

Kalamunda Activity Centre

ENGINEERING SERVICING REPORT



JDS171397

February 2019

INTEGRITY

We are open, honest, and consistent in our principles and conduct, so we're able to build trusted relationships with our clients and partners.

RESPECT

We treat everyone with respect and dignity and develop relationships founded on understanding and trust.

ACCOUNTABILITY

We always assume responsibility for our actions and make decisions in line with our economic, social, and ethical obligations.

EXCELLENCE

We pursue excellence in everything we do, challenging ourselves to look beyond the obvious and ensure ongoing improvement.

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1 Key Objectives

This engineering report has been prepared by JDSi to assist with the compilation of the Kalamunda Activity Centre Plan (KACP). The key objectives of this report are to:

- ▶ Undertake all necessary infrastructure and servicing investigations and assessments to support the Activity Centre Plan.
- ▶ Identify infrastructure and servicing constraints and issues to be addressed as part of the implementation.

This engineering report is based on a desktop study which covers the existing infrastructure servicing the KACP. The study incorporates a review of site characteristics, stormwater drainage and utility services including sewer, water, power, telecommunications and gas.

The findings in this report are largely based on preliminary advice from relevant authorities. The information is current as of October 2018 and may be subject to change as development and planning proceeds in the locality.

2 Introduction

The subject site is located approximately 19km east of the Perth CBD in the Shire of Kalamunda and comprises an area of approximately 70ha. The site area is shown on Figure 2.1 and is located within and surrounding the town centre of Kalamunda.

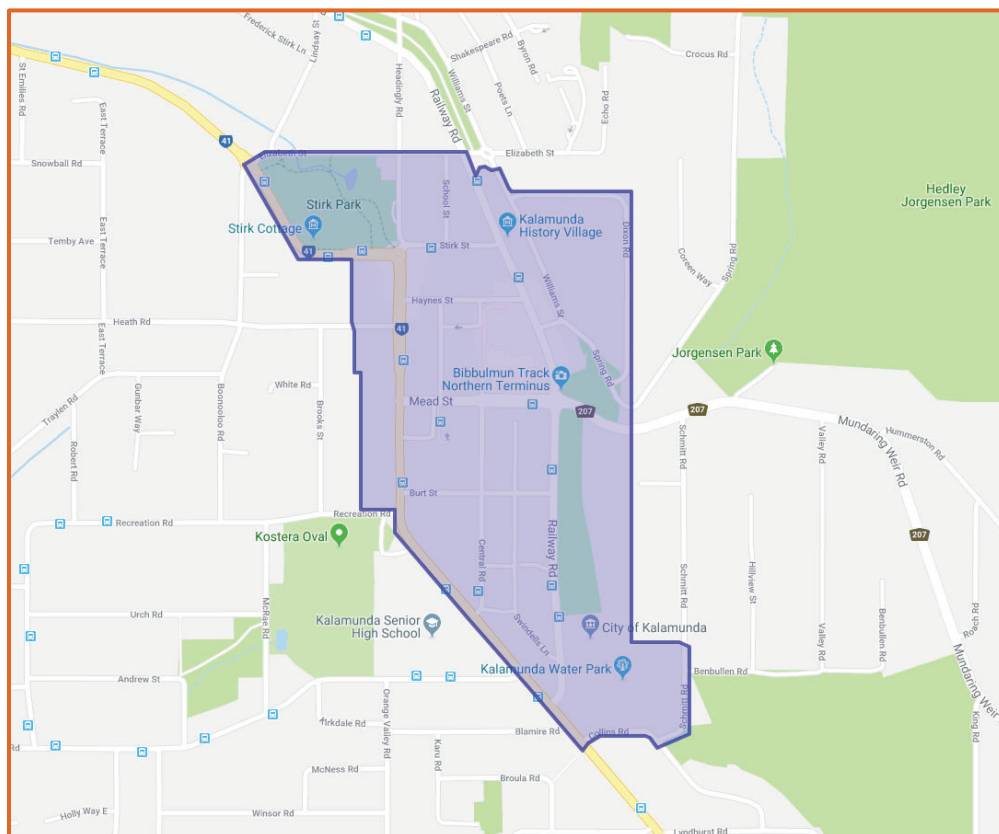


Figure 2.1: Site location (Nearmap, September 2018)

