates the surrounding features.

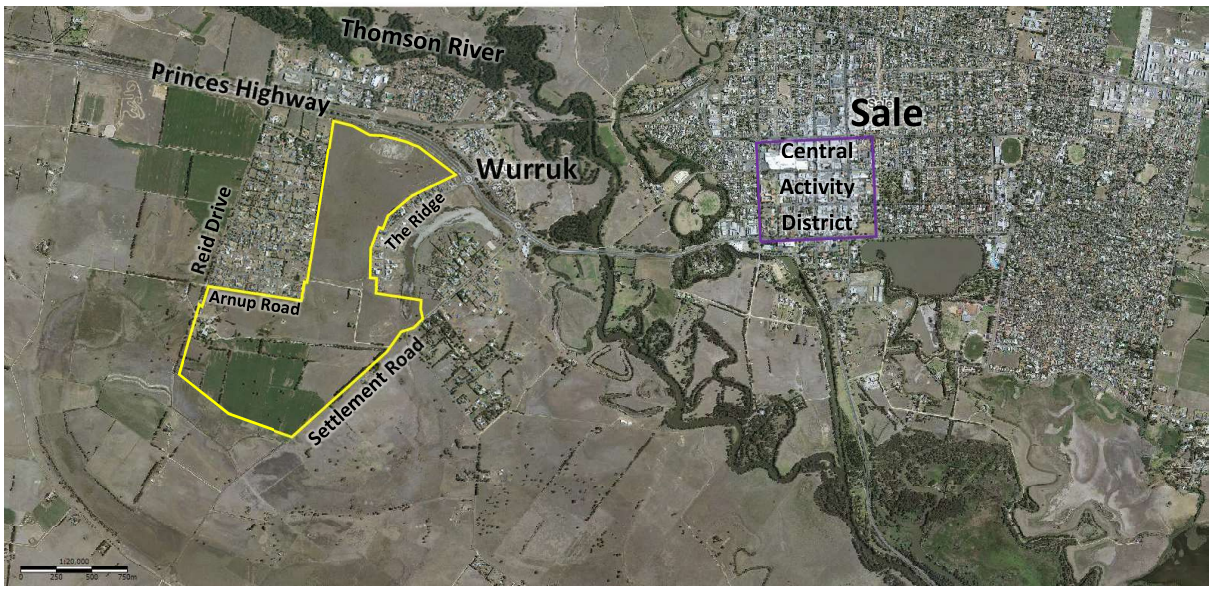


Figure 3: Aerial photograph showing the location of the Development Plan area with respect to the balance of development in Wurruk and the adjacent regional centre of Sale

As can be seen in the zoning map provided at ***Figure 4***, the subject site is located in the:

- General Residential Zone in its northern and central portions;
- Farming Zone in its southern portion; and,
- Low Density Residential Zone across the balance.

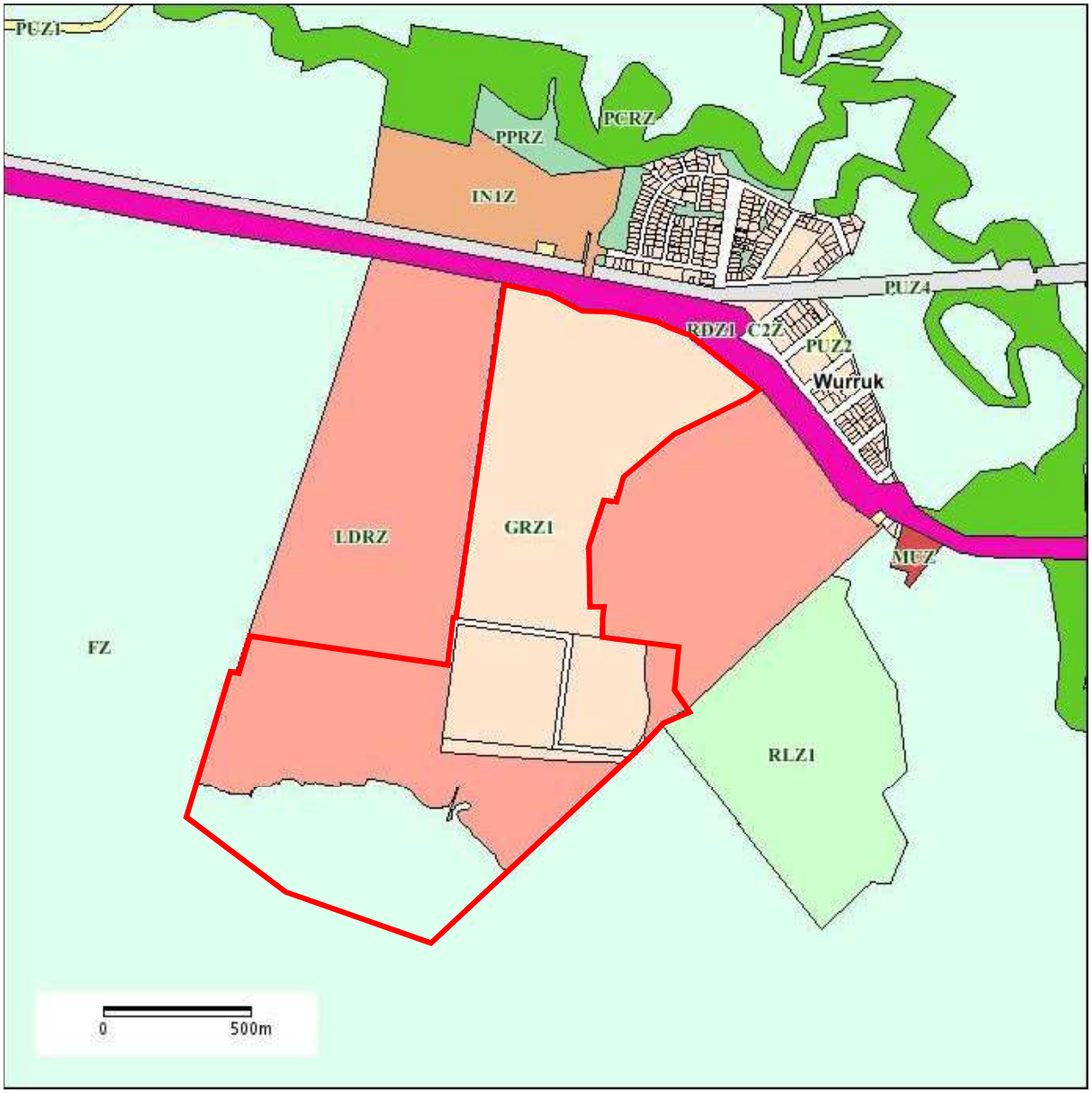


Figure 4: **Zoning Map showing the subject site outlined red**

2.3 Road Network

The four roads adjoining the subject site have the following features:

2.3.1 Princes Highway

Princes Highway is a national highway aligned in an east-west fashion on the north side of the subject site. It is managed and under the authority of the Department of Transport (DoT). The subject site's abuttal to Princes Highway includes one intersection, which is presently formed as a roundabout with three connection points, i.e. at Hunt Place. The Princes Highway has two further roundabout intersections located between the subject site and Sale, i.e. at The Ridge and Settlement Road.

The Princes Highway carriageway is a separated, four-lane, two-way road with a combination of wire rope safety barrier and guard rail on both the road sides and median. The lanes are generally 3.5m wide and the median width varies around 14m. The road operates with a posted 80km/h speed zone at the frontage of the site.

2.3.2 Hunt Place

Hunt Place forms the northern leg of the intersection on the Princes Highway that abuts the subject site. It is where the subject site will gain direct access from the Princes Highway once it is developed.

Hunt Place is a local road that serves as the sole access point for the original Wurruk residential neighbourhood and the Wurruk Industrial Estate. These developments are both located on the north side of the Bairnsdale-Melbourne Railway line, which Hunt Place crosses less than 50 metres to the north of its intersection with Princes Highway.

Hunt Place is two-lane, two-way road with a default local road speed limit of 50km/h. Figure 5 provides an aerial view of the current roundabout at the intersection of Hunt Place and the Princes Highway.

Figure 5: Aerial view of the roundabout at the intersection of Hunt Place and Princes Highway

2.3.3 The Ridge

The Ridge is a local road that continues south from its roundabout with Princes Highway. It is formed as a two-way road with a varied, non-delineated carriageway width of approximately 6m and terminates in a cul-de-sac at its southern end. The road pavement has no kerbing or pedestrian facilities and operates with a default local road speed limit of 50km/h.

The Ridge presently services 40 low-density residential lots that back onto the eastern perimeter of the subject site. It was designed to provide 5 vehicle connection points into the subject site. However, the proposed development plan only seeks to utilise two for motorised vehicular traffic, i.e. the two closest to the intersection with Princes Highway. They will be designed to accommodate normal vehicular traffic and one will be designed to encourage only limited vehicle access.

The Ridge will provide an alternative local road access point from the Princes Highway to the subject site.

The aerial photograph at Figure 6 shows The Ridge estate and its roundabout intersection with the Princes Highway.

Figure 6: **Aerial view of The Ridge estate and its intersection with Princes Highway**

2.3.4 Settlement Road

Settlement Road is a local road that also continues south from its roundabout with Princes Highway. It is a two-lane, two-way road with a varied width of approximately 6.5m. The road has no kerbing or pedestrian facilities and operates with a posted speed limit of 80km/h for the northern half of its abuttal with the subject site and 100km/h across the balance of the abuttal.

Settlement Road presently services:

- a BP Service Centre, which is located adjacent to the intersection with Princes Highway;
- low-density residential estates that are located on either side right up to its frontage with the subject;
- the subject site, for which it presently provides access to the two dwellings thereon;
- Arnup Road, which is a gravel road that bisects the southern portion of the subject site before connecting to Reid Drive further to the west; and,
- Farmland to the southwest of the subject;

Settlement Road meets the subject site at its easternmost tip. It forms an intersection with Arnup Road near the juncture of the low density residential zoned and general residential zoned areas and within the subject site, as can be seen at Figure 7.

Figure 7: **Aerial view of the intersection between Arnup Road and Settlement Road with the land use zoning overlaid**

2.3.5 Arnup Road

Arnup Road is a local gravel road that bisects the southern portion of the subject site and connects to Reid Drive, which is a north-south running road to the west, as shown at Figure 8.

Figure 8: **Aerial view of the intersection between Arnup Road and Reid Drive**

2.4 Traffic Volumes

Turning movement counts were conducted along Princes Highway at the intersections of Hunt Place, The Ridge and Settlement Road on Wednesday 31 July 2019 between 7am-7pm.

The morning peak hour occurred between 8:15-9:15 and the afternoon peak hour occurred between 3:30-4:30. The full survey is included in Appendix A, with the peak hour turning counts shown below

Of particular note, 90% of departure morning traffic travelled towards Sale to the east, with a variance of afternoon arrival traffic with west/east origin ratios of 80:20 at Hunt Place, 10:90 at south leg of The Ridge, and 15:85 at Settlement Road.

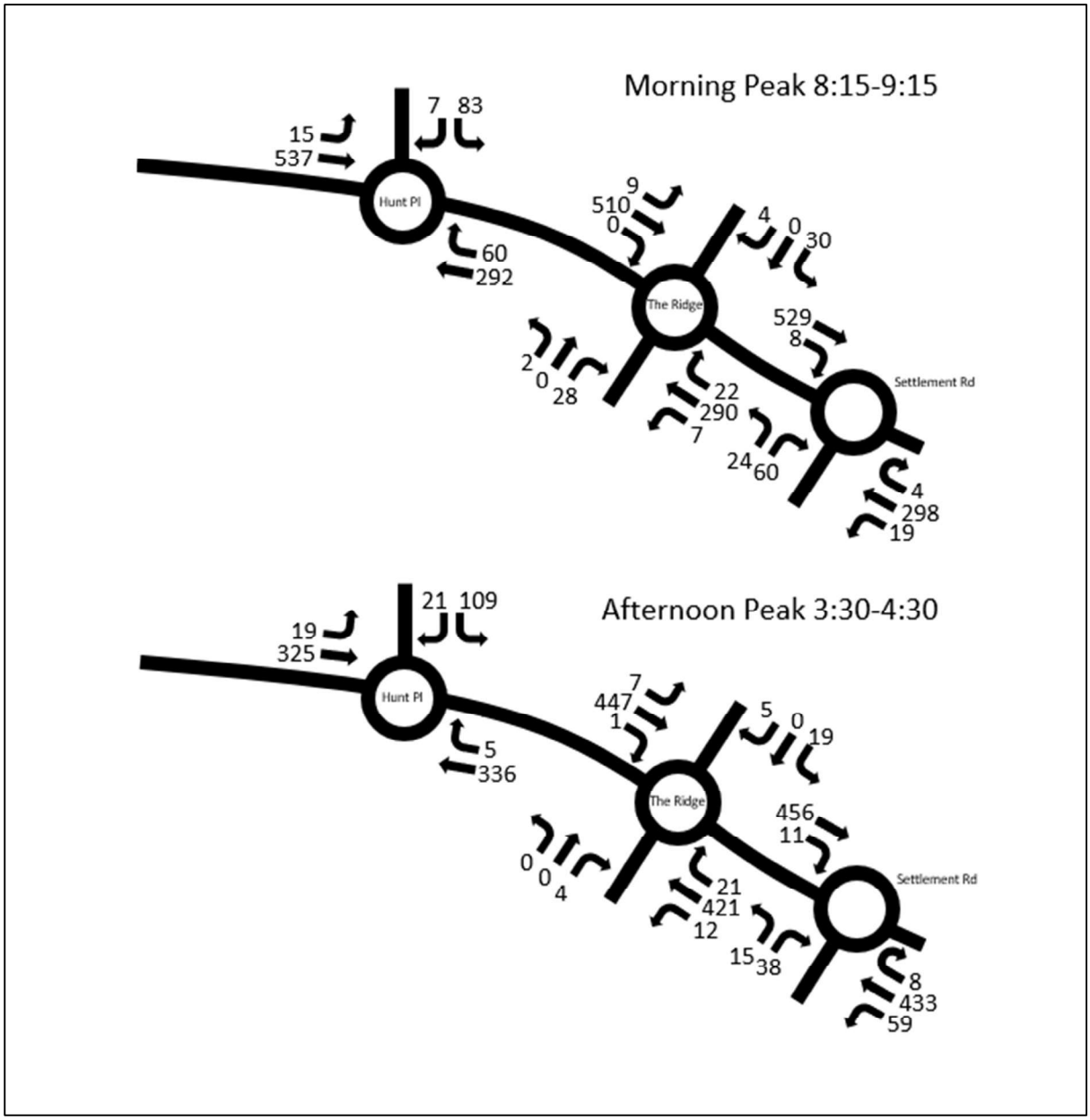


Figure 9: Peak Hour Turning Movement Counts
Source: Nationwide Traffic Surveys

2.5 Existing Intersection Operation

Based on the surveyed traffic volumes outlined in Figure 9, an assessment of the current operation of the intersections was carried as SIDRA model.

SIDRA intersection is a computer package developed to assess the operating characteristics of an intersection. Key metrics calculated by SIDRA include:

- Degree of saturation and level of service;
- Average delay; and
- 95th percentile queue length.

Degree of saturation is the ratio of traffic undertaking a movement within the intersection when compared to the maximum capacity calculated for that movement. The level of service is derived from the degree of saturation in the following way:

- Up to 0.6 Excellent
- 0.6 to 0.7 Very good
- 0.7 to 0.8 Good
- 0.8 to 0.9 Fair
- 0.9 to 1.0 Poor
- Over 1.0 Very poor

It is considered acceptable that some critical movements within an intersection operate in the range of 0.9 to 1.0 during peak periods, reflecting actual conditions of a substantial proportion of suburban intersections.

Average delay is the delay in seconds that can be expected over all the vehicles making a movement in the intersection during the peak hour.

The **95th percentile queue** represents the maximum queue length in metres expected in 95% of queues during the peak hour.

The results of the SIDRA intersection analysis of the existing intersection functionality are presented below.

Approach	Morning Peak			Afternoon Peak		
	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*
Hunt Pl	0.108	5.9	3	0.138	5.8	3.9
Princes Highway West	0.208	3.8	7.1	0.117	3.6	3.6
Princes Highway East	0.121	4.6	4.5	0.122	3.7	4.4

Figure 10: Existing intersection conditions – Princes Highway/Hunt Place

Approach	Morning Peak			Afternoon Peak		
	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*
The Ridge North	0.042	6	1.1	0.028	9.5	0.8
The Ridge South	0.033	9.9	0.9	0.007	8.9	0.2
Princes Highway West	0.194	3.8	6.9	0.163	3.7	5.3
Princes Highway East	0.109	4	3.8	0.161	3.9	6

Figure 11: Existing intersection conditions – Princes Highway/The Ridge

Approach	Morning Peak			Afternoon Peak		
	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*
Settlement Road	0.088	8.8	2.4	0.060	9.3	1.6
Princes Highway West	0.204	3.9	7.7	0.173	3.9	6.4
Princes Highway East	0.111	3.7	3.6	0.172	3.8	5.8

Figure 12: Existing intersection conditions – Princes Highway/The Ridge

A review of the above data indicates that the intersections along Princes Highway at Hunt Place, The Ridge and Settlement Road all operate with a Level of Service (LOS) of A with DoS of generally less than 0.2. The existing morning and afternoon peak hour operation of the intersections are considered to be 'Excellent' according to the SIDRA model.

2.6 Reid Drive Intersection

Early iterations of the proposed subdivision did not provide connections through the existing residential area that currently access the Princes Highway at Reid Drive. There were, therefore, wasn't a count conducted at Reid Drive when the three roundabouts were surveyed. As the current site layout proposes a connection, there are potential trips that would now travel via Reid Drive.

To assess the existing conditions, the number of lots in the existing residential area were tallied, with a total of 125 properties. Applying a rate of 10 vehicles per dwelling per day, the estimated volumes turning in and out of Reid Drive is 1,250 vehicles per day, or 125 during the peak periods. Applying the east/west directional splits from the existing intersections that were surveyed, the indicative turning movement counts are calculated below.

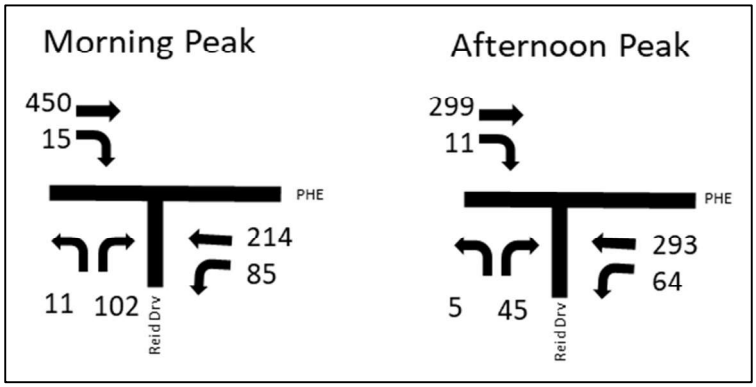


Figure 13: Reid Drive Calculated Turning Movements

Due to the wide median break, the intersection model was broken into two parts comprising the northern half and the southern half, which was networked to process the site as a whole. The SIDRA output is summarised below.