The KACP has been divided into smaller precincts to help identify the different density and building heights forecast across the area (as shown in Figure 2.2 and Table 2.1). JDSi has used this information to determine probable ultimate demands for water, sewer and power utilities. This has been summarised in Table 2.2.

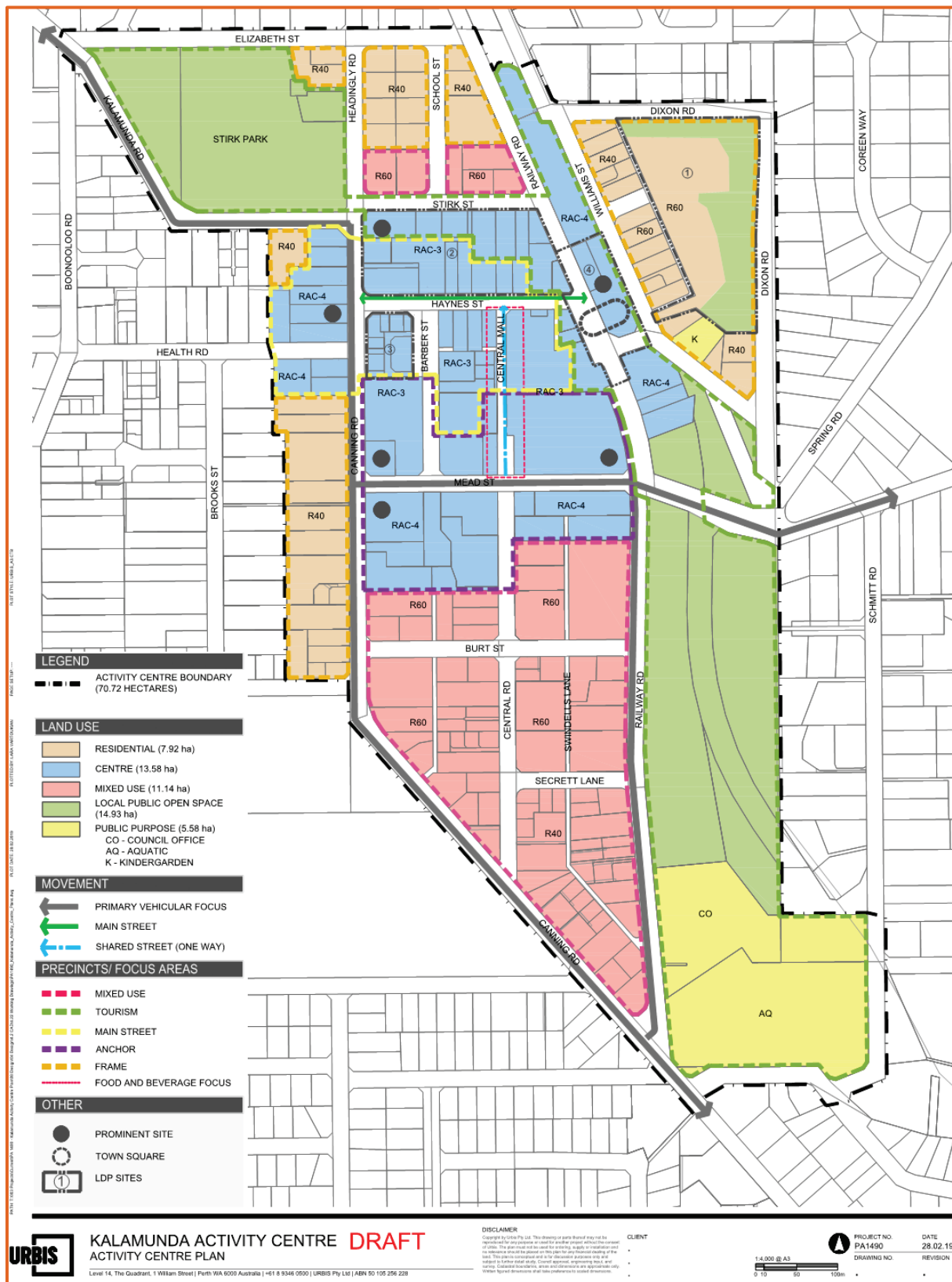


Figure 2.2: Activity Centre Plan (Urbis, February 2019)

Table 2.1 Proposed Precinct Densities

Precinct	Areas			Residential Equivalent R-Code
	Commercial	Utilities	Conservation	
	(ha)	(ha)	(ha)	
Mixed Use - R40	3.4	0.0	0.0	R-40
Mixed Use - R60	9.7	0.0	0.0	R-60
Tourism - RAC4	8.7	0.0	0.0	RAC-4
Tourism - POS	0.0	0.0	13.4	N/A
Tourism - Public Purpose	6.6	0.0	0.0	R-60
Main Street - RAC4	3.2	0.0	0.0	RAC-4
Main Street - RAC3	7.2	0.0	0.0	RAC-3
Anchor - RAC4	4.9	0.0	0.0	RAC-4
Anchor - RAC3	6.1	0.0	0.0	RAC-3
Frame - R40	0.0	0.0	0.0	R-40
Frame - R60	0.0	0.0	0.0	R-60
Frame - POS	0.0	0.0	1.5	N/A
	49.8	0.0	14.9	

Table 2.2 Probable Ultimate Demands for Water, Sewer, Power and Gas

Precinct	Dwellings (no.)	Demands		
		Water (L/s)	Sewer (L/s)	Power (MVA)
Mixed Use - R40	133	13	2	2
Mixed Use - R60	548	37	6	8
Tourism - RAC4	204	21	3	6
Tourism - POS	0	0	0	0
Tourism - Public Purpose	370	26	5	5
Main Street - RAC4	74	9	1	2
Main Street - RAC3	204	20	2	5
Anchor - RAC4	116	13	2	3
Anchor - RAC3	171	17	3	4
Frame - R40	220	13	0	1
Frame - R60	98	7	0	0
Frame - POS	0	0	0	0
Total	2,138	176	23	37

Please note the probable ultimate demands shown in Table 2.2 are the forecast demands once the area is completely developed to the proposed KACP, and includes already existing dwellings in the forecast model.

This report documents the existing and future servicing requirements to support the planned development. It has been based on JDSi's site observations, local experience gained from various projects and advice received from the various infrastructure stakeholders and utility providers.

3 Site Characteristics

3.1 Existing Structures and Vegetation

An aerial of the subject site is shown on Figure 3.1 and provides an overview of the existing structures and extent of vegetation on the site. The site predominantly consists of low rise commercial and residential dwellings along with public and community facilities. To the east of the subject area is significant undeveloped crown reserve.

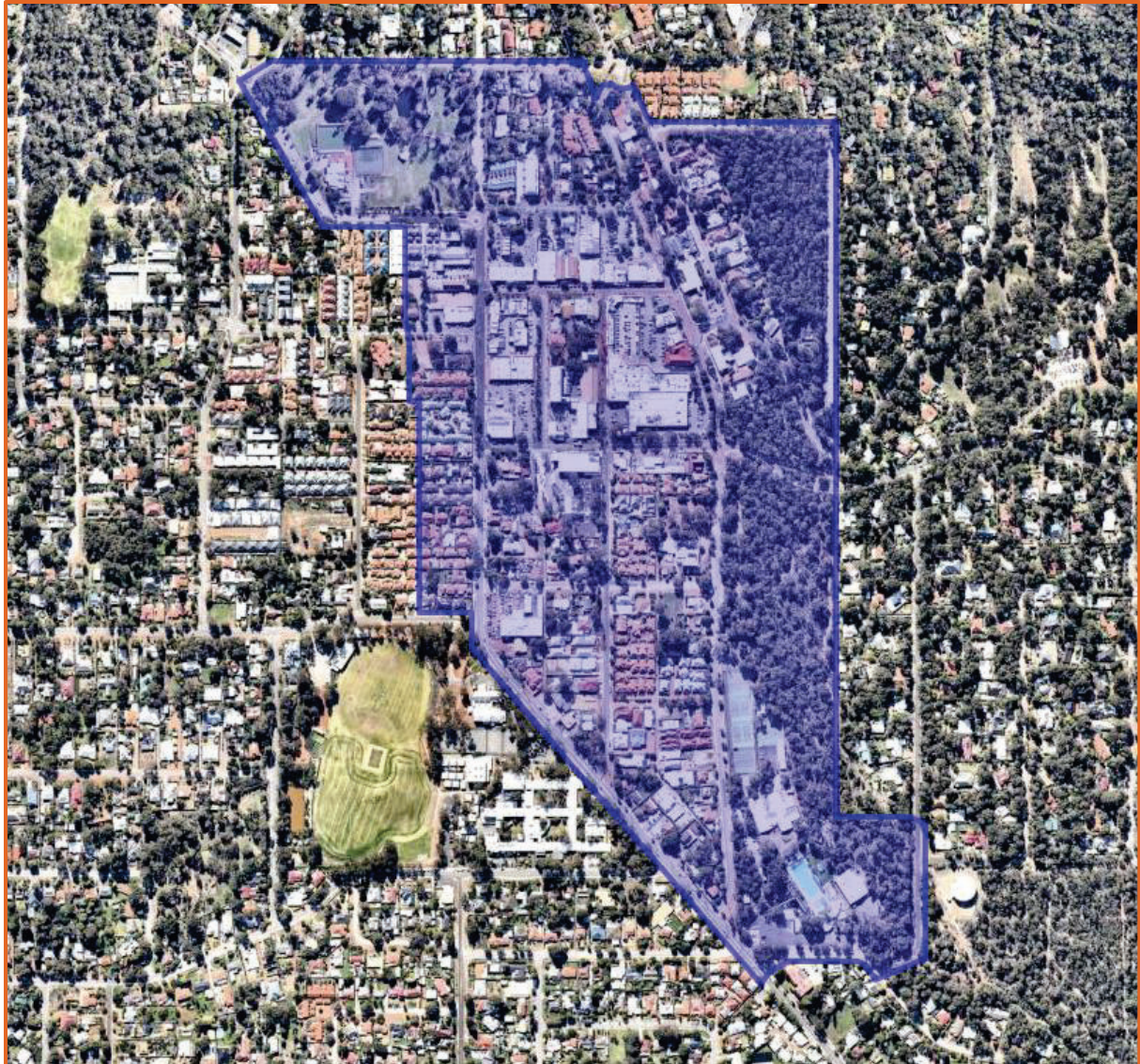


Figure 3.1: Site aerial (Nearmap, September 2018)

3.2 Topography

Low resolution topographical data sourced from the Water Corporation's Electronic Submissions Interface indicates the site comprising of undulating land with grades of up to 1 in 10 in some areas. An excerpt of the topographical data is shown on Figure 3.2 The topographical data is consistent with our visual assessment of the site undertaken utilising "street view" photography sourced from Nearmap