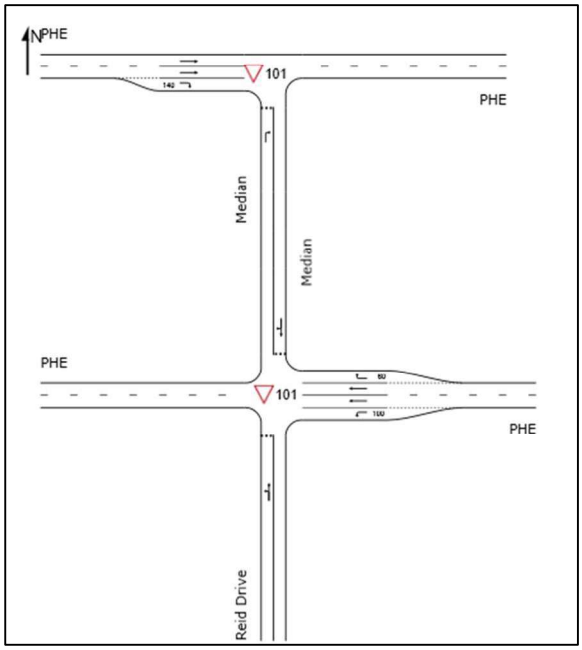


Figure 14: Reid Drive SIDRA Model Layout

Approach	Morning Peak			Afternoon Peak		
	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*
NB Median	0.022	4.3	0.3	0.018	4.8	0.2
SB Median	0.152	5.8	1.8	0.054	4.3	0.6
Reid Drive	0.140	6.8	1.9	0.068	7.3	0.9
Princes Highway West	0.129	0.2	0	0.086	0.2	0
Princes Highway East	0.062	1.6	0	0.084	1.0	0

Figure 15: Reid Drive Existing Conditions

The existing conditions show the intersection is currently operating well within capacity. The median break storage at 17m is nowhere near close to being exceeded.

3 SALE, WURRUK AND LONGFORD STRUCTURE PLAN

3.1 General

The Sale, Wurruk and Longford Structure Plan (Structure Plan) was prepared in 2010 by Wellington Shire to direct the development of the land within the precinct, which includes the subject site. The structure plan provides a Master Plan for the precinct which considers the mixture of land uses, indicative configuration of the road network, location of parks, activity centres and the infrastructure requirements for the future community.

The subject site context with respect to the Structure Plan is illustrated in Figure 16 below.

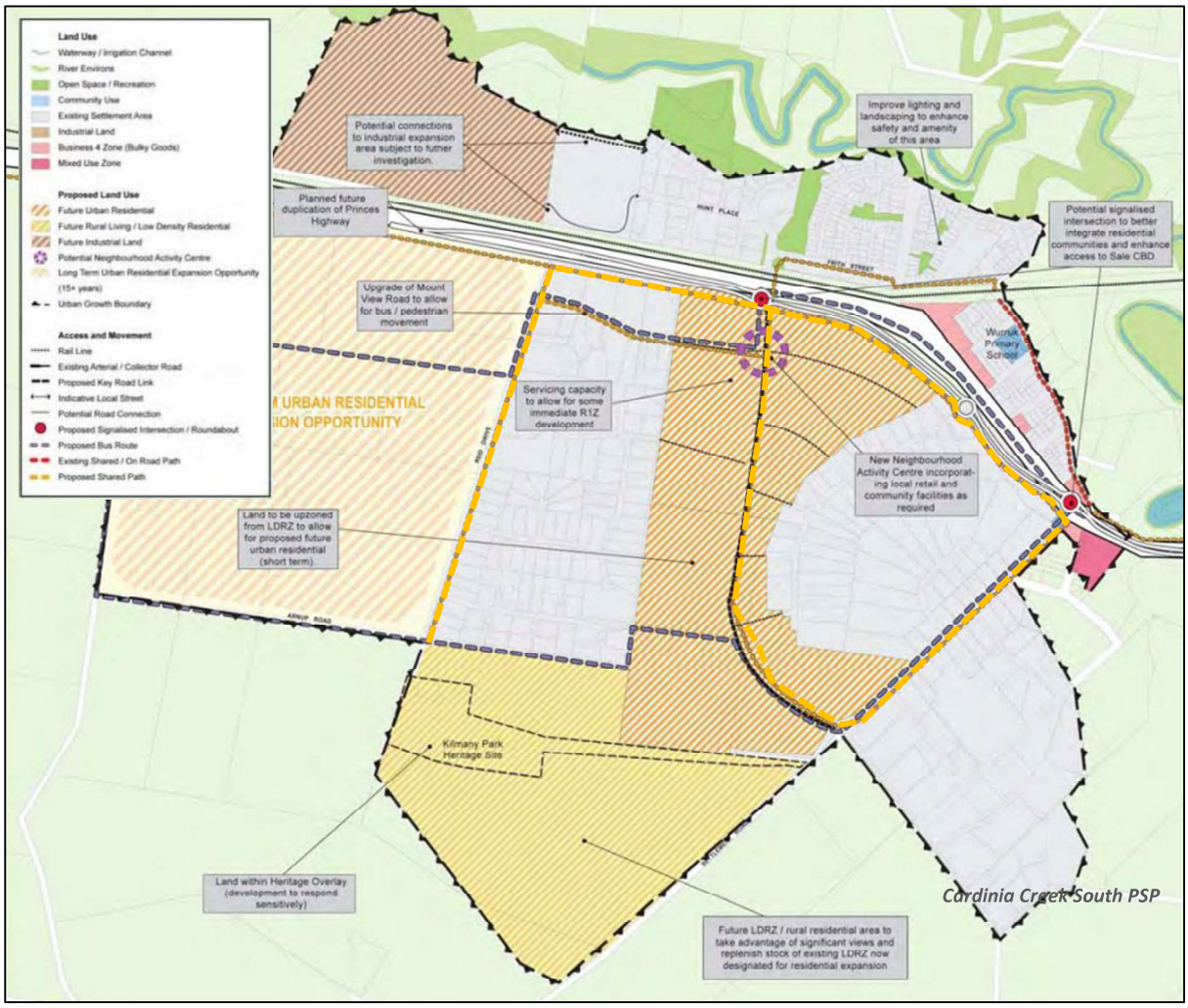


Figure 16: Wurruk Growth Area Structure Plan
Source: Sale, Wurruk and Longford Structure Plan

4 PROPOSAL

4.1 General

During the preparation of Schedule 9 to the Development Plan Overlay, Council prepared the 'Concept Plan' shown at Figure 17. This plan sets anticipated lot densities for a future development plan and nominates 4 key vehicle access points, i.e. at Hunt Place, The Ridge, Mount View Drive and Reid Drive. A copy of this plan is provided at Appendix A.

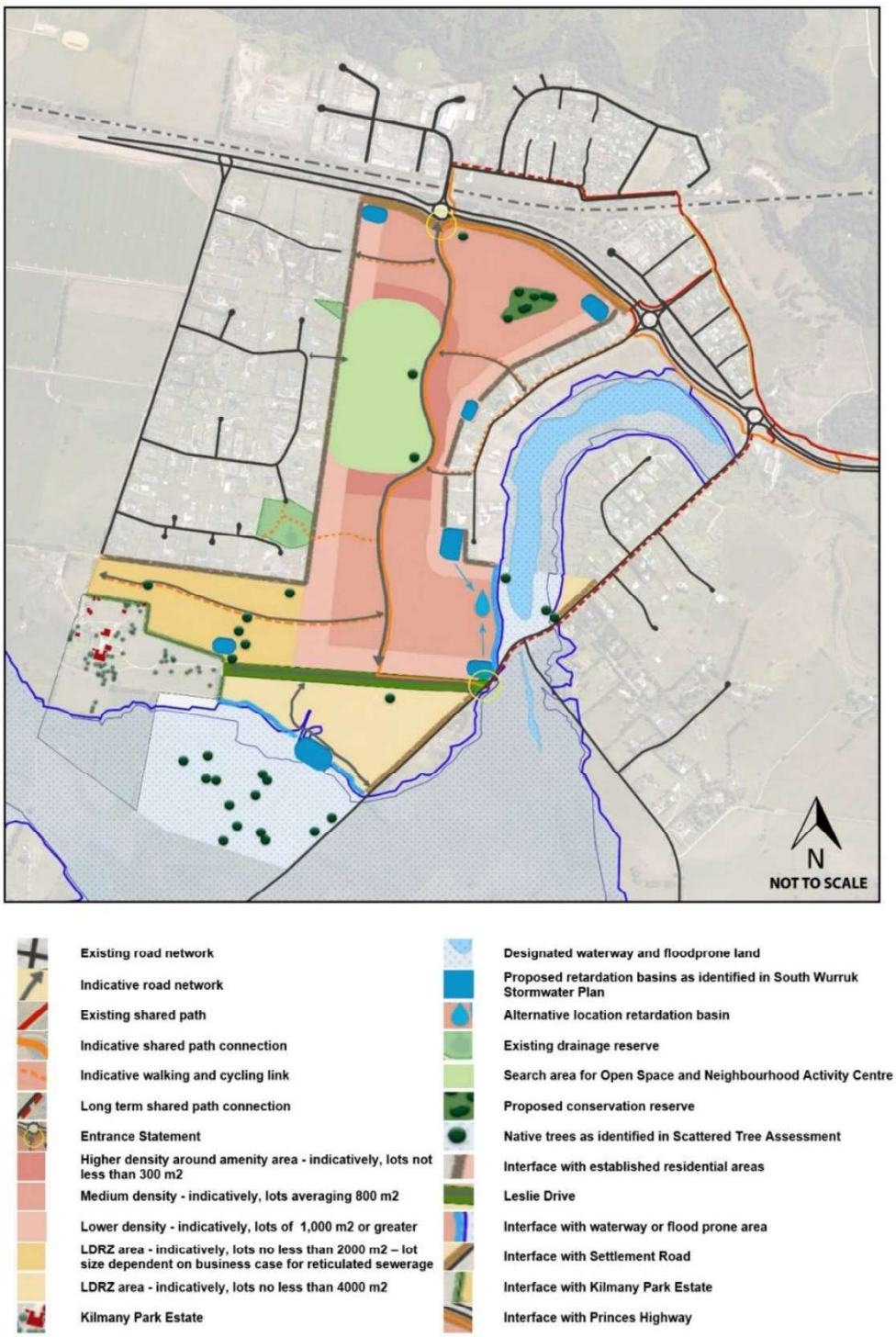


Figure 17: Concept Plan (excerpt from Clause 43.04, Schedule 9; Wellington Planning Scheme)

Beveridge Williams has prepared an Indicative Development Plan for the subject site based on the densities foreshadowed in the Concept Plan, taking into account the capacity of all low density residential zoned land to be developed with a minimum lot size of 2,000m² if sewer is provided.

This plan confirms that development of the subject site at the densities foreshadowed in the Concept Plan at Figure 15 could provide up to 1,256 low and standard density residential lots. An excerpt of the Indicative Development Plan prepared by Beveridge Williams to match that outcome is provided below. This plan is reproduced in Appendix A.

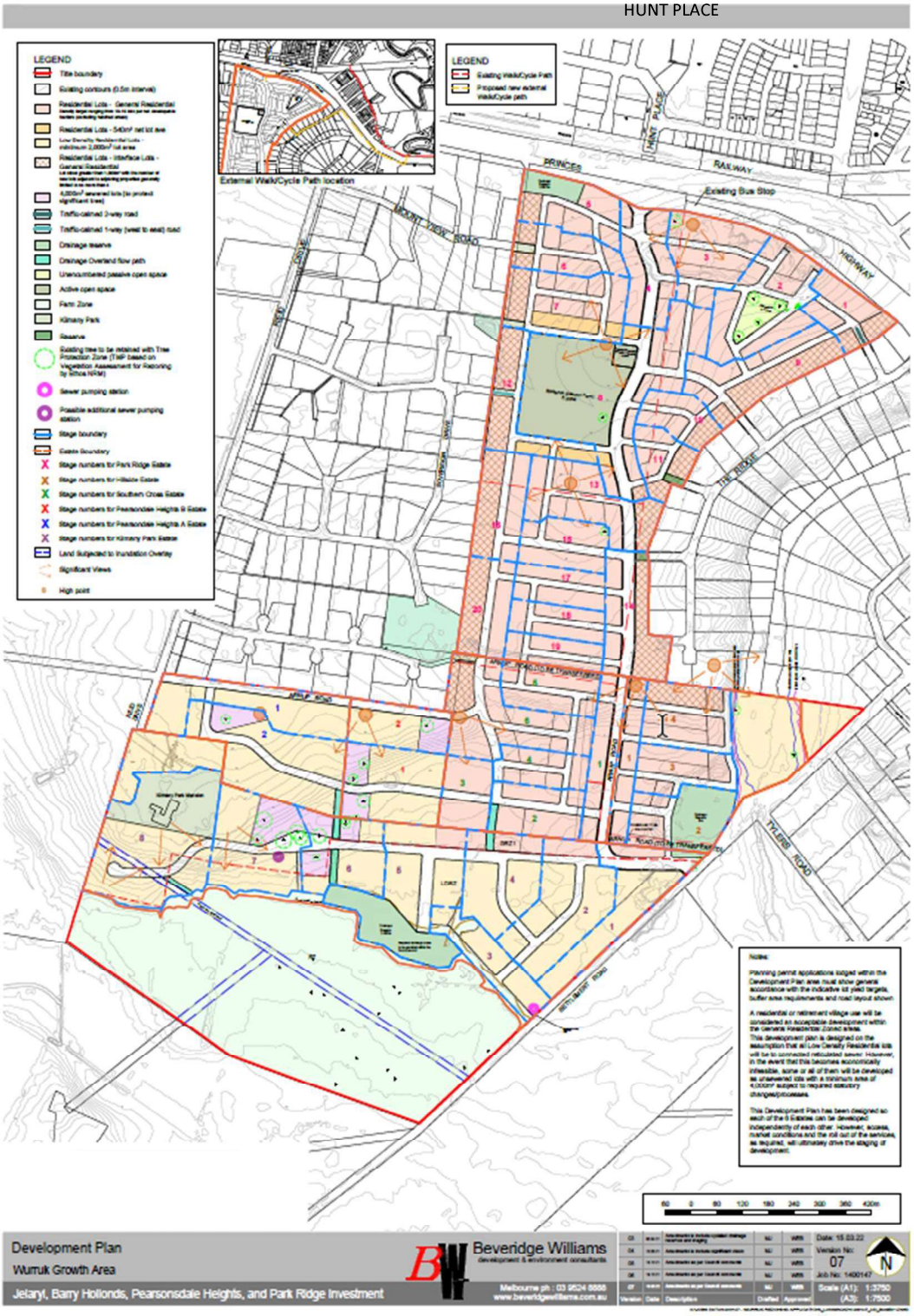


Figure 18: Indicative Development Plan with proposed site access points shown

4.2 Site Access

It is proposed develop the site with access at 7 separate locations:

1. Hunt Place
2. The Ridge – intersection closest to the Princes Highway;
3. The Ridge – second intersection from the Princes Highway;
4. Settlement Road;
5. Sovereign Drive; and,
6. Arnup Road.

These access points are proposed to be provided as follows:

4.2.1 Hunt Place

This access point will be constructed as the fourth and final leg of the existing roundabout intersection that Hunt Place forms with the Princes Highway. It will enjoy access to the two existing lanes within the roundabout and will become part of the highway up to the frontage of the subject site. As such it will be under the control of the Department of Transport, rather than Council. This intersection will be constructed in the early stages of the development of the northern portion of the subject site to allow the majority of traffic to be funnelled onto Princes Highway so as to avoid putting excessive pressure on surrounding local roads.

4.2.2 The Ridge – intersection 1

This access point will be constructed as part of the early stages of the development of the northern portion of the subject site. It will provide access to the northern portion of the development plan area early in the development. It will be a two-way, bitumen-sealed roadway that will connect to The Ridge near its intersection with the Princes Highway and provide pedestrian and vehicular access to the broader road, cycle path and footpath networks. It will remain under the control of Council.

4.2.3 The Ridge – intersection 2

This access point will connect to The Ridge and provide access to the northern portion of the development plan area early in the development. It will be constructed as a 'traffic-calmed' roadway that prioritises pedestrian and cyclist use over motorised vehicular traffic in order to limit the attractiveness of The Ridge to motorised vehicles as a thoroughfare into the development on the subject site. It will remain under the control of Council.

4.2.4 Settlement Road

This access point will provide the primary connection into the southern portion of the estate. A new road will be constructed between this intersection and the roundabout on the Princes Highway at Hunt Place to create a key connector street through the general residential zoned areas. It will sit within a road reserve with width of around 30 metres and be constructed in accordance with Council standards at the juncture of the low density residential zone and the general residential zones. There are two historic oak trees at this juncture that are growing on either side of an existing crossover. The gap between these trees is insufficient for a new intersection and connector road to be constructed between them. So, the new intersection will sit slightly to the south of the oak trees in order to allow their preservation.

4.2.5 Sovereign Drive

The subject site does not presently have frontage to Sovereign Drive, which is a local, bitumen-sealed road that provides access to lots within the low density residential estate to the subject site's west. However, as part of the development of that estate, Council required the creation of a 20 metre wide reserve that can be used to provide a road connection from the subject site into Sovereign Drive. An aerial view of this reserve is shown at Figure 16. A one-way, traffic-calmed road connection will be constructed as part of the proposed development with preference given to eastbound traffic coming from the existing estate. This will avoid traffic from the development on the subject site choosing to use Sovereign Drive as an alternative egress to Princes Highway.

Figure 19: Sovereign Drive Access Location

4.2.6 Arnup Road

The existing road frontage to Arnup Road at the western end of the site will be used to provide access into the low density residential estate on the south side of the road reserve. It is anticipated that this portion of Arnup Road will be required to be upgraded to a bitumen standard as part of the development works.

An excerpt of the Indicative Development Plan prepared by Beveridge Williams with the 7 proposed site access points shown is provided at Figure 17.

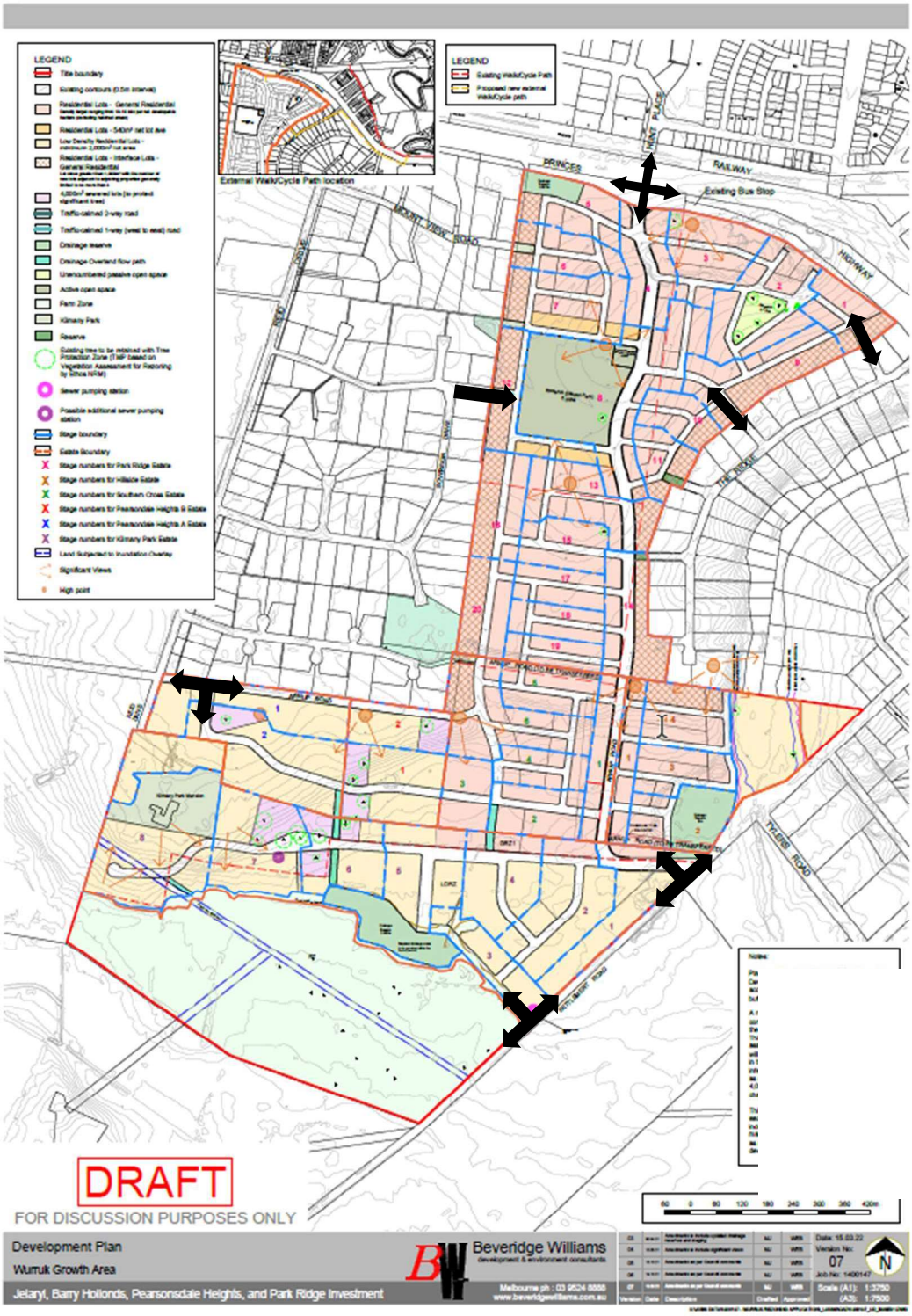


Figure 20: Indicative Development Plan with proposed site access points shown

4.3 Proposed Internal Road Network Hierarchy

As is also shown at Figure 20, apart from the main north-south running connector street, the proposed development plan provides a network of Access Streets. These Access Streets provide the second tier of the road network across the development. For the most part, the access streets branch off the main connector street to the east and west to provide the connections to the The Ridge, Arnup Road and the low density residential areas in the southwest portions of the development plan area. There is also a north-south running Access Street that runs parallel to the main connector street and provides a 'secondary spine' to the development. As shown in the road section at Figure 20, the Access Streets will sit in 20 metre wide road reserves and provide a walk/cycle path down one side and a footpath down the other. The network has been arranged in this way to provide safe, continuous connections between the various stages of the development for pedestrians, cyclists and motorised vehicles, whilst also complementing the stormwater conveyance requirements of the proposed stormwater management system.

Indicative cross sections for the three road types, i.e. Connector Street (Figure 18), Access Streets (Figure 19) and Local Roads (Figure 20) are provided below.

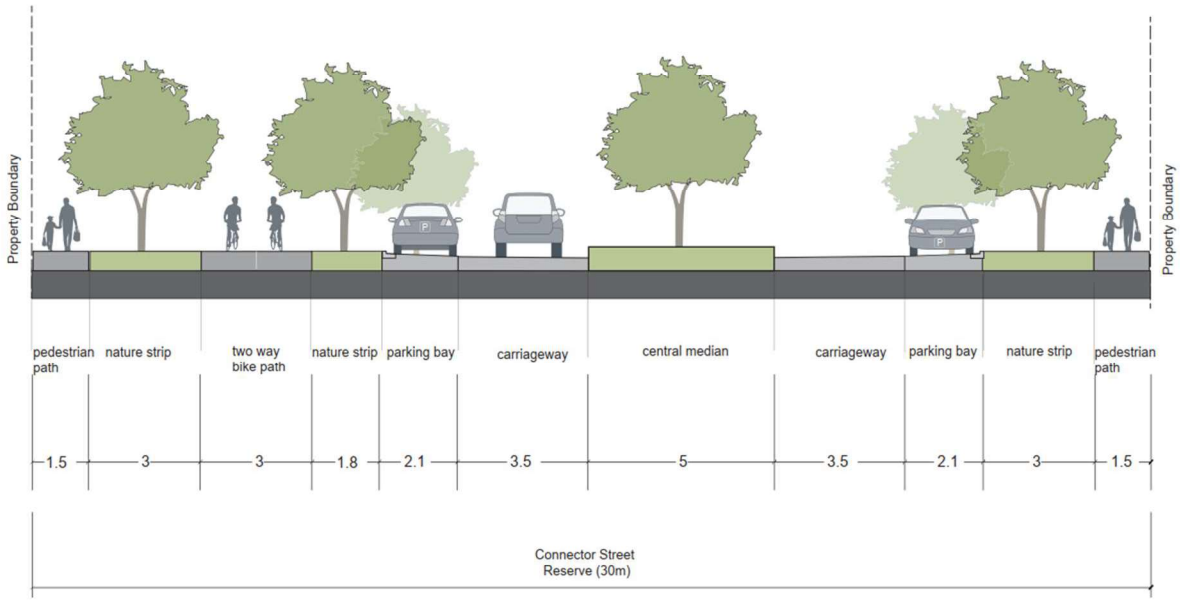


Figure 21: Cross Section 30m Connector Road

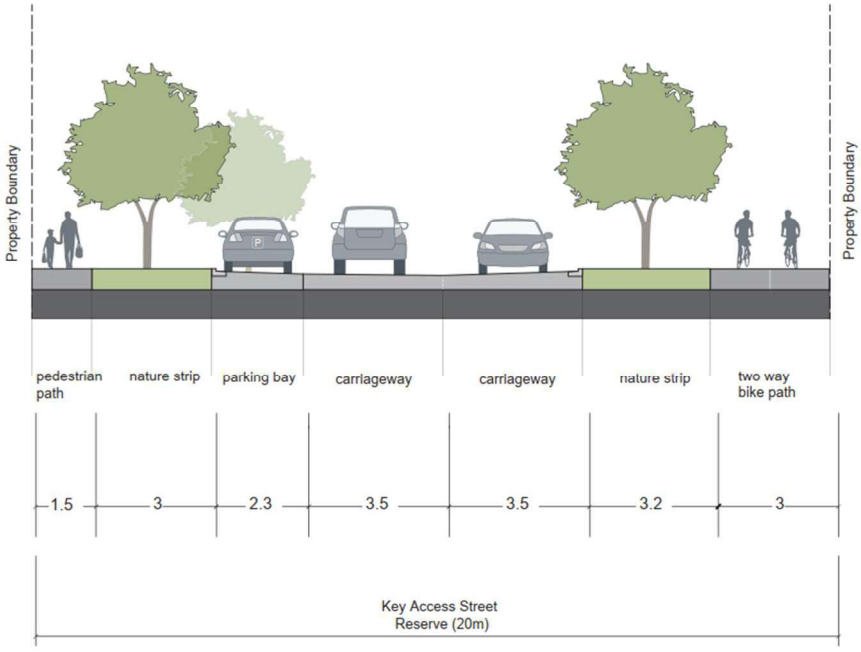


Figure 22: Cross Section 20m Key Access Street

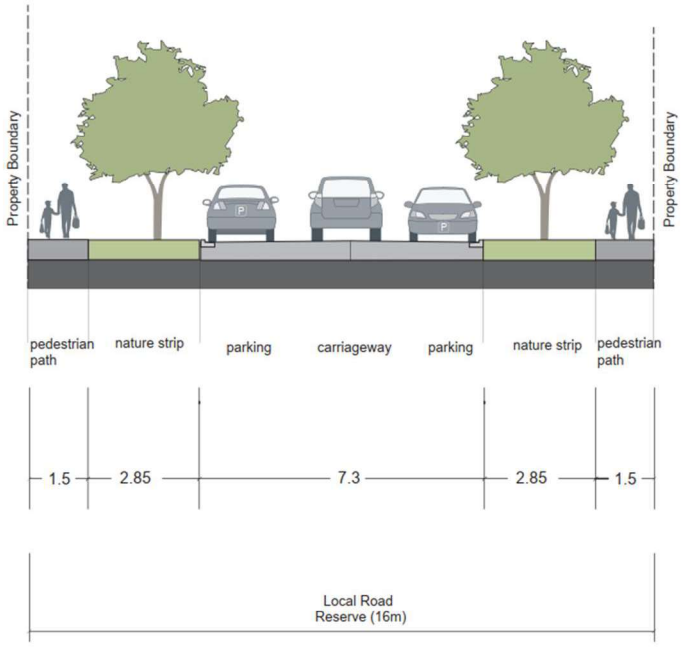


Figure 23: Cross Section 16m Local Access Road

4.4 Local Area Traffic Management

The proposed road network generally comprises a series of Access Streets connecting to a Connector Road to provide access to the external road network. The internal road network has been configured to avoid the creation of cross intersections with intersections typically taking the form of typical or staggered/off-set t-intersections.

Consideration has been given to ensure that an appropriate street layout is provided that seeks to minimise vehicle speeds with the majority of straight road lengths not exceeding 240m.

Typically, the internal local road network is to be configured to minimise the requirements for traffic calming treatments through the use of a discontinuous road network and regular use of acute bends in roads. However, at locations where there is an opportunity for the target vehicle speeds to be exceeded the use of traffic calming devices or treatments may be warranted.

Where possible, traffic calming devices should be developed in conjunction with intersection treatments to comprise vertical plateaus (

Figure 24) or narrowed in the form of modified T-intersections, refer

Figure 25**.**

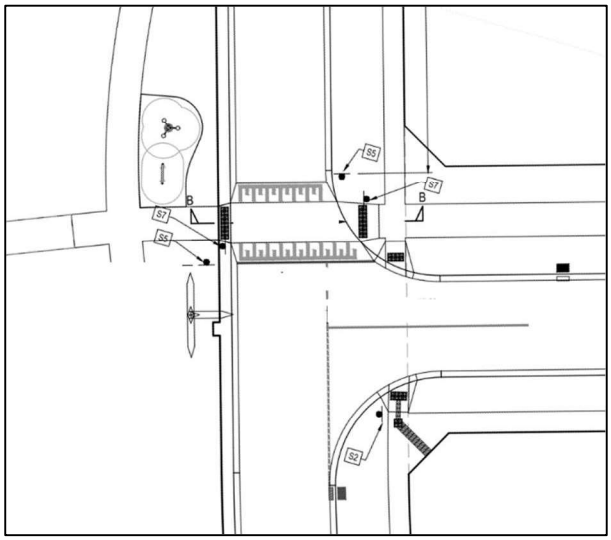


Figure 24: Example of Intersection Raised Plateau

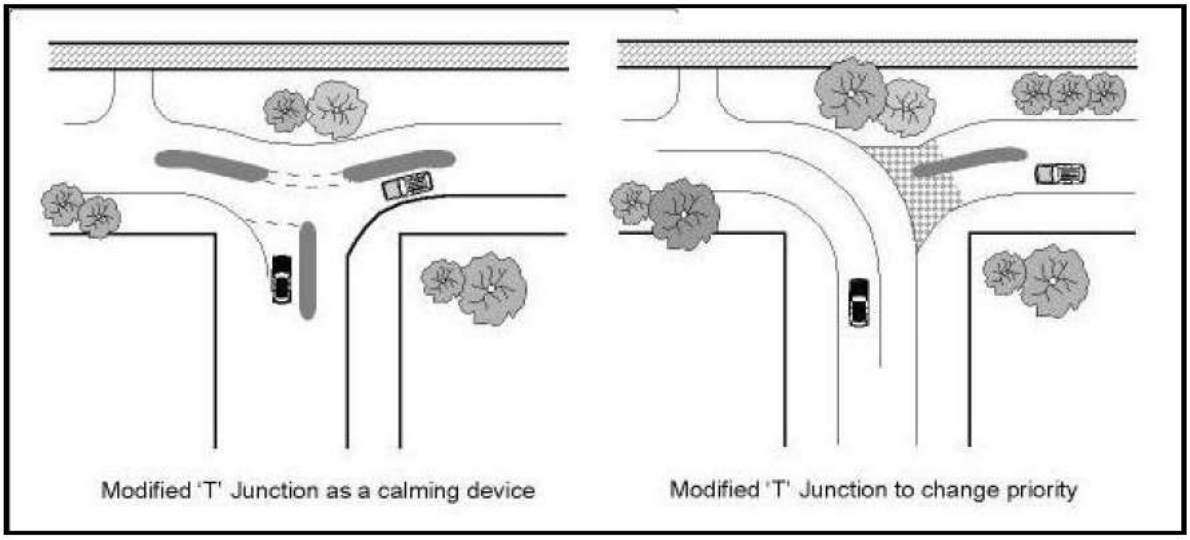


Figure 25: Typical Modified T-Intersection Treatment

If traffic calming treatments are not able to be implemented as part of an intersection design a mid-block location may be considered. Such treatments should have regard to access of surrounding lots and preferably take the form of localised narrowing as illustrated in Figure 26, chicane as illustrated in Figure 27 or a raised plateau as illustrated in

Figure 28. Alternate treatments may be considered as required.

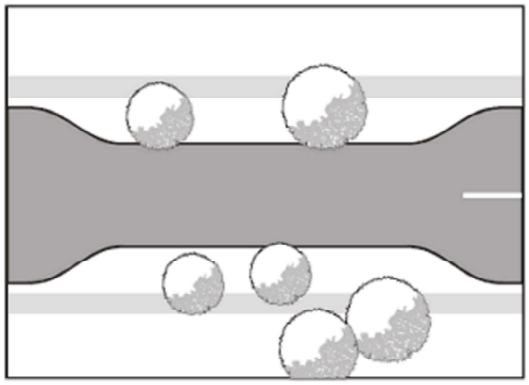


Figure 26: Example Single Lane Narrowing

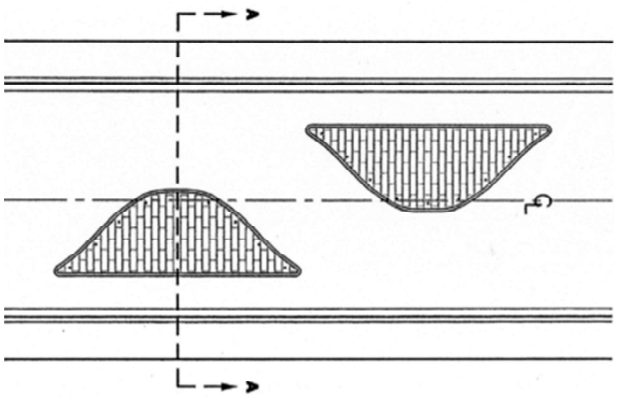


Figure 27: Typical Chicane Treatment

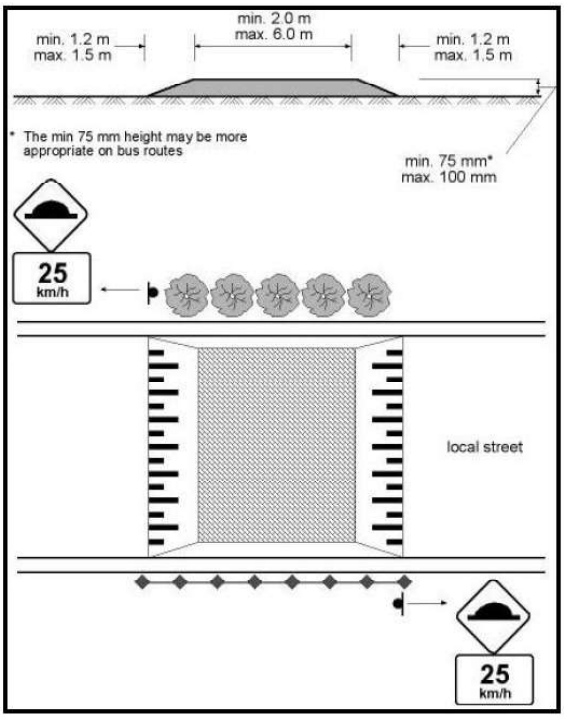


Figure 28: Typical Raised Plateau Treatment

Having regard to the proposed internal road network layout there are a number of straight sections of local road in excess of 250m that would be candidates for traffic calming devices. The indicative locations are provided below.