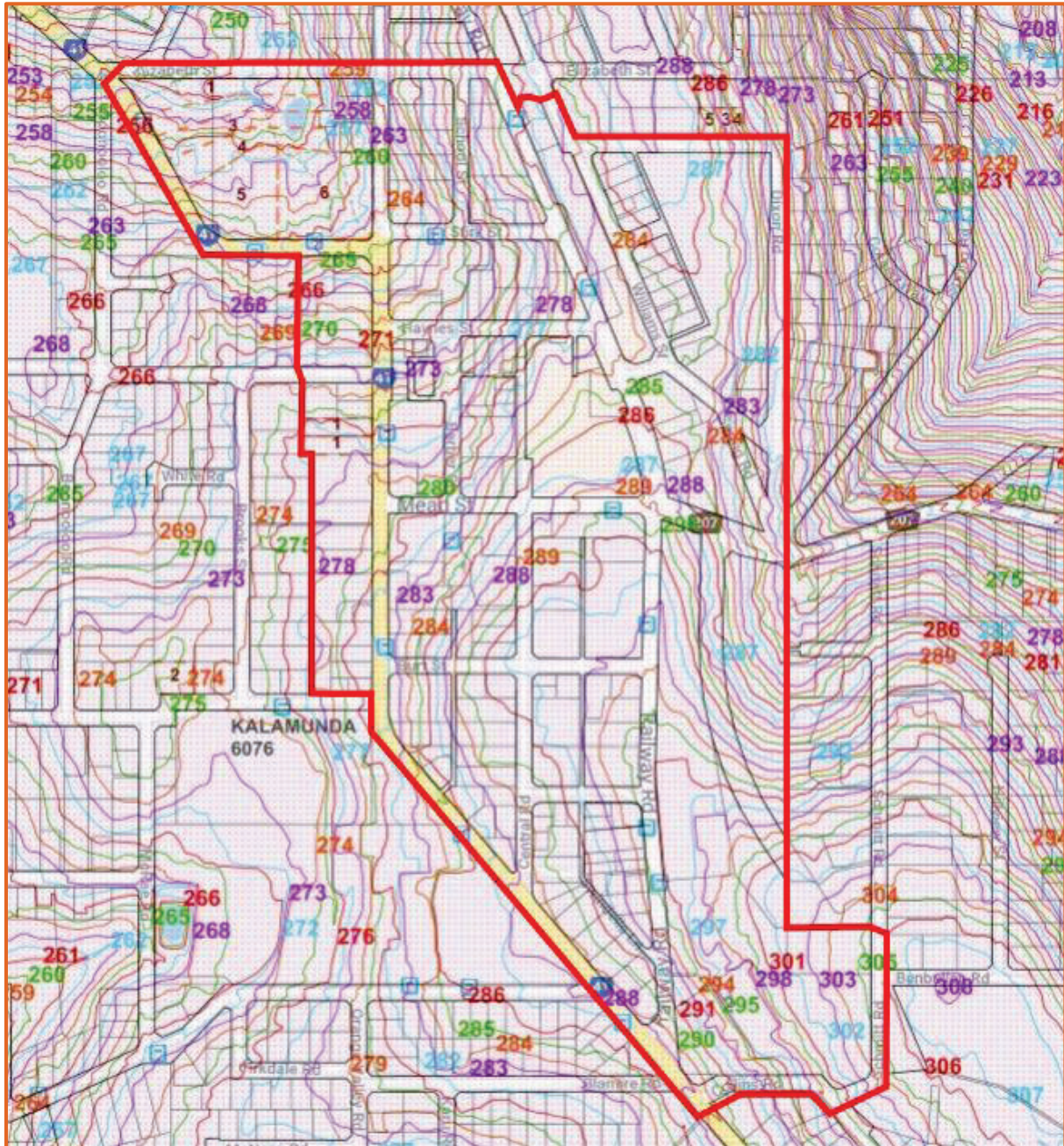


Figure 3.2: Topography (Water Corporation, September 2018)

4 Sewer

4.1 Existing Situation

The Water Corporation owns and maintains the sewerage reticulation system across the Perth Metropolitan area.

The subject area possesses several operational Water Corporation gravity sewer lines and two privately owned pump stations. Existing sewer reticulation can be seen in Figure 4.1 highlighted in red. There is the potential for existing sewer lines to be extended in order to service all lots within the site area. Currently the sewer network in the area is collecting and flowing downstream west of the subject area. An investigation would need to be undertaken to determine what amendments to the existing sewer infrastructure would be required to service additional lots and increased lot densities.

All sewer lines in the subject area are standard DN150 PVC pipe, with the exception of a single DN300 gravity line extending from the Kalamunda District Hospital (to the North East of the KACP), south along Williams St, across Haynes Rd and finally exiting the area to the West.

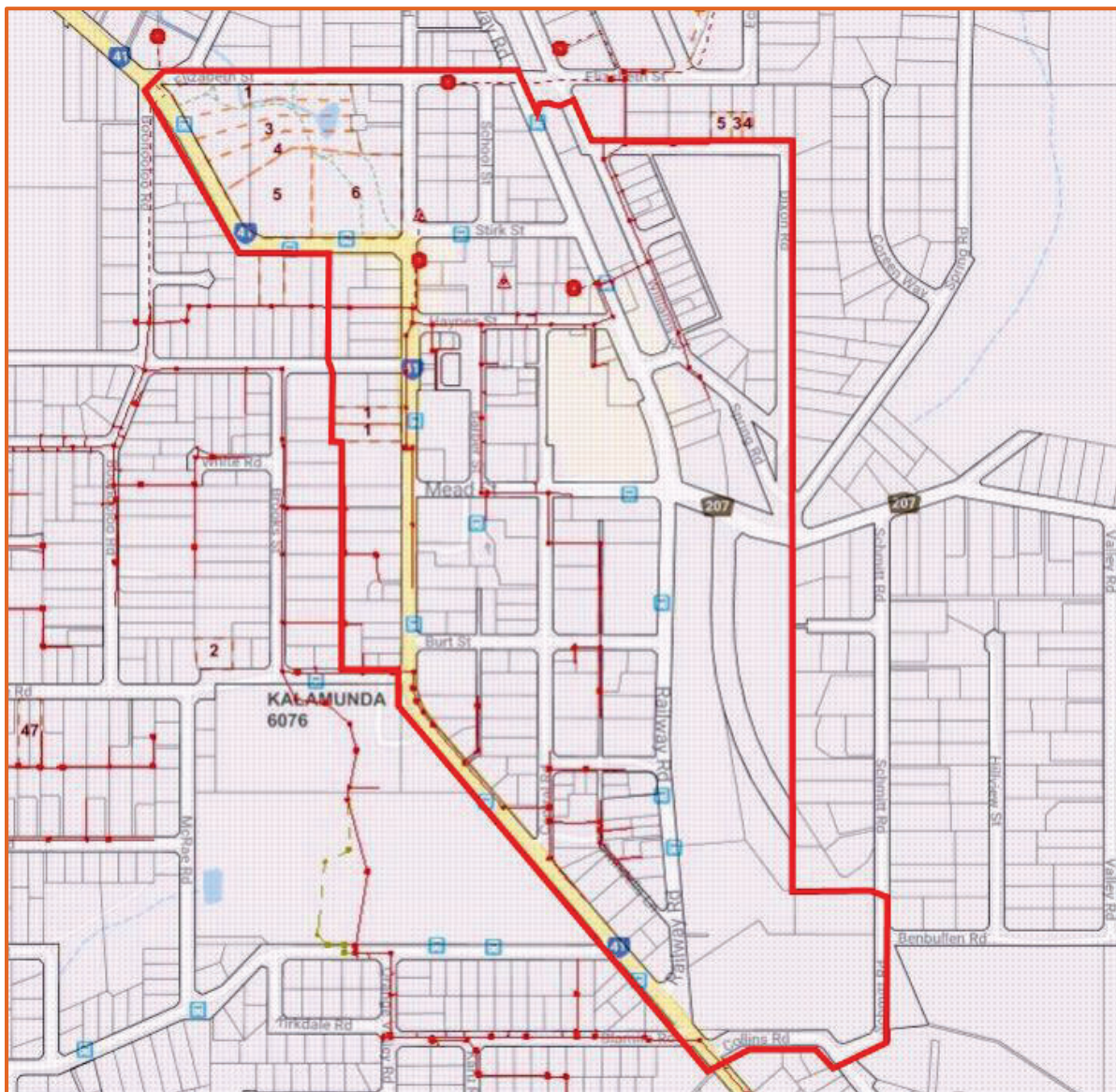


Figure 4.1: Water Corporation Sewer Reticulation Assets (Water Corporation, December 2017)

4.2 Current Planning

Whilst the Water Corporation has planning in place across the Perth Metropolitan region, it requires updating as revised re-zoning and Council planning occurs to ensure additional loads are taken into account. The Water Corporation have carried out a review of the current planning based on the forecast dwelling numbers and developable areas for each of the precincts and have provided preliminary advice for the ultimate development. These are outlined in Section 4.3.

4.3 Future Requirements