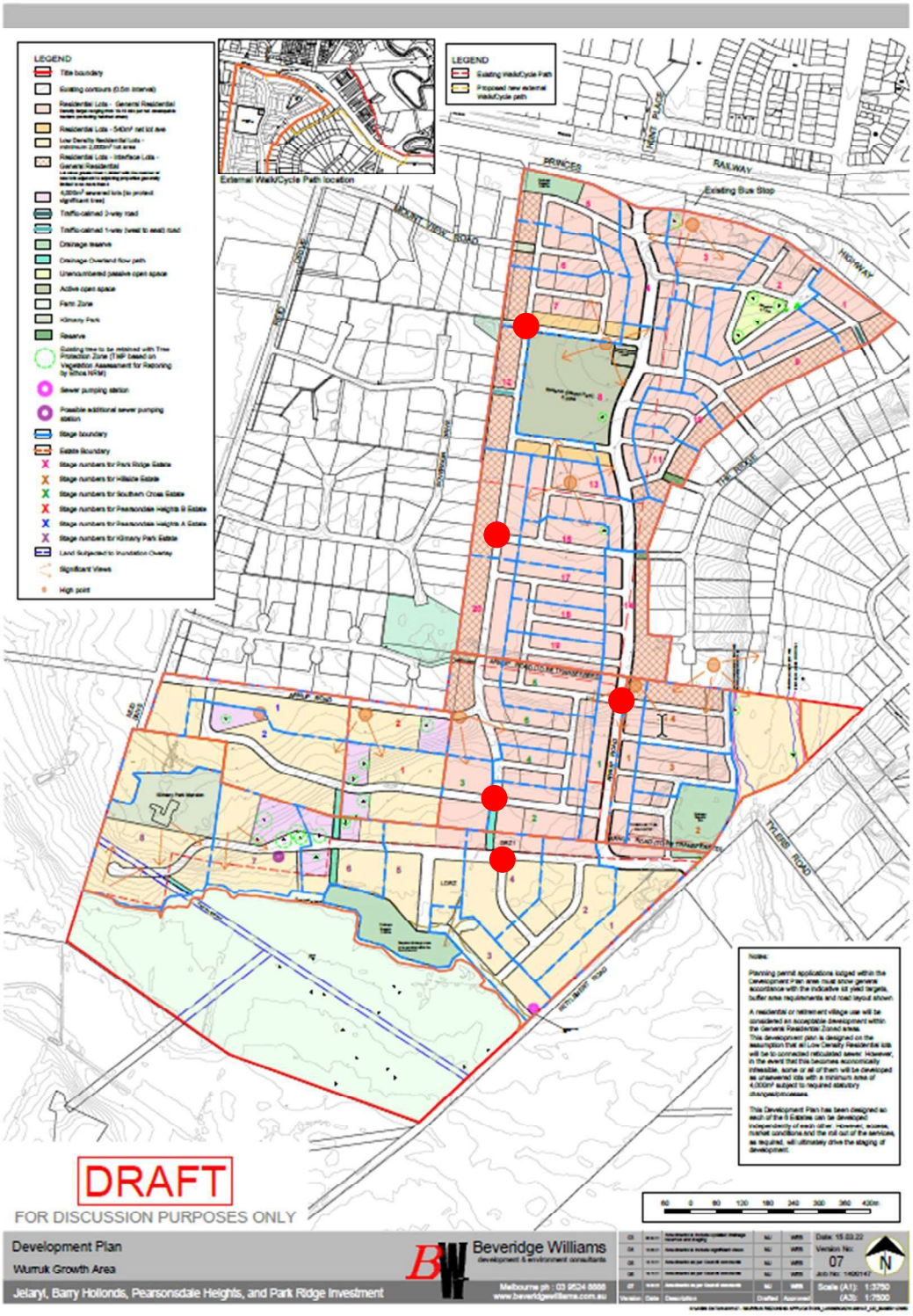


Figure 29: Indicative LATM Device Locations

5 TRAFFIC IMPACT CONSIDERATIONS

5.1 Traffic Generation

It is generally accepted that residential lots in outer suburban areas generate vehicular traffic at a rate of 10 vehicle movements per day (with 10% of movements occurring in the peak hours). In areas of higher density or with access to good public transport lower traffic generation rates can be recorded. For the purposes of this assessment the rate of 10 vehicle movements per day per lot has been adopted.

Application of this rate to the potential 1,256 lots equates to a daily traffic generation of 12,560 vehicle movements or 1,256 vehicle movements in the peak hours.

Based on the proposed development composition of the subject site it is considered that all vehicle trips will have an external origin or destination and therefore all vehicles will enter or exit the site.

The above traffic generation rate is inclusive of all trip types and includes work, recreation, shopping and educational trips. This is true for traffic generated by adjacent developments and those contained within the Wurruk Growth Area.

5.2 Traffic Distribution

Based on the existing traffic distribution percentages demonstrated in Section 2.4, the following post-development traffic distribution is assumed:

- 90% of traffic will egress in the morning, 10% will ingress;
- 40% of traffic will egress in the afternoon, 60% will ingress;
- Morning egress 90% to the east (towards Sale);
- Morning egress 10% to the west;
- Morning ingress 85% from the east (from Sale);
- Morning ingress 15% from the west;
- Afternoon egress 90% to the east (towards Sale);
- Afternoon egress 10% to the west;
- Afternoon ingress 85% to the east (towards Sale); and
- Afternoon ingress 15% to the west.

Further to the destination splits, based on the general locations of the access roads, it was assumed that the percentage of subdivisional traffic is as follows:

- 80% from Hunt Place;
- 10% from The Ridge;
- 5% from Arnup Road/Reid Drive (1% via Sovereign Drive); and
- 5% from Settlement Road.

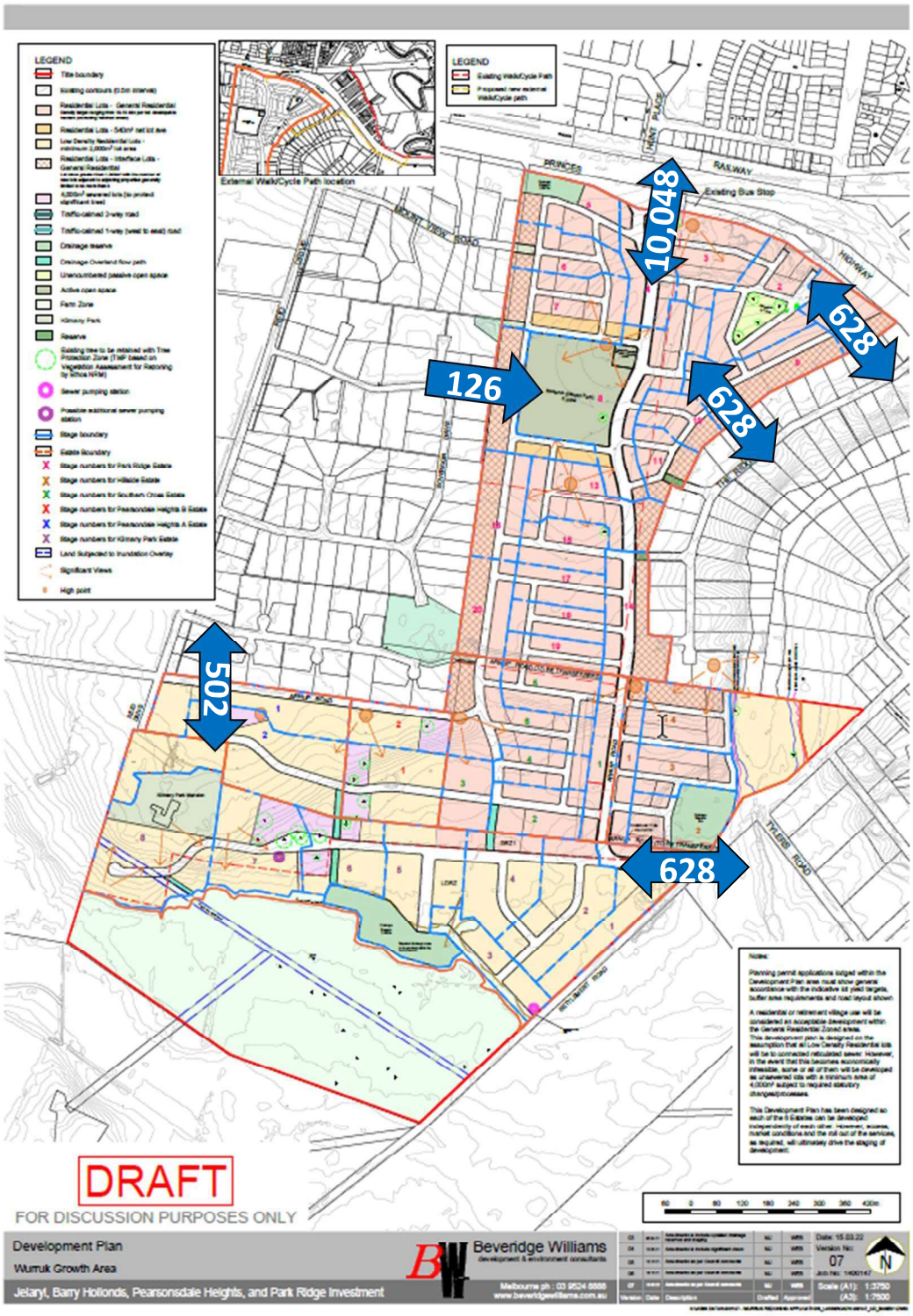


Figure 30: Post Development Access Point Volumes

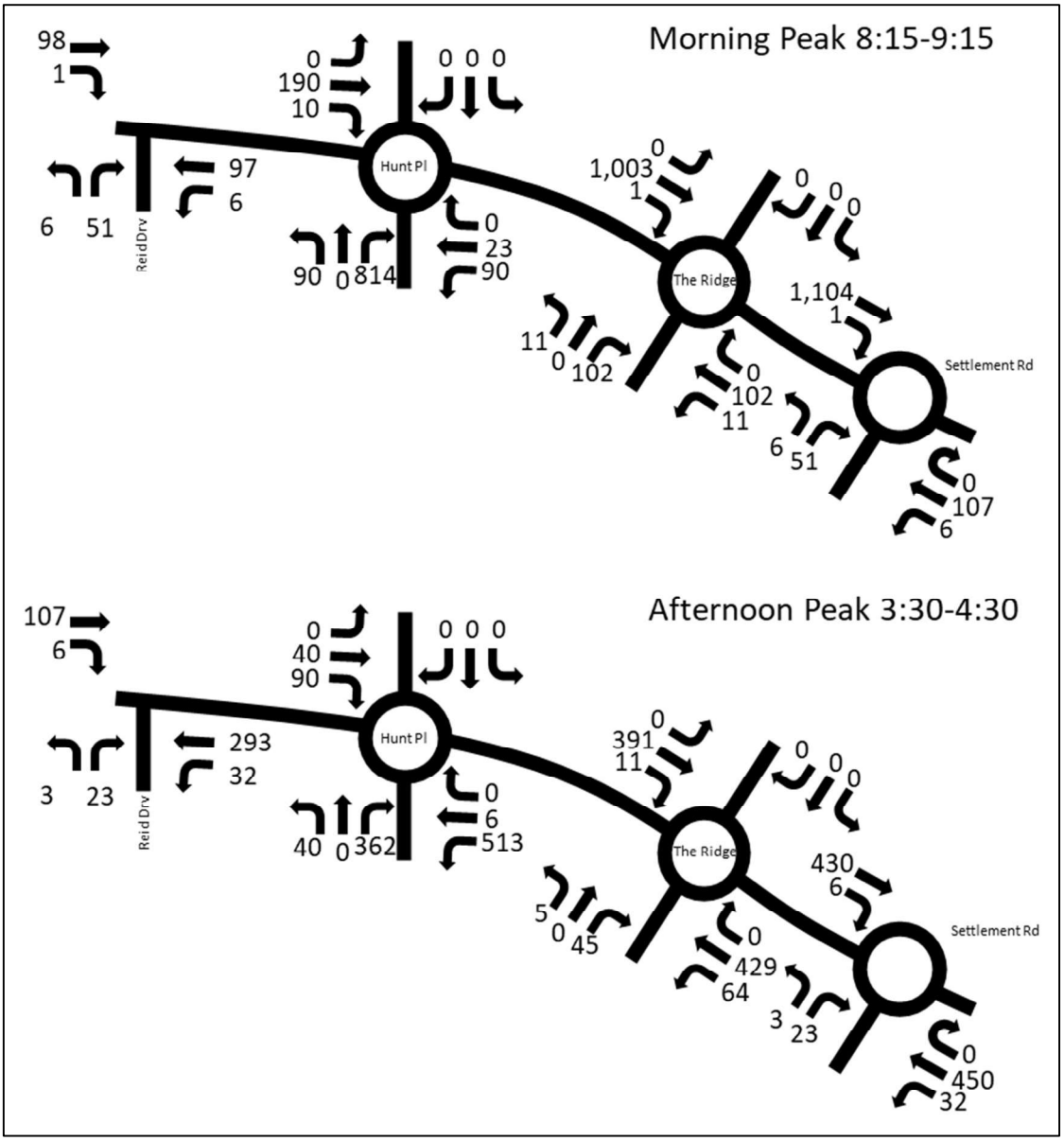


Figure 31: Additional Post Development Peak Hour Turning Movements on the Princes Highway

5.3 Intersection Modelling

5.3.1 Post Development Model

Based on the calculated post development traffic volumes outlined in the previous section, an assessment of the post development operation of the intersections were undertaken. In order to facilitate morning egress traffic in the order of 835 vehicles, it was found that a dedicated right turn lane on the Hunt Place southern leg was required.

The SIDRA results are demonstrated below.

Approach	Morning Peak			Afternoon Peak		
	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*
Hunt Pl North	0.246	13.4	9.8	0.188	7.74	6.2
Hunt Pl South	0.722	12.3	45.9	0.322	10.4	12.9
Princes Highway West	0.634	12.5	44.4	0.234	6.2	9.5
Princes Highway East	0.154	4.5	6	0.366	4.2	15.5

Figure 32: Existing intersection conditions – Princes Highway/Hunt Place

Approach	Morning Peak			Afternoon Peak		
	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*
The Ridge North	0.078	9.7	5.8	0.035	10.7	1
The Ridge South	0.161	10.4	4.6	0.078	11.5	2.2
Princes Highway West	0.624	4.8	39.4	0.325	4	14.2
Princes Highway East	0.148	3.9	5..8	0.338	3.9	15

Figure 33: Existing intersection conditions – Princes Highway/The Ridge

Approach	Morning Peak			Afternoon Peak		
	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*
Settlement Road	0.145	9.6	4.1	0.107	10.9	3
Princes Highway West	0.632	4.5	43.1	0.338	3.7	14.3
Princes Highway East	0.149	3.7	5.6	0.299	4	13.2

Figure 34: Existing intersection conditions – Princes Highway/The Ridge

Approach	Morning Peak			Afternoon Peak		
	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*
NB Median	0.026	5.4	0.3	0.046	9.5	0.5
SB Median	0.262	734	3.4	0.192	6.5	2.3
Reid Drive	0.243	8.1	3.4	0.122	11.2	1.4
Princes Highway West	0.158	0.2	0	0.145	0.2	0
Princes Highway East	0.089	1.3	0	0.168	0.8	0

Figure 35: Existing intersection conditions – Princes Highway/Reid Drive

According to the SIDRA analysis, the intersections continue to operate under 'Excellent' conditions. As expected, the main access at Hunt Place south, operates with a higher level of service during the morning peak period, operating at a DOS of 0.72 or 'Good' conditions. The 95th percentile queue accounts for less than 7 vehicles in the dedicated right turning lane. It is noted that the left lane may have a right turn allocation in future to lessen the DOS even further.

The 700m mid-block capacity along Princes Highway is not close to being exceeded, with the longest 95th percentile queue on the western leg at Hunt Place of 44m, which accounts for approximately 6 vehicles. This is the longest expected queue on the highway across all intersections.

The median break at Reid Drive is also nowhere near being exceeded.

5.3.2 Hunt Place Intersection

The post-development model found that a dedicated right turn lane would be required. A concept drawing is provided below. As the carriageway width of the roundabout is currently 2-lanes, there are no changes required within the intersection.

Figure 36: Hunt Place South Leg with Dedicated Right Turning Lane

The northern leg queuing is not expected to exceed the 37m between the roundabout and level crossing. The longest post-development queue will be approximately 10m during the morning peak.

5.3.3 10-year Growth Model

The 10-year growth scenario was analysed to ensure the Princes Highway interfaces were appropriate over a 10-year life span. The environmental growth was based on 2%, with the south leg of Hunt Place set at 0% as it is already assumed that the proposed development is already complete.

Approach	Morning Peak			Afternoon Peak		
	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*
Hunt Pl North	0.346	16.8	14.9	0.251	8.6	8.9
Hunt Pl South	0.752	13.2	55.1	0.410	11	18.3
Princes Highway West	0.779	17.2	69.3	0.301	6.6	13.4
Princes Highway East	0.186	4.5	7.6	0.447	4.3	21.2

Figure 37: 10-year Growth conditions – Princes Highway/Hunt Place

Approach	Morning Peak			Afternoon Peak		
	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*
The Ridge North	0.130	12.1	4.7	0.046	11.2	1.3
The Ridge South	0.201	10.8	5.9	0.101	12.0	2.9
Princes Highway West	0.770	6.3	71.5	0.396	4.1	19
Princes Highway East	0.178	3.9	7.4	0.408	3.9	20

Figure 38: 10-year Growth conditions – Princes Highway/The Ridge

Approach	Morning Peak			Afternoon Peak		
	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*	Degree of Saturation	Average Delay *(sec)*	95th Percentile Queue *(m)*
Settlement Road	0.182	9.9	5.3	0.124	11.2	3.5
Princes Highway West	0.653	4.7	45.3	0.373	3.8	16.8
Princes Highway East	0.169	3.7	6.8	0.282	4.1	12.2

Figure 39: 10-year Growth conditions – Princes Highway/The Ridge

Based on the 10-year growth scenarios, the intersections continue to operate with an overall LOS of A. With the additional right turning lane on the southern leg of Hunt Place, the DOS maintains within 'Very Good' operation.

Based on the preceding intersection analysis, it is considered that the proposed development will not have a significant adverse impact on the existing road network, particularly the Princes Highway.

6 CYCLIST AND PEDESTRIAN PATH NETWORK

6.1 Structure Plan Shared Path Network

The Structure Plan identifies a key opportunity for *"improving accessibility to all members of the community by better connecting key destinations with where people live through the enhancement of public transport services and improvements to key pedestrian / cycle connections that provide for safe, convenient and direct movement".*

The excerpt of the Structure Plan in Figure 16 indicates a shared path network from the proposed development to cross Princes Highway near Hunt Place. The path continues along the south side of Princes Highway and south to the connector road that loops back to the highway via Settlement Road.

6.2 Proposed Shared Path Network

As can be seen from the Indicative Development Plan at Figure 18, the inclusion of walk/cycle paths within the main connector street and the second-tier access streets automatically creates a much more substantial network of shared paths that run through the estate. This network also provides external connections that reach into the middle of the two adjoining low density residential estates to the east and west.

The plan at Figure 14 shows the existing and proposed shared path networks, along with the network proposed through the Structure Plan. Relative to the path alignment shown in the Structure Plan, the location of shared paths along internal subdivisional roads will provide superior passive surveillance for path users. This increased level of pedestrian/cyclist safety should secure higher path patronage.

As can also be seen at Figure 29, the proposed path also seeks to reroute the shared path interface with the existing path so that it will meet it after running:

- Through portion of the existing low density residential estate at The Ridge;
- Along the south side of Princes Highway;
- Across Settlement Road at the intersection with Princes Highway;
- Across the frontage of the BP Service Station (remaining within the Princes Highway Road reserve);
- Adjacent to an existing gabion wall on the south side of the Princes Highway reserve. The path will run along a short section of constructed boardwalk in this portion to ensure it remains above an existing depression. A photograph of this portion of the path network is provided at Figure x; and,
- Up to and under an existing bridge to the east of the service station. Photographs showing the underside of the bridge and the approach to the existing path network are provided at Figures 31 and 32.

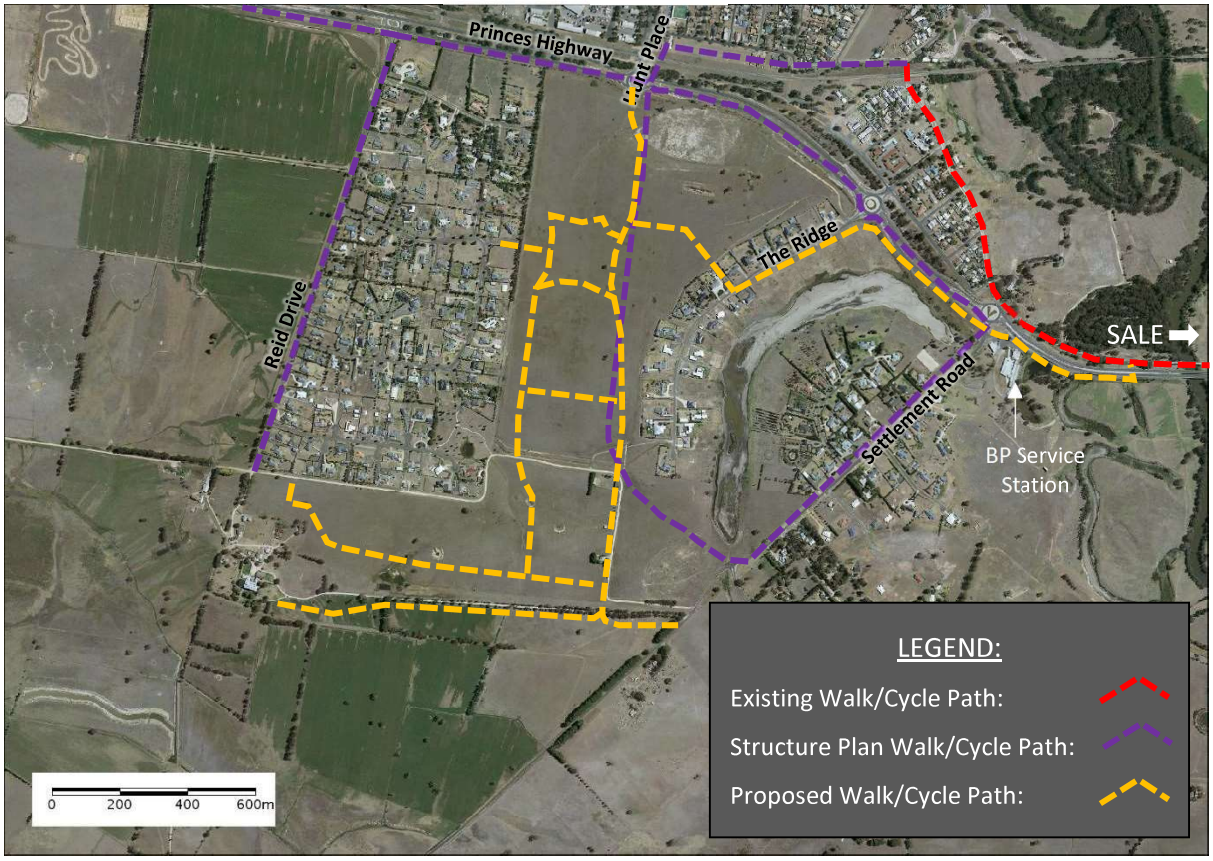


Figure 40: Map showing the existing, proposed and Structure Plan Walk/Cycle Path alignments across Wurruk

Figure 41: Existing Shared Path

Figure 42: Existing Unformed Ramps

Figure 43: Proposed Shared Path Bridge Interface

Figure 44: Proposed Boardwalk Location

6.3 Discussion

The proposed relocation of the shared path network takes into account some risks identified with the network proposed through the Structure Plan. The Princes Highway crossing near Hunt Place would likely require construction of a pedestrian overpass, which presents inherent vandalisation opportunities and the risk of objects falling onto highway traffic. To ensure height clearances, the required ramping system would need a greater vertical displacement than going underneath the bridge will. It is noted that an overpass would also preclude this section of Princes Highway being used as a route for over-dimensional loads.

An additional risk inherent in the Structure Plan's nominated route is the requirement for the shared path to interface with the level crossing at Hunt Place, which unnecessarily introduces the potential for rail conflict and will require additional rail infrastructure.

Cycle path user behaviour indicates if any point of a bike route is unsafe or inconvenient, the entire route is likely not to be used despite an issue being localised. A big ramp system with a rail interface could be considered as localised points of inconvenience or unsafety.

During a meeting with DoT on 2 July 2019, it was indicated that the likely preferred alignment would involve the underpass. DoT officers advised that pedestrian connectivity between both sides of Wurruk and Sale was investigated. They advised that in discussing potential pedestrian facilities with the Wurruk Primary School, school management expressed the view that the school would not expand due to the extra growth within Wurruk. This inferred that children in the Wurruk growth area would likely attend schools in Sale.

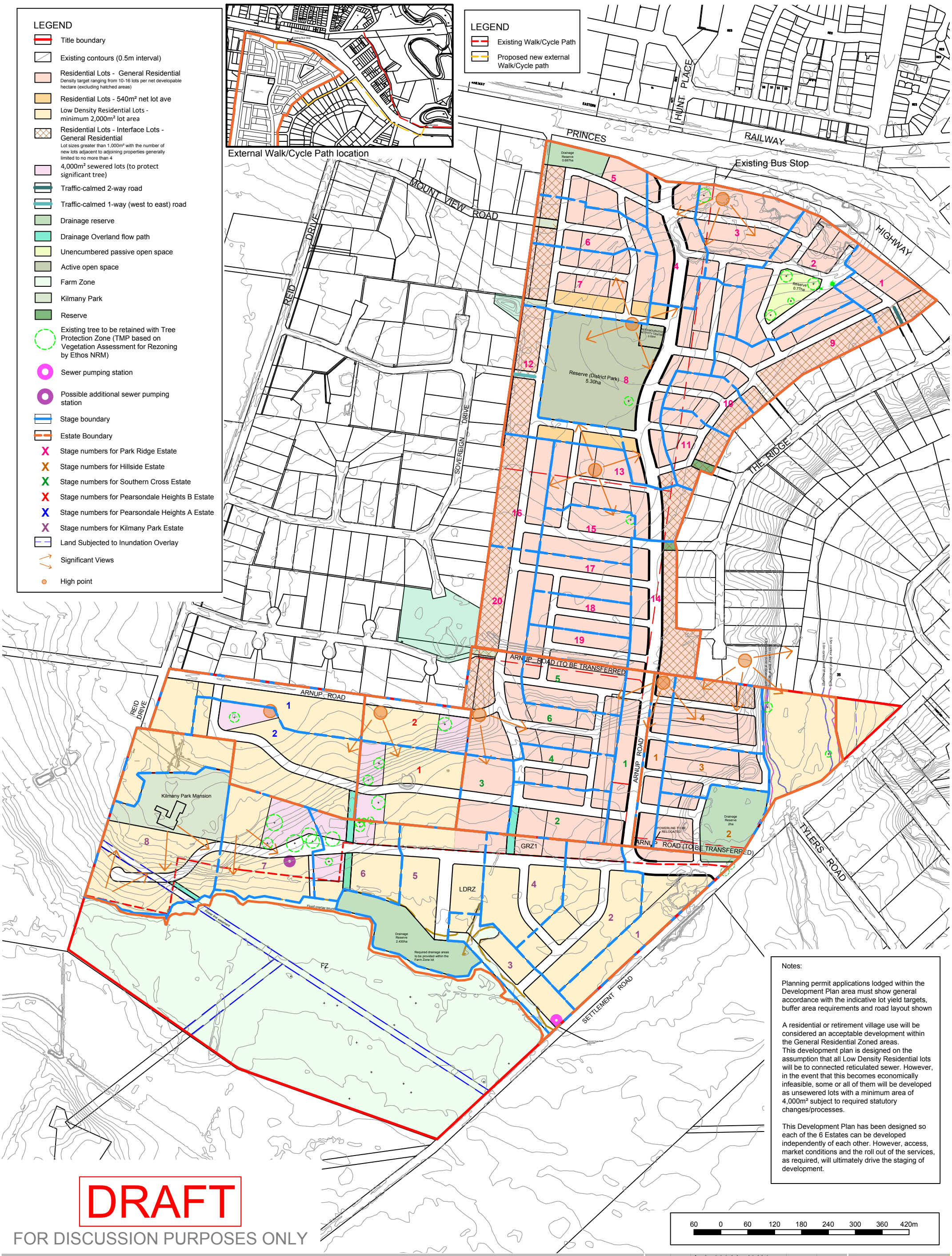
It is likely that the generated pedestrian need for the growth area in Wurruk would exclusively require shared path connectivity to Sale as opposed to the existing parts of Wurruk on the north side of the highway. The proposed alignment of the shared path network would provide a safer and more direct route between the proposed development and Sale.

7 SUMMARY AND CONCLUSIONS

Based on the preceding it is summarised that:

- The subject site is located within the extent of the Sale, Wurruk and Longford Structure Plan.
- The development plan will provide the capacity to develop the subject site in line with the Structure Plan and will generate predominantly residential subdivision of up to 1,256 lots.
- It is anticipated that the subject site may generate traffic at a rate of up to 10 movements per lot per day equivalent to 12,560 vehicle movements per day.
- The internal road network of the subject site is proposed to comprise a series of Access Streets connecting to a central Connector Road that connects the Princes Highway to Settlement Road.
- The shared path network providing connectivity to Sale is proposed to cross Princes Highway underneath the bridge to the east of Settlement Road.
- It is considered that sufficient road network planning and capacity will be available in the short and long term to cater for traffic generated by the subject site.

APPENDIX A. Development Plan V7



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.

DRAFT

FOR DISCUSSION PURPOSES ONLY

Development Plan

Wurruk Growth Area

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

Beveridge Williams
development & environment consultants

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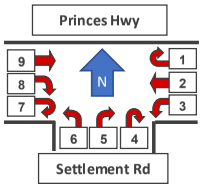
Version	Date	Description	Drafted	Approved
03	30.04.21	Amedments to include updated drainage reserves and staging	MJ	WEB
04	10.05.21	Amedments to include significant views	MJ	WEB
05	13.10.21	Amedments as per Council comments	MJ	WEB
06	19.10.21	Amedments as per Council comments	MJ	WEB
07	15.03.22	Amedments as per Council comments	MJ	WEB

Date: 15.03.22
Version No: 07
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. Turning Movement Counts

Client: Beridge Williams
Name: Wurruk Traffic Count
Job No.: 5710
Location: Princes Hwy and Settlement Rd
Date: Wed 31/07/2019 **Time:** 7am-7pm
Weather: Sunny



Absolute Value		VEHICLE MOVEMENTS																	
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7:30	7:45	0	0	72	7	1	0	0	0	9	0	6	1	0	0	1	0	61	8
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	Accumulative Value		VEHICLE MOVEMENTS																	
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	TIME		Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck
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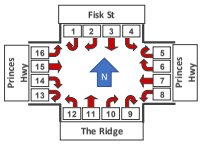
671	8:00	8:15	4	1	297	25	6	0	1	0	39	1	25	3	0	0	8	2	334	37
783	8:15	8:30	4	1	359	31	10	0	1	0	54	2	29	4	1	0	9	2	463	56
883	8:30	8:45	4	1	424	34	16	0	1	0	80	3	38	4	1	0	11	2	605	68
911	8:45	9:00	6	2	506	40	21	0	1	0	89	3	42	4	1	0	14	2	715	75
943	9:00	9:15	7	2	573	47	25	0	1	0	97	3	48	4	1	0	16	2	818	82
876	9:15	9:30	9	2	635	56	32	0	1	0	103	4	55	5	1	0	18	3	890	88
769	9:30	9:45	11	2	701	62	40	0	1	0	108	4	56	6	1	0	20	3	954	92
713	9:45	10:00	12	2	766	66	44	0	1	0	119	5	60	6	1	0	24	3	1028	97
673	10:00	10:15	13	3	830	73	47	0	1	0	125	6	63	6	2	0	24	4	1098	104
664	10:15	10:30	13	3	894	82	51	0	1	0	134	6	68	7	2	0	26	6	1162	111
680	10:30	10:45	13	4	966	85	58	0	1	0	144	6	71	7	2	0	27	7	1232	118
667	10:45	11:00	13	5	1026	88	66	0	1	0	153	6	74	10	2	0	30	7	1300	120
659	11:00	11:15	14	5	1087	99	69	1	1	0	160	6	75	10	2	0	31	7	1365	126
644	11:15	11:30	16	5	1147	105	75	1	1	0	165	6	75	10	2	0	33	7	1430	132
650	11:30	11:45	16	5	1220	115	77	1	1	0	174	6	81	11	2	0	35	7	1503	137
661	11:45	12:00	18	5	1280	119	89	1	1	0	184	6	84	11	2	0	38	7	1576	141
687	12:00	12:15	20	5	1342	124	101	1	1	0	191	6	92	12	2	0	46	7	1648	147
732	12:15	12:30	20	5	1424	130	111	1	1	0	198	7	92	12	2	0	49	8	1732	150
748	12:30	12:45	21	5	1504	138	120	1	1	0	208	8	99	13	2	0	53	9	1803	154
765	12:45	13:00	21	5	1580	145	124	1	1	0	219	8	106	13	2	0	56	9	1875	162
780	13:00	13:15	22	5	1669	153	133	1	1	0	231	8	111	13	2	0	57	10	1938	171
747	13:15	13:30	24	5	1739	157	137	1	1	0	237	8	114	13	2	0	57	10	2007	177
738	13:30	13:45	25	5	1814	161	142	1	1	0	243	8	118	13	3	0	59	10	2094	180
706	13:45	14:00	28	5	1878	165	147	2	1	0	246	8	121	13	3	0	62	11	2161	182
697	14:00	14:15	31	5	1971	168	155	2	1	0	253	8	125	13	3	0	64	11	2225	187
712	14:15	14:30	32	5	2047	174	162	2	1	0	258	8	126	13	3	0	68	12	2295	195
718	14:30	14:45	34	6	2124	181	167	3	1	0	269	8	133	14	3	1	72	12	2364	203
764	14:45	15:00	35	6	2217	186	174	3	1	0	278	9	137	14	3	1	77	13	2434	209
775	15:00	15:15	37	6	2286	191	179	3	1	0	292	9	146	14	3	1	78	13	2521	217
826	15:15	15:30	37	6	2371	195	193	5	1	0	315	10	149	15	3	1	81	14	2613	218
910	15:30	15:45	39	6	2476	209	212	5	1	0	322	10	155	15	3	1	86	15	2731	219
940	15:45	16:00	42	6	2582	214	226	5	1	0	329	10	158	16	3	1	89	15	2820	220
998	16:00	16:15	43	6	2679	216	238	5	1	0	342	10	159	16	3	1	89	15	2943	229
1020	16:15	16:30	45	6	2777	222	251	6	1	0	352	11	163	16	3	1	90	16	3055	232
970	16:30	16:45	46	7	2896	228	257	7	1	0	359	11	168	17	4	1	94	17	3126	236
954	16:45	17:00	48	7	2989	229	270	7	1	0	364	11	175	17	4	1	97	17	3216	238
921	17:00	17:15	50	7	3092	233	282	7	1	0	371	11	177	17	4	1	101	17	3303	242
903	17:15	17:30	51	7	3195	236	297	7	1	0	383	11	185	17	4	1	104	17	3391	243
898	17:30	17:45	53	7	3302	238	312	7	1	0	390	11	193	17	4	1	106	17	3466	248
858	17:45	18:00	53	7	3378	239	318	7	1	0	398	11	196	17	4	1	107	17	3545	250
807	18:00	18:15	53	7	3453	242	330	7	1	0	403	11	198	17	4	1	110	17	3617	252
696	18:15	18:30	54	7	3494	245	336	7	1	0	410	11	202	17	4	1	112	17	3676	252
580	18:30	18:45	54	7	3527	246	341	7	1	0	422	12	204	17	5	1	113	17	3726	253
492	18:45	19:00	54	7	3558	247	347	7	1	0	423	12	206	17	5	1	114	17	3772	253

nationwide TRAFFIC SURVEYS

Client: Beridge Williams
Name: Wurruk Traffic Count
Job No.: 5710
Location: Princes Hwy and The Ridge, Fisk St
Date: Wed 31/07/2019 **Time:** 7am-7pm
Weather: Sunny