The Water Corporation's adopted, long term wastewater planning for the Kalamunda Sewer District is attached in Appendix A. The green linework shows the various sub-catchments and assumed SDF's based on ultimate flows arising from the full development at the zonings and density codings shown in the City's current Town Planning Scheme.

The capacity limits of the various 150mm and 225mm retic. sewers will be based on the gravity hydraulic characteristics of gravity sewers (150 sewers typically can accept up to 6 L/s SDF depending on grade; 225 sewers can accept up to 22L/s SDF depending on grade).

JDSi have overlayed the Water Corporation sub-catchments and assumed SDF flows onto the Activity Centre Plan, and it appears the long-term flows from the full development of the proposed land uses can be accommodated in the downstream gravity sewers. However, this would need to be confirmed by Water Corporation following a review of the entire Kalamunda SD planning at some point in the future should the zoning changes be accepted and included in a revised TPS.

5 Water Supply

5.1 Existing Situation

The water supply assets owned by the Water Corporation within the vicinity of the site are shown on Figure 5.1. No water supply assets owned by other potable water providers were identified by Dial Before You Dig (DBYD) checks of the study area. The subject area is currently well serviced by a network consisting of steel, cast iron and asbestos cement pipes.

Of note, there is a DN460/535/610 steel distribution main running north to south through site towards a water storage facility in the south east corner. Stretching from Headingly Rd, down through Barber St, Central Rd and Canning Rd and across Collins Rd.