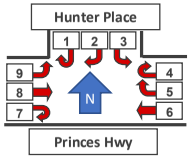
Absolute Value

TIME		VEHICLE MOVEMENTS 1 Car	1 Truck	2 Car	2 Truck	3 Car	3 Truck	4 Car	4 Truck	5 Car	5 Truck	6 Car	6 Truck	7 Car	7 Truck	8 Car	8 Truck	9 Car	9 Truck	10 Car	10 Truck	11 Car	11 Truck	12 Car	12 Truck	13 Car	13 Truck	14 Car	14 Truck	15 Car	15 Truck	16 Car	16 Truck
7:00	7:15	0	0	0	0	0	0	3	0	0	0	0	0	45	4	1	0	0	0	2	0	0	0	0	0	0	0	0	0	38	9	0	0
7:15	7:30	0	0	2	0	0	0	7	0	0	0	4	0	64	4	1	0	0	0	3	0	0	0	1	0	0	0	0	0	42	10	1	0
7:30	7:45	0	0	2	0	0	0	3	1	0	0	1	0	74	6	1	0	0	0	4	0	0	0	0	0	1	0	0	0	53	8	0	1
7:45	8:00	0	0	1	0	0	0	2	0	0	0	2	0	77	6	1	0	0	0	4	0	0	0	1	0	0	0	0	0	102	6	0	0
8:00	8:15	0	0	0	0	0	0	3	0	0	0	1	0	62	6	2	0	0	0	1	0	0	0	1	0	0	0	0	0	90	4	0	0
8:15	8:30	0	0	1	0	0	0	10	2	0	0	4	1	64	6	2	0	0	0	9	0	0	0	1	0	0	0	0	0	119	18	0	1
8:30	8:45	0	0	0	0	0	0	4	0	0	0	5	0	65	5	2	0	0	0	9	0	0	0	1	0	0	0	0	0	145	11	2	0
8:45	9:00	0	0	0	0	0	0	5	0	1	0	5	0	62	3	0	0	0	0	9	0	0	0	0	0	0	0	0	0	105	9	5	0
9:00	9:15	0	0	4	0	0	0	9	0	0	0	6	1	79	6	3	0	0	0	1	0	0	0	0	0	0	0	0	0	96	7	1	0
9:15	9:30	0	0	0	0	0	0	6	0	0	0	6	0	66	7	0	0	0	0	3	0	0	0	0	0	0	0	0	0	69	7	0	0
9:30	9:45	0	0	0	0	1	0	3	0	0	0	3	0	64	10	3	0	0	0	1	0	0	0	1	0	0	0	1	0	63	5	0	0
9:45	10:00	0	0	1	0	0	0	2	0	0	0	2	0	70	6	0	0	0	0	1	0	0	0	2	0	0	0	0	0	76	7	0	1
10:00	10:15	0	0	0	0	0	0	3	0	1	0	0	0	64	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	72	6	2	0
10:15	10:30	0	0	0	1	0	0	5	0	0	0	3	0	61	7	1	0	0	0	3	0	0	0	0	0	0	0	0	0	58	9	0	0
10:30	10:45	0	0	0	0	0	0	5	0	0	0	6	0	62	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	64	7	1	0
10:45	11:00	0	0	0	0	0	0	4	0	0	0	5	0	66	5	1	0	0	0	1	0	0	0	0	0	0	0	0	0	64	1	0	0
11:00	11:15	0	0	0	0	0	0	6	0	1	0	3	0	60	6	1	0	0	0	2	0	0	0	0	0	0	0	1	0	56	4	0	0
11:15	11:30	0	0	0	0	0	0	1	0	1	0	4	0	55	8	2	0	0	0	3	0	0	0	0	0	1	0	0	0	66	4	0	0
11:30	11:45	0	0	1	0	0	0	3	0	0	0	0	0	58	6	1	0	0	0	1	0	0	0	0	0	0	0	0	0	64	6	3	0
11:45	12:00	0	0	0	0	0	0	6	1	0	0	6	0	69	6	1	0	0	0	2	0	0	0	0	0	0	0	0	0	72	4	1	1
12:00	12:15	0	0	0	0	0	0	1	1	0	0	5	0	57	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	76	5	1	0
12:15	12:30	0	0	2	0	0	0	1	0	0	0	3	0	68	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	84	4	0	0
12:30	12:45	0	0	0	0	0	0	5	0	1	0	3	0	75	5	1	0	0	0	2	0	0	0	0	0	0	0	0	0	73	5	2	0
12:45	13:00	0	0	0	0	0	0	2	0	0	0	5	1	74	8	3	0	0	0	1	0	0	0	0	0	0	0	0	0	64	10	0	0
13:00	13:15	0	0	0	0	0	0	2	0	0	0	5	1	78	8	0	0	0	0	2	0	0	0	0	0	0	0	0	0	58	10	1	0
13:15	13:30	0	0	3	1	0	0	8	0	0	0	3	0	91	10	1	0	0	0	6	0	0	0	0	0	0	0	0	0	62	5	2	0
13:30	13:45	0	0	0	0	0	0	2	0	0	0	3	0	72	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	90	4	0	0
13:45	14:00	0	0	0	0	0	0	3	0	0	0	5	0	69	5	1	0	0	0	2	0	0	0	0	0	0	0	0	0	67	4	0	0
14:00	14:15	0	0	0	0	0	0	3	0	0	0	2	0	79	5	1	0	0	0	1	0	0	0	0	0	0	0	0	0	63	3	1	0
14:15	14:30	0	0	0	0	0	0	7	0	1	0	1	0	71	7	1	0	0	0	1	0	0	0	0	0	0	0	0	0	69	8	0	0
14:30	14:45	0	0	0	0	0	0	3	0	0	0	5	0	78	9	3	0	0	0	1	0	0	0	2	0	0	0	0	0	69	9	1	0
14:45	15:00	0	0	0	0	0	0	10	0	0	0	5	0	89	6	2	0	0	0	1	0	0	0	1	0	0	0	0	0	76	5	0	0
15:00	15:15	0	0	0	0	0	0	5	1	0	0	7	0	65	6	3	0	0	0	6	0	0	0	1	0	0	0	0	0	83	5	2	0
15:15	15:30	0	0	3	0	0	0	12	0	0	0	5	0	79	6	4	0	0	0	3	0	0	0	1	0	0	0	1	0	84	1	1	0
15:30	15:45	0	0	0	1	0	0	6	1	0	0	5	2	102	14	4	0	0	0	1	0	0	0	0	0	0	0	0	0	114	3	2	0
15:45	16:00	0	0	0	0	0	0	6	0	0	0	7	0	98	8	2	0	0	0	1	0	0	0	0	0	0	0	0	0	87	2	2	0
16:00	16:15	0	0	1	0	0	0	2	0	0	0	3	0	97	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	119	10	1	0
16:15	16:30	0	0	3	0	0	0	4	0	0	0	4	0	93	7	5	0	0	0	2	0	0	0	0	0	0	0	1	0	109	3	1	1
16:30	16:45	0	0	0	0	0	0	2	0	1	0	5	0	113	7	5	0	0	0	2	0	0	0	0	0	0	0	0	0	74	5	1	0
16:45	17:00	0	0	0	0	0	0	2	0	0	0	2	0	93	2	4	0	0	0	1	0	0	0	2	0	0	0	0	0	92	2	0	0
17:00	17:15	0	0	1	0	0	0	0	0	0	0	5	0	89	4	10	1	0	0	2	0	0	0	2	0	0	0	0	0	88	4	1	0
17:15	17:30	0	0	1	0	0	0	2	0	0	0	1	0	99	4	5	0	0	0	1	0	0	0	0	0	0	0	1	0	89	2	0	0
17:30	17:45	0	0	0	0	0	0	4	0	0	0	2	0	112	1	4	0	0	0	2	0	0	0	0	0	0	0	0	0	72	5	1	0
17:45	18:00	0	0	0	0	0	0	4	0	0	0	3	0	77	0	3	0	0	0	6	0	0	0	0	0	0	0	1	0	70	2	2	0
18:00	18:15	0	0	2	0	0	0	1	0	0	0	7	0	68	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	80	2	1	0
18:15	18:30	0	0	0	0	0	0	2	0	0	0	1	0	43	3	2	0	0	0	1	0	0	0	1	0	0	0	0	0	55	1	1	0
18:30	18:45	0	0	0	0	0	0	1	0	0	0	5	0	30	1	2	0	0	0	3	0	0	0	0	0	0	0	0	0	46	0	0	0
18:45	19:00	0	0	0	0	0	0	2	0	0	0	2	0	27	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	43	0	1	0

Accumulative Value

	TIME		VEHICLE MOVEMENTS 1 Car	1 Truck	2 Car	2 Truck	3 Car	3 Truck	4 Car	4 Truck	5 Car	5 Truck	6 Car	6 Truck	7 Car	7 Truck	8 Car	8 Truck	9 Car	9 Truck	10 Car	10 Truck	11 Car	11 Truck	12 Car	12 Truck	13 Car	13 Truck	14 Car	14 Truck	15 Car	15 Truck	16 Car	16 Truck
	7:00	7:15	0	0	0	0	0	0	3	0	0	0	0	0	45	4	1	0	0	0	2	0	0	0	0	0	0	0	0	38	9	0	0
	7:15	7:30	0	0	2	0	0	0	10	0	0	0	4	0	109	8	2	0	0	0	5	0	0	0	1	0	0	0	0	80	19	1	0
	7:30	7:45	0	0	4	0	0	0	13	1	0	0	5	0	183	14	3	0	0	0	9	0	0	0	1	0	1	0	0	133	27	1	1
598	7:45	8:00	0	0	5	0	0	0	15	1	0	0	7	0	260	20	4	0	0	0	13	0	0	0	2	0	1	0	0	235	33	1	1
666	8:00	8:15	0	0	5	0	0	0	18	1	0	0	8	0	322	26	6	0	0	0	14	0	0	0	3	0	1	0	0	325	37	1	1
765	8:15	8:30	0	0	6	0	0	0	28	3	0	0	12	1	386	32	8	0	0	0	23	0	0	0	4	0	1	0	0	444	55	1	2
859	8:30	8:45	0	0	6	0	0	0	32	3	0	0	17	1	451	37	10	0	0	0	32	0	0	0	5	0	1	0	0	589	66	3	2
861	8:45	9:00	0	0	6	0	0	0	37	3	1	0	22	1	513	40	10	0	0	0	41	0	0	0	5	0	1	0	0	694	75	8	2
904	9:00	9:15	0	0	10	0	0	0	46	3	1	0	28	2	592	46	13	0	0	0	42	0	0	0	5	0	1	0	0	790	82	9	2
830	9:15	9:30	0	0	10	0	0	0	52	3	1	0	34	2	658	53	13	0	0	0	45	0	0	0	5	0	1	0	0	859	89	9	2
736	9:30	9:45	0	0	10	0	1	0	55	3	1	0	37	2	722	63	16	0	0	0	46	0	0	0	6	0	1	0	1	922	94	9	2
700	9:45	10:00	0	0	11	0	1	0	57	3	1	0	39	2	792	69	16	0	0	0	47	0	0	0	8	0	1	0	1	998	101	9	3
644	10:00	10:15	0	0	11	0	1	0	60	3	2	0	39	2	856	74	20	0	0	0	47	0	0	0	8	0	1	0	1	1070	107	11	3
628	10:15	10:30	0	0	11	1	1	0	65	3	2	0	42	2	917	81	21	0	0	0	50	0	0	0	8	0	1	0	1	1128	116	11	3
623	10:30	10:45	0	0	11	1	1	0	70	3	2	0	48	2	979	84	22	0	0	0	51	0	0	0	8	0	1	0	1	1192	123	12	3
602	10:45	11:00	0	0	11	1	1	0	74	3	2	0	53	2	1045	89	23	0	0	0	52	0	0	0	8	0	1	0	1	1256	124	12	3
585	11:00	11:15	0	0	11	1	1	0	80	3	3	0	56	2	1105	95	24	0	0	0	54	0	0	0	8	0	1	0	2	1312	128	12	3
582	11:15	11:30	0	0	11	1	1	0	81	3	4	0	60	2	1160	103	26	0	0	0	57	0	0	0	8	0	2	0	2	1378	132	12	3
575	11:30	11:45	0	0	12	1	1	0	84	3	4	0	60	2	1218	109	27	0	0	0	58	0	0	0	8	0	2	0	2	1442	138	15	3
597	11:45	12:00	0	0	12	1	1	0	90	4	4	0	66	2	1287	115	28	0	0	0	60	0	0	0	8	0	2	0	2	1514	142	16	4
610	12:00	12:15	0	0	12	1	1	0	91	5	4	0	71	2	1344	119	31	0	0	0	60	0	0	0	8	0	2	0	2	1590	147	17	4
634	12:15	12:30	0	0	14	1	1	0	92	5	4	0	74	2	1412	124	33	0	0	0	60	0	0	0	8	0	2	0	2	1674	151	17	4
663	12:30	12:45	0	0	14	1	1	0	97	5	5	0	77	2	1487	129	34	0	0	0	62	0	0	0	8	0	2	0	2	1747	156	19	4
662	12:45	13:00	0	0	14	1	1	0	99	5	5	0	82	3	1561	137	37	0	0	0	63	0	0	0	8	0	2	0	2	1811	166	19	4
674	13:00	13:15	0	0	14	1	1	0	101	5	5	0	87	4	1639	145	37	0	0	0	65	0	0	0	8	0	2	0	2	1869	176	20	4
697	13:15	13:30	0	0	17	2	1	0	109	5	5	0	90	4	1730	155	38	0	0	0	71	0	0	0	8	0	2	0	2	1931	181	22	4
702	13:30	13:45	0	0	17	2	1	0	111	5	5	0	93	4	1802	160	38	0	0	0	71	0	0	0	9	0	2	0	2	2021	185	22	4
690	13:45	14:00	0	0	17	2	1	0	114	5	5	0	98	4	1871	165	39	0	0	0	73	0	0	0	9	0	2	0	2	2088	189	22	4
683	14:00	14:15	0	0	17	2	1	0	117	5	5	0	100	4	1950	170	40	0	0	0	74	0	0	0	9	0	2	0	2	2151	192	23	4
657	14:15	14:30	0	0	17	2	1	0	124	5	6	0	101	4	2021	177	41	0	0	0	75	0	0	0	9	0	2	0	2	2220	200	23	4
660	14:30	14:45	0	0	17	2	1	0	127	5	6	0	106	4	2099	186	44	0	0	0	76	0	0	0	11	0	2	0	2	2289	209	24	4
699	14:45	15:00	0	0	17	2	1	0	137	5	6	0	111	4	2188	192	46	0	0	0	77	0	0	0	12	0	2	0	2	2365	214	24	4
726	15:00	15:15	0	0	17	2	1	0	142	6	6	0	118	4	2253	198	49	0	0	0	83	0	0	0	13	0	2	0	3	0	2449	219	26	4
760	15:15	15:30	0	0	20	2	1	0	154	6	6	0	123	4	2332	204	53	0	0	0	86	0	0	0	14	0	2	0	4	0	2532	220	27	4
835	15:30	15:45	0	0	20	3	1	0	160	7	6	0	128	6	2434	218	57	0	0	0	87	0	0	0	14	0	2	0	4	0	2646	223	29	4
853	15:45	16:00	0	0	20	3	1	0	166	7	6	0	135	6	2532	226	59	0	0	0	88	0	0	0	14	0	2	0	4	0	2733	225	31	4
904	16:00	16:15	0	0	21	3	1	0	168	7	6	0	138	6	2629	228	60	0	0	0	88	0	0	0	14	0	2	0	4	0	2852	235	32	4
937	16:15	16:30	0	0	24	3	1	0	172	7	6	0	142	6	2722	235	65	0	0	0	90	0	0	0	14	0	2	0	5	0	2961	238	33	5
897	16:30	16:45	0	0	24	3	1	0	174	7	7	0	147	6	2835	242	70	0	0	0	92	0	0	0	14	0	2	0	5	0	3035	243	34	5
884	16:45	17:00	0	0	24	3	1	0	176	7	7	0	149	6	2928	244	74	0	0	0	93	0	0	0	16	0	2	0	5	0	3127	245	34	5
855	17:00	17:15	0	0	25	3	1	0	176	7	7	0	154	6	3017	248	84	1	0	0	95	0	0	0	18	0	2	0	5	0	3215	249	35	5
827	17:15	17:30	0	0	26	3	1	0	178	7	7	0	155	6	3116	252	89	1	0	0	96	0	0	0	18	0	2	0	6	0	3304	251	35	5
815	17:30	17:45	0	0	26	3	1	0	182	7	7	0	157	6	3228	253	93	1	0	0	98	0	0	0	18	0	2	0	6	0	3376	256	36	5
783	17:45	18:00	0	0	26	3	1	0	186	7	7	0	160	6	3305	253	96	1	0	0	104	0	0	0	18	0	2	0	7	0	3446	258	38	5
741	18:00	18:15	0	0	28	3	1	0	187	7	7	0	167	6	3373	255	98	1	0	0	104	0	0	0	18	0	2	0	7	0	3526	260	39	5
646	18:15	18:30	0	0	28	3	1	0	189	7	7	0	168	6	3416	258	100	1	0	0	105	0	0	0	19	0	2	0	7	0	3581	261	40	5
531	18:30	18:45	0	0	28	3	1	0	190	7	7	0	173	6	3446	259	102	1	0	0	108	0	0	0	19	0	2	0	7	0	3627	261	40	5
443	18:45	19:00	0	0	28	3	1	0	192	7	7	0	175	6	3473	260	103	1	0	0	111	0	0	0	19	0	2	0	7	0	3670	261	41	5

Client: Beridge Williams
Name: Wurruk Traffic Count
Job No.: 5710
Location: Princes Hwy and Hunter Place
Date: Wed 31/07/2019 **Time:** 7am-7pm
Weather: Sunny



Absolute Value		VEHICLE MOVEMENTS																	
		1		2		3		4		5		6		7		8		9	
TIME		Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck
7:00	7:15	0	0	1	1	5	1	0	0	5	1	39	3	0	0	31	8	1	1
7:15	7:30	0	0	1	1	3	1	0	0	14	1	52	2	0	0	40	9	2	0
7:30	7:45	0	0	3	1	4	0	0	0	6	0	62	6	0	0	55	9	2	1
7:45	8:00	0	0	1	1	6	0	0	0	16	1	67	4	0	0	93	5	2	0
8:00	8:15	0	0	2	0	13	1	0	0	10	0	56	6	0	0	77	3	1	0
8:15	8:30	0	0	0	1	16	1	0	0	9	2	52	4	0	0	110	18	2	1
8:30	8:45	0	0	1	0	22	3	0	0	7	2	55	1	0	0	125	8	4	0
8:45	9:00	0	0	2	0	12	0	0	0	17	0	57	6	0	0	96	9	4	0
9:00	9:15	0	0	1	0	11	4	0	0	12	1	50	5	0	0	86	5	2	1
9:15	9:30	0	0	2	1	13	1	0	0	8	1	65	11	0	0	55	6	2	1
9:30	9:45	0	0	0	1	13	0	0	0	13	0	59	6	0	0	54	4	2	1
9:45	10:00	0	0	2	2	15	1	0	0	12	2	51	4	0	0	61	8	1	0
10:00	10:15	0	0	3	1	10	0	0	0	9	0	58	5	0	0	56	5	1	0
10:15	10:30	0	0	2	0	13	0	0	0	10	2	54	6	0	0	49	9	1	0
10:30	10:45	0	0	1	0	7	0	0	0	9	0	61	6	0	0	55	7	1	0
10:45	11:00	0	0	1	1	10	0	0	0	8	1	48	5	0	0	58	1	2	0
11:00	11:15	0	0	1	0	6	0	0	0	4	0	56	11	0	0	49	4	1	1
11:15	11:30	0	0	5	0	14	0	0	0	13	1	43	5	0	0	52	4	2	1
11:30	11:45	0	0	0	1	9	0	0	0	14	2	60	9	0	0	57	5	3	0
11:45	12:00	0	0	2	0	15	2	1	0	8	0	47	4	0	0	56	4	1	2
12:00	12:15	0	0	2	0	22	1	0	0	13	1	53	5	1	0	61	2	2	0
12:15	12:30	0	0	3	0	8	1	0	0	17	0	63	5	0	0	79	1	3	1
12:30	12:45	0	0	3	0	18	0	0	0	5	1	61	12	0	0	55	5	2	0
12:45	13:00	0	0	1	1	15	0	0	0	10	0	72	5	0	0	53	11	2	0
13:00	13:15	0	0	1	0	12	0	0	0	19	3	69	19	0	0	44	11	3	0
13:15	13:30	0	0	0	1	13	0	0	0	11	0	65	4	0	0	46	5	3	0
13:30	13:45	1	0	3	0	17	2	0	0	8	0	64	8	0	0	70	2	1	0
13:45	14:00	0	0	3	0	14	1	0	0	6	1	61	4	0	0	58	3	3	1
14:00	14:15	0	0	3	0	4	1	0	0	10	0	86	3	0	0	54	4	2	0
14:15	14:30	0	0	1	1	11	1	0	0	12	1	56	2	0	0	56	7	2	0
14:30	14:45	0	0	2	1	6	0	0	0	16	0	70	0	0	0	64	9	0	0
14:45	15:00	0	0	1	0	11	0	0	0	9	1	87	5	0	0	69	5	1	1
15:00	15:15	0	0	4	0	18	0	0	0	9	2	55	3	0	0	67	5	1	0
15:15	15:30	0	0	5	1	8	0	0	0	15	1	66	4	0	0	73	1	1	0
15:30	15:45	0	0	14	0	55	0	0	0	17	3	91	11	0	0	63	3	1	0
15:45	16:00	0	0	1	0	16	2	0	0	14	1	81	4	0	0	74	0	1	0
16:00	16:15	0	0	4	2	18	2	0	0	14	1	83	2	0	0	96	8	3	0
16:15	16:30	0	0	2	0	18	1	0	0	20	0	76	7	0	0	92	3	0	0
16:30	16:45	0	0	2	0	7	0	2	0	9	1	98	5	0	0	65	5	2	0
16:45	17:00	0	0	2	1	10	0	0	0	15	2	85	0	0	0	88	2	0	0
17:00	17:15	0	0	2	0	10	1	0	0	7	1	81	3	0	0	73	3	1	1
17:15	17:30	0	0	3	0	19	1	0	0	10	2	95	2	0	0	72	1	1	0
17:30	17:45	0	0	2	0	12	1	1	0	16	1	90	0	0	0	61	4	2	0
17:45	18:00	0	0	1	2	12	1	0	0	14	0	69	0	0	0	57	2	3	0
18:00	18:15	0	0	5	1	16	1	0	0	10	0	60	2	0	0	61	2	3	0
18:15	18:30	0	0	0	0	7	0	0	0	11	0	35	3	1	0	47	1	1	0
18:30	18:45	0	0	0	0	9	0	0	0	11	0	19	1	0	0	37	0	2	0
18:45	19:00	0	0	0	0	3	0	0	0	5	0	23	1	1	0	39	1	1	0

Accumulative Value		VEHICLE MOVEMENTS																		
		1		2		3		4		5		6		7		8		9		
TIME		Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	
7:00	7:15	0	0	1	1	5	1	0	0	5	1	39	3	0	0	31	8	1	1	
7:15	7:30	0	0	2	2	8	2	0	0	19	2	91	5	0	0	71	17	3	1	
7:30	7:45	0	0	5	3	12	2	0	0	25	2	153	11	0	0	126	26	5	2	
7:45	8:00	0	0	6	4	18	2	0	0	41	3	220	15	0	0	219	31	7	2	568
8:00	8:15	0	0	8	4	31	3	0	0	51	3	276	21	0	0	296	34	8	2	640
8:15	8:30	0	0	8	5	47	4	0	0	60	5	328	25	0	0	406	52	10	3	730
8:30	8:45	0	0	9	5	69	7	0	0	67	7	383	26	0	0	531	60	14	3	809
8:45	9:00	0	0	11	5	81	7	0	0	84	7	440	32	0	0	627	69	18	3	816
9:00	9:15	0	0	12	5	92	11	0	0	96	8	490	37	0	0	713	74	20	4	825
9:15	9:30	0	0	14	6	105	12	0	0	104	9	555	48	0	0	768	80	22	5	775
9:30	9:45	0	0	14	7	118	12	0	0	117	9	614	54	0	0	822	84	24	6	700
9:45	10:00	0	0	16	9	133	13	0	0	129	11	665	58	0	0	883	92	25	6	656
10:00	10:15	0	0	19	10	143	13	0	0	138	11	723	63	0	0	939	97	26	6	626
10:15	10:30	0	0	21	10	156	13	0	0	148	13	777	69	0	0	988	106	27	6	606
10:30	10:45	0	0	22	10	163	13	0	0	157	13	838	75	0	0	1043	113	28	6	600
10:45	11:00	0	0	23	11	173	13	0	0	165	14	886	80	0	0	1101	114	30	6	576
11:00	11:15	0	0	24	11	179	13	0	0	169	14	942	91	0	0	1150	118	31	7	561
11:15	11:30	0	0	29	11	193	13	0	0	182	15	985	96	0	0	1202	122	33	8	555
11:30	11:45	0	0	29	12	202	13	0	0	196	17	1045	105	0	0	1259	127	36	8	568
11:45	12:00	0	0	31	12	217	15	1	0	204	17	1092	109	0	0	1315	131	37	10	575
12:00	12:15	0	0	33	12	239	16	1	0	217	18	1145	114	1	0	1376	133	39	10	605
12:15	12:30	0	0	36	12	247	17	1	0	234	18	1208	119	1	0	1455	134	42	11	646
12:30	12:45	0	0	39	12	265	17	1	0	239	19	1269	131	1	0	1510	139	44	11	648
12:45	13:00	0	0	40	13	280	17	1	0	249	19	1341	136	1	0	1563	150	46	11	676
13:00	13:15	0	0	41	13	292	17	1	0	268	22	1410	155	1	0	1607	161	49	11	694
13:15	13:30	0	0	41	14	305	17	1	0	279	22	1475	159	1	0	1653	166	52	11	661
13:30	13:45	1	0	44	14	322	19	1	0	287	22	1539	167	1	0	1723	168	53	11	675
13:45	14:00	1	0	47	14	336	20	1	0	293	23	1600	171	1	0	1781	171	56	12	660
14:00	14:15	1	0	50	14	340	21	1	0	303	23	1686	174	1	0	1835	175	58	12	646
14:15	14:30	1	0	51	15	351	22	1	0	315	24	1742	176	1	0	1891	182	60	12	648
14:30	14:45	1	0	53	16	357	22	1	0	331	24	1812	176	1	0	1955	191	60	12	640
14:45	15:00	1	0	54	16	368	22	1	0	340	25	1899	181	1	0	2024	196	61	13	675
15:00	15:15	1	0	58	16	386	22	1	0	349	27	1954	184	1	0	2091	201	62	13	672
15:15	15:30	1	0	63	17	394	22	1	0	364	28	2020	188	1	0	2164	202	63	13	697
15:30	15:45	1	0	77	17	449	22	1	0	381	31	2111	199	1	0	2227	205	64	13	787
15:45	16:00	1	0	78	17	465	24	1	0	395	32	2192	203	1	0	2301	205	65	13	791
16:00	16:15	1	0	82	19	483	26	1	0	409	33	2275	205	1	0	2397	213	68	13	860
16:15	16:30	1	0	84	19	501	27	1	0	429	33	2351	212	1	0	2489	216	68	13	904
16:30	16:45	1	0	86	19	508	27	3	0	438	34	2449	217	1	0	2554	221	70	13	842
16:45	17:00	1	0	88	20	518	27	3	0	453	36	2534	217	1	0	2642	223	70	13	853
17:00	17:15	1	0	90	20	528	28	3	0	460	37	2615	220	1	0	2715	226	71	14	803
17:15	17:30	1	0	93	20	547	29	3	0	470	39	2710	222	1	0	2787	227	72	14	790
17:30	17:45	1	0	95	20	559	30	4	0	486	40	2800	222	1	0	2848	231	74	14	784
17:45	18:00	1	0	96	22	571	31	4	0	500	40	2869	222	1	0	2905	233	77	14	740
18:00	18:15	1	0	101	23	587	32	4	0	510	40	2929	224	1	0	2966	235	80	14	718
18:15	18:30	1	0	101	23	594	32	4	0	521	40	2964	227	2	0	3013	236	81	14	618
18:30	18:45	1	0	101	23	603	32	4	0	532	40	2983	228	2	0	3050	236	83	14	507
18:45	19:00	1	0	101	23	606	32	4	0	537	40	3006	229	3	0	3089	237	84	14	420

APPENDIX C. SIDRA ANALYSIS

MOVEMENT SUMMARY

Site: 101 [PHE/Hunt Pl AM Existing]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Princes Highway												
5	T1	307	10.0	0.121	3.6	LOS A	0.6	4.5	0.05	0.38	0.05	57.9
6	R2	63	10.0	0.121	9.3	LOS A	0.6	4.4	0.05	0.47	0.05	57.2
Approach		371	10.0	0.121	4.6	LOS A	0.6	4.5	0.05	0.40	0.05	57.8
North: Hunt Place												
7	L2	87	10.0	0.108	5.5	LOS A	0.4	3.0	0.47	0.64	0.47	55.3
9	R2	7	10.0	0.108	11.3	LOS B	0.4	3.0	0.47	0.64	0.47	56.3
Approach		95	10.0	0.108	5.9	LOS A	0.4	3.0	0.47	0.64	0.47	55.4
West: Princes Highway												
10	L2	16	10.0	0.208	3.9	LOS A	0.9	7.0	0.17	0.36	0.17	55.4
11	T1	565	10.0	0.208	3.8	LOS A	0.9	7.1	0.17	0.36	0.17	57.9
Approach		581	10.0	0.208	3.8	LOS A	0.9	7.1	0.17	0.36	0.17	57.8
All Vehicles		1046	10.0	0.208	4.3	LOS A	0.9	7.1	0.16	0.40	0.16	57.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/The Ridge AM Existing]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: The Ridge												
1	L2	2	10.0	0.033	4.7	LOS A	0.1	0.9	0.36	0.64	0.36	52.9
2	T1	1	10.0	0.033	4.8	LOS A	0.1	0.9	0.36	0.64	0.36	53.0
3	R2	29	10.0	0.033	10.5	LOS B	0.1	0.9	0.36	0.64	0.36	54.2
Approach		33	10.0	0.033	9.9	LOS A	0.1	0.9	0.36	0.64	0.36	54.1
East: Princes Highway												
4	L2	7	10.0	0.109	3.7	LOS A	0.5	3.8	0.04	0.34	0.04	56.8
5	T1	305	10.0	0.109	3.6	LOS A	0.5	3.8	0.05	0.37	0.05	58.5
6	R2	23	10.0	0.109	9.3	LOS A	0.5	3.8	0.05	0.40	0.05	58.0
Approach		336	10.0	0.109	4.0	LOS A	0.5	3.8	0.05	0.37	0.05	58.4
North: The Ridge												
7	L2	32	10.0	0.042	5.3	LOS A	0.1	1.1	0.45	0.60	0.45	55.2
8	T1	1	10.0	0.042	5.4	LOS A	0.1	1.1	0.45	0.60	0.45	56.0
9	R2	4	10.0	0.042	11.1	LOS B	0.1	1.1	0.45	0.60	0.45	56.9
Approach		37	10.0	0.042	6.0	LOS A	0.1	1.1	0.45	0.60	0.45	55.4
West: Princes Highway												
10	L2	9	10.0	0.194	3.9	LOS A	0.9	6.9	0.16	0.35	0.16	56.3
11	T1	537	10.0	0.194	3.8	LOS A	0.9	6.9	0.16	0.35	0.16	58.2
12	R2	1	10.0	0.194	9.5	LOS A	0.9	6.9	0.17	0.36	0.17	58.0
Approach		547	10.0	0.194	3.8	LOS A	0.9	6.9	0.16	0.35	0.16	58.2
All Vehicles		953	10.0	0.194	4.2	LOS A	0.9	6.9	0.14	0.38	0.14	58.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/Settlement Rd AM Existing]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Settlement Road												
1	L2	25	10.0	0.088	4.7	LOS A	0.3	2.4	0.37	0.64	0.37	53.4
3	R2	63	10.0	0.088	10.5	LOS B	0.3	2.4	0.37	0.64	0.37	53.9
Approach		88	10.0	0.088	8.8	LOS A	0.3	2.4	0.37	0.64	0.37	53.8
East: Princes Highway												
4	L2	20	10.0	0.111	3.7	LOS A	0.5	3.6	0.05	0.35	0.05	56.1
5	T1	314	10.0	0.111	3.6	LOS A	0.5	3.6	0.05	0.35	0.05	58.4
6u	U	4	10.0	0.111	11.7	LOS B	0.5	3.6	0.05	0.35	0.05	59.7
Approach		338	10.0	0.111	3.7	LOS A	0.5	3.6	0.05	0.35	0.05	58.3
West: Princes Highway												
11	T1	557	10.0	0.204	3.8	LOS A	1.0	7.7	0.20	0.37	0.20	57.7
12	R2	8	10.0	0.204	9.6	LOS A	1.0	7.7	0.20	0.37	0.20	57.7
Approach		565	10.0	0.204	3.9	LOS A	1.0	7.7	0.20	0.37	0.20	57.7
All Vehicles		992	10.0	0.204	4.3	LOS A	1.0	7.7	0.16	0.39	0.16	57.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/Hunt Pl PM Existing]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Princes Highway												
5	T1	354	10.0	0.122	3.7	LOS A	0.6	4.4	0.10	0.34	0.10	58.2
6	R2	5	10.0	0.122	9.4	LOS A	0.6	4.3	0.10	0.35	0.10	58.2
Approach		359	10.0	0.122	3.7	LOS A	0.6	4.4	0.10	0.34	0.10	58.2
North: Hunt Place												
7	L2	115	10.0	0.138	4.8	LOS A	0.5	3.9	0.39	0.59	0.39	55.3
9	R2	22	10.0	0.138	10.6	LOS B	0.5	3.9	0.39	0.59	0.39	56.3
Approach		137	10.0	0.138	5.8	LOS A	0.5	3.9	0.39	0.59	0.39	55.5
West: Princes Highway												
10	L2	20	10.0	0.117	3.7	LOS A	0.5	3.6	0.03	0.35	0.03	56.2
11	T1	342	10.0	0.117	3.6	LOS A	0.5	3.6	0.04	0.34	0.04	58.5
Approach		362	10.0	0.117	3.6	LOS A	0.5	3.6	0.04	0.34	0.04	58.4
All Vehicles		858	10.0	0.138	4.0	LOS A	0.6	4.4	0.12	0.38	0.12	57.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/The Ridge PM Existing]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: The Ridge												
1	L2	1	10.0	0.007	5.0	LOS A	0.0	0.2	0.41	0.60	0.41	53.5
2	T1	1	10.0	0.007	5.1	LOS A	0.0	0.2	0.41	0.60	0.41	53.8
3	R2	4	10.0	0.007	10.8	LOS B	0.0	0.2	0.41	0.60	0.41	54.9
Approach		6	10.0	0.007	8.9	LOS A	0.0	0.2	0.41	0.60	0.41	54.5
East: Princes Highway												
4	L2	13	10.0	0.161	3.8	LOS A	0.8	6.0	0.10	0.34	0.10	56.5
5	T1	443	10.0	0.161	3.7	LOS A	0.8	6.0	0.10	0.36	0.10	58.3
6	R2	22	10.0	0.161	9.4	LOS A	0.8	6.0	0.10	0.38	0.10	57.9
Approach		478	10.0	0.161	3.9	LOS A	0.8	6.0	0.10	0.36	0.10	58.3
North: The Ridge												
7	L2	5	10.0	0.028	5.1	LOS A	0.1	0.8	0.42	0.65	0.42	53.1
8	T1	1	10.0	0.028	5.2	LOS A	0.1	0.8	0.42	0.65	0.42	53.4
9	R2	20	10.0	0.028	10.9	LOS B	0.1	0.8	0.42	0.65	0.42	54.7
Approach		26	10.0	0.028	9.5	LOS A	0.1	0.8	0.42	0.65	0.42	54.3
West: Princes Highway												
10	L2	7	10.0	0.163	3.8	LOS A	0.7	5.3	0.10	0.34	0.10	56.6
11	T1	471	10.0	0.163	3.7	LOS A	0.7	5.3	0.10	0.34	0.10	58.5
12	R2	1	10.0	0.163	9.4	LOS A	0.7	5.3	0.11	0.34	0.11	58.3
Approach		479	10.0	0.163	3.7	LOS A	0.7	5.3	0.10	0.34	0.10	58.4
All Vehicles		989	10.0	0.163	4.0	LOS A	0.8	6.0	0.11	0.36	0.11	58.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/Settlement Rd PM Existing]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Settlement Road												
1	L2	16	10.0	0.060	5.1	LOS A	0.2	1.6	0.42	0.67	0.42	53.3
3	R2	40	10.0	0.060	10.9	LOS B	0.2	1.6	0.42	0.67	0.42	53.7
Approach		56	10.0	0.060	9.3	LOS A	0.2	1.6	0.42	0.67	0.42	53.6
East: Princes Highway												
4	L2	62	10.0	0.172	3.7	LOS A	0.8	5.8	0.06	0.36	0.06	56.0
5	T1	456	10.0	0.172	3.6	LOS A	0.8	5.8	0.06	0.36	0.06	58.3
6u	U	8	10.0	0.172	11.7	LOS B	0.8	5.8	0.07	0.36	0.07	59.6
Approach		526	10.0	0.172	3.8	LOS A	0.8	5.8	0.06	0.36	0.06	58.1
West: Princes Highway												
11	T1	480	10.0	0.173	3.8	LOS A	0.8	6.4	0.16	0.36	0.16	57.8
12	R2	12	10.0	0.173	9.5	LOS A	0.8	6.3	0.16	0.37	0.16	57.8
Approach		492	10.0	0.173	3.9	LOS A	0.8	6.4	0.16	0.36	0.16	57.8
All Vehicles		1074	10.0	0.173	4.1	LOS A	0.8	6.4	0.13	0.37	0.13	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/Hunt Pl AM PD]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: RoadName												
1	L2	95	10.0	0.134	6.1	LOS A	0.5	3.7	0.46	0.63	0.46	54.2
2	T1	1	10.0	0.134	6.0	LOS A	0.5	3.7	0.46	0.63	0.46	56.1
3	R2	857	10.0	0.722	13.0	LOS B	6.6	49.9	0.69	0.88	0.84	52.8
Approach		953	10.0	0.722	12.3	LOS B	6.6	49.9	0.66	0.86	0.81	52.9
East: Princes Highway												
4	L2	63	10.0	0.154	3.8	LOS A	0.8	6.0	0.09	0.36	0.09	56.6
5	T1	332	10.0	0.154	3.7	LOS A	0.8	6.0	0.10	0.40	0.10	57.7
6	R2	63	10.0	0.154	9.4	LOS A	0.8	5.9	0.10	0.44	0.10	57.3
Approach		458	10.0	0.154	4.5	LOS A	0.8	6.0	0.10	0.40	0.10	57.5
North: Hunt Place												
7	L2	87	10.0	0.246	13.0	LOS B	1.3	9.8	0.85	0.92	0.85	50.9
8	T1	1	10.0	0.246	13.1	LOS B	1.3	9.8	0.85	0.92	0.85	50.5
9	R2	7	10.0	0.246	18.8	LOS B	1.3	9.8	0.85	0.92	0.85	50.6
Approach		96	10.0	0.246	13.4	LOS B	1.3	9.8	0.85	0.92	0.85	50.8
West: Princes Highway												
10	L2	16	10.0	0.634	11.9	LOS B	5.8	44.4	0.94	1.08	1.24	50.2
11	T1	765	10.0	0.634	12.4	LOS B	5.8	44.4	0.94	1.08	1.24	52.8
12	R2	11	10.0	0.634	19.0	LOS B	5.3	40.1	0.93	1.07	1.25	50.8
Approach		792	10.0	0.634	12.5	LOS B	5.8	44.4	0.94	1.08	1.24	52.7
All Vehicles		2298	10.0	0.722	10.8	LOS B	6.6	49.9	0.65	0.84	0.82	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/Hunt Pl PM PD]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: RoadName												
1	L2	42	0.0	0.058	5.9	LOS A	0.2	1.7	0.48	0.58	0.48	54.5
2	T1	1	0.0	0.058	5.8	LOS A	0.2	1.7	0.48	0.58	0.48	56.4
3	R2	381	0.0	0.322	10.9	LOS B	1.8	12.9	0.53	0.72	0.53	53.7
Approach		424	0.0	0.322	10.4	LOS B	1.8	12.9	0.52	0.70	0.52	53.8
East: Princes Highway												
4	L2	540	0.0	0.366	4.1	LOS A	2.2	15.5	0.30	0.46	0.30	56.1
5	T1	360	10.0	0.306	4.2	LOS A	1.7	12.7	0.31	0.41	0.31	57.2
6	R2	5	10.0	0.306	9.9	LOS A	1.7	12.7	0.31	0.41	0.31	57.3
Approach		905	4.0	0.366	4.2	LOS A	2.2	15.5	0.31	0.44	0.31	56.6
North: Hunt Place												
7	L2	115	10.0	0.188	6.8	LOS A	0.8	6.2	0.62	0.78	0.62	54.3
8	T1	1	0.0	0.188	6.6	LOS A	0.8	6.2	0.62	0.78	0.62	55.0
9	R2	22	10.0	0.188	12.6	LOS B	0.8	6.2	0.62	0.78	0.62	55.0
Approach		138	9.9	0.188	7.7	LOS A	0.8	6.2	0.62	0.78	0.62	54.4
West: Princes Highway												
10	L2	20	10.0	0.234	5.1	LOS A	1.3	9.5	0.50	0.50	0.50	53.7
11	T1	384	10.0	0.234	5.1	LOS A	1.3	9.5	0.51	0.54	0.51	56.0
12	R2	95	0.0	0.234	10.7	LOS B	1.2	9.0	0.51	0.61	0.51	54.7
Approach		499	8.1	0.234	6.2	LOS A	1.3	9.5	0.51	0.55	0.51	55.7
All Vehicles		1966	4.6	0.366	6.3	LOS A	2.2	15.5	0.43	0.55	0.43	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/The Ridge AM PD]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: The Ridge												
1	L2	14	10.0	0.161	5.2	LOS A	0.6	4.6	0.44	0.72	0.44	52.6
2	T1	1	10.0	0.161	5.3	LOS A	0.6	4.6	0.44	0.72	0.44	52.7
3	R2	137	10.0	0.161	11.0	LOS B	0.6	4.6	0.44	0.72	0.44	54.0
Approach		152	10.0	0.161	10.4	LOS B	0.6	4.6	0.44	0.72	0.44	53.9
East: Princes Highway												
4	L2	19	10.0	0.148	3.7	LOS A	0.8	5.8	0.05	0.34	0.05	56.7
5	T1	413	10.0	0.148	3.6	LOS A	0.8	5.8	0.06	0.36	0.06	58.5
6	R2	23	10.0	0.148	9.3	LOS A	0.7	5.7	0.06	0.38	0.06	58.1
Approach		455	10.0	0.148	3.9	LOS A	0.8	5.8	0.06	0.36	0.06	58.4
North: The Ridge												
7	L2	32	10.0	0.078	9.1	LOS A	0.3	2.6	0.75	0.86	0.75	53.0
8	T1	1	10.0	0.078	9.2	LOS A	0.3	2.6	0.75	0.86	0.75	53.2
9	R2	4	10.0	0.078	14.9	LOS B	0.3	2.6	0.75	0.86	0.75	54.5
Approach		37	10.0	0.078	9.7	LOS A	0.3	2.6	0.75	0.86	0.75	53.1
West: Princes Highway												
10	L2	9	10.0	0.624	4.8	LOS A	5.2	39.4	0.51	0.45	0.51	54.8
11	T1	1593	10.0	0.624	4.8	LOS A	5.2	39.4	0.52	0.46	0.52	56.8
12	R2	2	10.0	0.624	10.6	LOS B	5.1	38.7	0.53	0.47	0.53	56.4
Approach		1604	10.0	0.624	4.8	LOS A	5.2	39.4	0.52	0.46	0.52	56.8
All Vehicles		2247	10.0	0.624	5.1	LOS A	5.2	39.4	0.42	0.47	0.42	56.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/The Ridge PM PD]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: The Ridge												
1	L2	6	10.0	0.078	6.4	LOS A	0.3	2.2	0.55	0.79	0.55	52.2
2	T1	1	10.0	0.078	6.5	LOS A	0.3	2.2	0.55	0.79	0.55	52.2
3	R2	52	10.0	0.078	12.2	LOS B	0.3	2.2	0.55	0.79	0.55	53.6
Approach		59	10.0	0.078	11.5	LOS B	0.3	2.2	0.55	0.79	0.55	53.4
East: Princes Highway												
4	L2	80	10.0	0.338	3.8	LOS A	2.0	15.0	0.15	0.36	0.15	56.3
5	T1	895	10.0	0.338	3.7	LOS A	2.0	15.0	0.15	0.36	0.15	58.2
6	R2	22	10.0	0.338	9.5	LOS A	2.0	14.9	0.16	0.36	0.16	57.9
Approach		997	10.0	0.338	3.9	LOS A	2.0	15.0	0.15	0.36	0.15	58.1
North: The Ridge												
7	L2	5	10.0	0.035	6.2	LOS A	0.1	1.0	0.55	0.75	0.55	52.6
8	T1	1	10.0	0.035	6.3	LOS A	0.1	1.0	0.55	0.75	0.55	52.7
9	R2	20	10.0	0.035	12.0	LOS B	0.1	1.0	0.55	0.75	0.55	54.1
Approach		26	10.0	0.035	10.7	LOS B	0.1	1.0	0.55	0.75	0.55	53.7
West: Princes Highway												
10	L2	7	10.0	0.325	4.0	LOS A	1.9	14.2	0.24	0.37	0.24	56.0
11	T1	882	10.0	0.325	3.9	LOS A	1.9	14.2	0.24	0.38	0.24	57.9
12	R2	13	10.0	0.325	9.7	LOS A	1.9	14.1	0.25	0.39	0.25	57.6
Approach		902	10.0	0.325	4.0	LOS A	1.9	14.2	0.24	0.38	0.24	57.8
All Vehicles		1984	10.0	0.338	4.2	LOS A	2.0	15.0	0.21	0.39	0.21	57.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/Settlement Rd AM PD]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Settlement Road												
1	L2	32	10.0	0.145	5.1	LOS A	0.5	4.1	0.43	0.70	0.43	53.0
3	R2	106	10.0	0.145	10.9	LOS B	0.5	4.1	0.43	0.70	0.43	53.5
Approach		138	10.0	0.145	9.6	LOS A	0.5	4.1	0.43	0.70	0.43	53.4
East: Princes Highway												
4	L2	26	10.0	0.149	3.7	LOS A	0.7	5.6	0.06	0.35	0.06	56.0
5	T1	426	10.0	0.149	3.6	LOS A	0.7	5.6	0.06	0.35	0.06	58.3
6u	U	4	10.0	0.149	11.7	LOS B	0.7	5.5	0.06	0.35	0.06	59.7
Approach		457	10.0	0.149	3.7	LOS A	0.7	5.6	0.06	0.35	0.06	58.2
West: Princes Highway												
11	T1	1719	10.0	0.632	4.4	LOS A	5.7	43.1	0.45	0.43	0.45	56.5
12	R2	9	10.0	0.632	10.2	LOS B	5.7	43.1	0.47	0.44	0.47	56.6
Approach		1728	10.0	0.632	4.5	LOS A	5.7	43.1	0.45	0.43	0.45	56.5
All Vehicles		2323	10.0	0.632	4.6	LOS A	5.7	43.1	0.37	0.43	0.37	56.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [PHE/Settlement Rd PM PD]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Settlement Road												
1	L2	19	10.0	0.107	6.5	LOS A	0.4	3.0	0.55	0.80	0.55	52.4
3	R2	64	10.0	0.107	12.3	LOS B	0.4	3.0	0.55	0.80	0.55	52.7
Approach		83	10.0	0.107	10.9	LOS B	0.4	3.0	0.55	0.80	0.55	52.6
East: Princes Highway												
4	L2	96	10.0	0.338	3.8	LOS A	1.9	14.2	0.10	0.35	0.10	55.8
5	T1	929	10.0	0.338	3.7	LOS A	1.9	14.3	0.10	0.35	0.10	58.1
6u	U	8	10.0	0.338	11.8	LOS B	1.9	14.3	0.10	0.35	0.10	59.5
Approach		1034	10.0	0.338	3.7	LOS A	1.9	14.3	0.10	0.35	0.10	58.0
West: Princes Highway												
11	T1	815	10.0	0.299	3.9	LOS A	1.7	13.2	0.24	0.38	0.24	57.5
12	R2	18	10.0	0.299	9.6	LOS A	1.7	13.0	0.24	0.39	0.24	57.5
Approach		833	10.0	0.299	4.0	LOS A	1.7	13.2	0.24	0.38	0.24	57.5
All Vehicles		1949	10.0	0.338	4.2	LOS A	1.9	14.3	0.18	0.38	0.18	57.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/Hunt Pl AM PD + 10yrs]

New Site
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: RoadName												
1	L2	95	10.0	0.139	6.4	LOS A	0.5	3.9	0.49	0.66	0.49	53.9
2	T1	1	10.0	0.139	6.3	LOS A	0.5	3.9	0.49	0.66	0.49	55.8
3	R2	857	10.0	0.752	13.9	LOS B	7.2	55.1	0.74	0.97	0.97	52.2
Approach		953	10.0	0.752	13.2	LOS B	7.2	55.1	0.71	0.94	0.93	52.4
East: Princes Highway												
4	L2	76	10.0	0.186	3.8	LOS A	1.0	7.6	0.11	0.36	0.11	56.5
5	T1	398	10.0	0.186	3.7	LOS A	1.0	7.6	0.11	0.40	0.11	57.7
6	R2	76	10.0	0.186	9.4	LOS A	1.0	7.4	0.12	0.44	0.12	57.2
Approach		549	10.0	0.186	4.5	LOS A	1.0	7.6	0.11	0.40	0.11	57.4
North: Hunt Place												
7	L2	105	10.0	0.345	16.4	LOS B	2.0	14.9	0.90	0.98	1.00	49.0
8	T1	1	10.0	0.345	16.4	LOS B	2.0	14.9	0.90	0.98	1.00	48.3
9	R2	9	10.0	0.345	22.2	LOS C	2.0	14.9	0.90	0.98	1.00	48.4
Approach		115	10.0	0.345	16.8	LOS B	2.0	14.9	0.90	0.98	1.00	49.0
West: Princes Highway												
10	L2	19	10.0	0.779	16.3	LOS B	9.1	69.3	1.00	1.22	1.58	47.5
11	T1	918	10.0	0.779	17.1	LOS B	9.1	69.3	1.00	1.22	1.58	50.1
12	R2	13	10.0	0.779	23.9	LOS C	8.1	61.8	0.99	1.21	1.59	47.6
Approach		950	10.0	0.779	17.2	LOS B	9.1	69.3	1.00	1.22	1.58	50.1
All Vehicles		2567	10.0	0.779	12.9	LOS B	9.1	69.3	0.70	0.93	1.00	52.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/Hunt Pl PM PD + 10yrs]

New Site
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: RoadName												
1	L2	51	0.0	0.074	6.5	LOS A	0.3	2.3	0.53	0.63	0.53	54.1
2	T1	1	0.0	0.074	6.4	LOS A	0.3	2.3	0.53	0.63	0.53	55.9
3	R2	457	0.0	0.410	11.5	LOS B	2.6	18.3	0.63	0.76	0.63	53.4
Approach		509	0.0	0.410	11.0	LOS B	2.6	18.3	0.62	0.75	0.62	53.5
East: Princes Highway												
4	L2	648	0.0	0.447	4.2	LOS A	3.0	21.2	0.37	0.49	0.37	55.9
5	T1	432	10.0	0.375	4.4	LOS A	2.2	17.1	0.37	0.43	0.37	56.9
6	R2	6	10.0	0.375	10.1	LOS B	2.2	17.1	0.37	0.43	0.37	57.0
Approach		1086	4.0	0.447	4.3	LOS A	3.0	21.2	0.37	0.46	0.37	56.3
North: Hunt Place												
7	L2	138	10.0	0.251	7.6	LOS A	1.2	8.9	0.69	0.84	0.69	53.8
8	T1	1	0.0	0.251	7.4	LOS A	1.2	8.9	0.69	0.84	0.69	54.3
9	R2	27	10.0	0.251	13.4	LOS B	1.2	8.9	0.69	0.84	0.69	54.3
Approach		165	9.9	0.251	8.6	LOS A	1.2	8.9	0.69	0.84	0.69	53.9
West: Princes Highway												
10	L2	24	10.0	0.301	5.6	LOS A	1.8	13.4	0.59	0.54	0.59	53.3
11	T1	461	10.0	0.301	5.6	LOS A	1.8	13.4	0.59	0.58	0.59	55.6
12	R2	114	0.0	0.301	11.2	LOS B	1.7	12.5	0.60	0.65	0.60	54.3
Approach		599	8.1	0.301	6.6	LOS A	1.8	13.4	0.59	0.59	0.59	55.3
All Vehicles		2360	4.6	0.447	6.6	LOS A	3.0	21.2	0.50	0.58	0.50	55.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/The Ridge AM PD + 10yrs]

New Site
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: The Ridge												
1	L2	16	10.0	0.201	5.5	LOS A	0.8	5.9	0.48	0.76	0.48	52.5
2	T1	1	10.0	0.201	5.6	LOS A	0.8	5.9	0.48	0.76	0.48	52.6
3	R2	164	10.0	0.201	11.3	LOS B	0.8	5.9	0.48	0.76	0.48	53.9
Approach		182	10.0	0.201	10.8	LOS B	0.8	5.9	0.48	0.76	0.48	53.7
East: Princes Highway												
4	L2	23	10.0	0.178	3.7	LOS A	1.0	7.4	0.06	0.34	0.06	56.7
5	T1	495	10.0	0.178	3.6	LOS A	1.0	7.4	0.06	0.36	0.06	58.5
6	R2	28	10.0	0.178	9.3	LOS A	0.9	7.2	0.07	0.38	0.07	58.1
Approach		546	10.0	0.178	3.9	LOS A	1.0	7.4	0.06	0.36	0.06	58.4
North: The Ridge												
7	L2	38	10.0	0.130	11.5	LOS B	0.6	4.7	0.84	0.91	0.84	51.5
8	T1	1	10.0	0.130	11.6	LOS B	0.6	4.7	0.84	0.91	0.84	51.4
9	R2	5	10.0	0.130	17.3	LOS B	0.6	4.7	0.84	0.91	0.84	53.0
Approach		44	10.0	0.130	12.1	LOS B	0.6	4.7	0.84	0.91	0.84	51.7
West: Princes Highway												
10	L2	11	10.0	0.770	6.0	LOS A	9.2	69.6	0.70	0.60	0.74	54.0
11	T1	1911	10.0	0.770	6.2	LOS A	9.4	71.5	0.72	0.63	0.77	56.0
12	R2	3	10.0	0.770	12.3	LOS B	9.4	71.5	0.74	0.65	0.80	55.4
Approach		1925	10.0	0.770	6.3	LOS A	9.4	71.5	0.72	0.63	0.77	56.0
All Vehicles		2697	10.0	0.770	6.2	LOS A	9.4	71.5	0.57	0.59	0.61	56.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/The Ridge PM PD + 10yrs]

New Site
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: The Ridge												
1	L2	8	10.0	0.101	6.9	LOS A	0.4	2.9	0.60	0.84	0.60	51.9
2	T1	1	10.0	0.101	7.0	LOS A	0.4	2.9	0.60	0.84	0.60	51.8
3	R2	62	10.0	0.101	12.7	LOS B	0.4	2.9	0.60	0.84	0.60	53.2
Approach		71	10.0	0.101	12.0	LOS B	0.4	2.9	0.60	0.84	0.60	53.1
East: Princes Highway												
4	L2	96	10.0	0.408	3.9	LOS A	2.6	20.0	0.18	0.36	0.18	56.2
5	T1	1074	10.0	0.408	3.8	LOS A	2.6	20.0	0.19	0.36	0.19	58.1
6	R2	27	10.0	0.408	9.5	LOS A	2.6	19.8	0.19	0.37	0.19	57.7
Approach		1196	10.0	0.408	3.9	LOS A	2.6	20.0	0.19	0.36	0.19	57.9
North: The Ridge												
7	L2	6	10.0	0.046	6.8	LOS A	0.2	1.3	0.60	0.79	0.60	52.3
8	T1	1	10.0	0.046	6.9	LOS A	0.2	1.3	0.60	0.79	0.60	52.4
9	R2	24	10.0	0.046	12.6	LOS B	0.2	1.3	0.60	0.79	0.60	53.8
Approach		32	10.0	0.046	11.2	LOS B	0.2	1.3	0.60	0.79	0.60	53.4
West: Princes Highway												
10	L2	9	10.0	0.396	4.1	LOS A	2.5	19.0	0.29	0.39	0.29	55.8
11	T1	1059	10.0	0.396	4.0	LOS A	2.5	19.0	0.29	0.40	0.29	57.7
12	R2	15	10.0	0.396	9.8	LOS A	2.5	18.7	0.30	0.40	0.30	57.3
Approach		1083	10.0	0.396	4.1	LOS A	2.5	19.0	0.29	0.40	0.29	57.6
All Vehicles		2381	10.0	0.408	4.3	LOS A	2.6	20.0	0.25	0.40	0.25	57.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/Settlement Rd AM PD + 10yrs]

New Site
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Settlement Road												
1	L2	38	10.0	0.182	5.5	LOS A	0.7	5.3	0.47	0.74	0.47	52.9
3	R2	128	10.0	0.182	11.3	LOS B	0.7	5.3	0.47	0.74	0.47	53.3
Approach		165	10.0	0.182	9.9	LOS A	0.7	5.3	0.47	0.74	0.47	53.2
East: Princes Highway												
4	L2	32	10.0	0.180	3.7	LOS A	1.0	7.7	0.08	0.34	0.08	55.9
5	T1	512	10.0	0.180	3.6	LOS A	1.0	7.7	0.08	0.34	0.08	58.2
6u	U	5	10.0	0.180	11.7	LOS B	1.0	7.5	0.08	0.35	0.08	59.6
Approach		548	10.0	0.180	3.7	LOS A	1.0	7.7	0.08	0.34	0.08	58.1
West: Princes Highway												
11	T1	2063	10.0	0.776	5.0	LOS A	9.2	70.0	0.66	0.49	0.66	55.6
12	R2	11	10.0	0.776	10.8	LOS B	9.2	70.0	0.68	0.50	0.68	55.6
Approach		2074	10.0	0.776	5.0	LOS A	9.2	70.0	0.66	0.49	0.66	55.6
All Vehicles		2788	10.0	0.776	5.0	LOS A	9.2	70.0	0.53	0.47	0.53	55.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PHE/Settlement Rd PM PD - Copy]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Settlement Road												
1	L2	19	10.0	0.107	6.5	LOS A	0.4	3.0	0.55	0.80	0.55	52.4
3	R2	64	10.0	0.107	12.3	LOS B	0.4	3.0	0.55	0.80	0.55	52.7
Approach		83	10.0	0.107	10.9	LOS B	0.4	3.0	0.55	0.80	0.55	52.6
East: Princes Highway												
4	L2	96	10.0	0.338	3.8	LOS A	1.9	14.2	0.10	0.35	0.10	55.8
5	T1	929	10.0	0.338	3.7	LOS A	1.9	14.3	0.10	0.35	0.10	58.1
6u	U	8	10.0	0.338	11.8	LOS B	1.9	14.3	0.10	0.35	0.10	59.5
Approach		1034	10.0	0.338	3.7	LOS A	1.9	14.3	0.10	0.35	0.10	58.0
West: Princes Highway												
11	T1	815	10.0	0.299	3.9	LOS A	1.7	13.2	0.24	0.38	0.24	57.5
12	R2	18	10.0	0.299	9.6	LOS A	1.7	13.0	0.24	0.39	0.24	57.5
Approach		833	10.0	0.299	4.0	LOS A	1.7	13.2	0.24	0.38	0.24	57.5
All Vehicles		1949	10.0	0.338	4.2	LOS A	1.9	14.3	0.18	0.38	0.18	57.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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