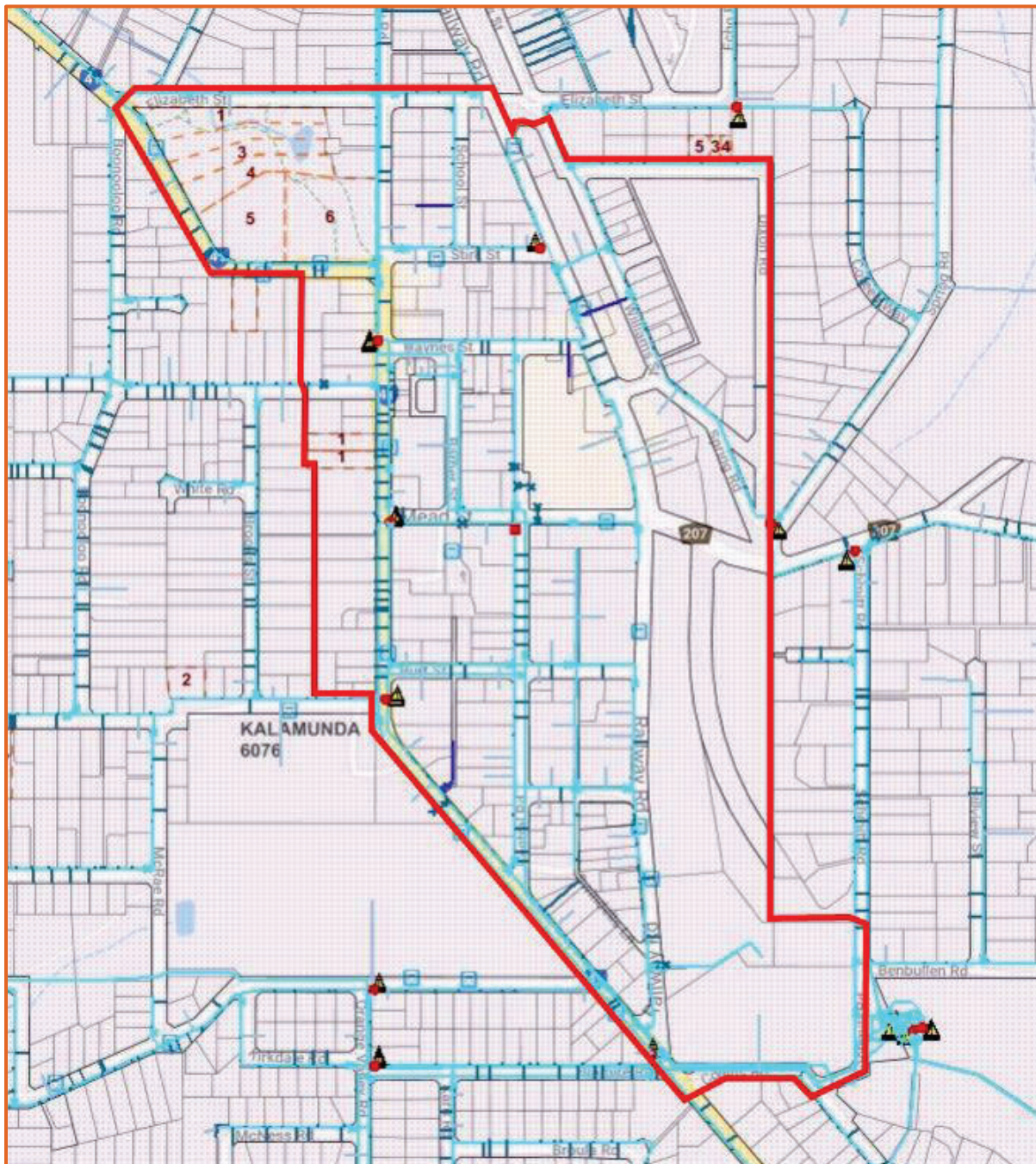


Figure 5.1: Water Corporation water reticulation assets (Water Corporation, September 2018)

5.2 Current Planning

The Water Corporation undertook a review of its current water distribution network across a large portion of the Perth Metropolitan Region as part of their Pressure Management Program and are looking at implementing District Metered Areas (DMA's) to help identify where losses in their system may be occurring. A DMA is defined as a discrete part of a water distribution network and is created by closing boundary valves or permanently disconnecting pipes to neighbouring areas. This will then allow the Water Corporation to control and meter water into a particular DMA in order to calculate the water balance for that area. This in turn will help to identify any losses within a particular system to allow the Water Corporation to prioritise any maintenance and upgrade works required.

5.3 Future Upgrades

Water Corporation have advised that it is not possible to determine if any of this network will need to be upgraded to support servicing of the land use categories indicated in the draft townsite strategy. Depending on the hydraulic demands of individual land uses or buildings, it is possible that some short sections of retic. main may need to be upgraded, replaced, re-laid or duplicated as necessary.

In Water Corporation's experience, most domestic water services can be adequately provided off 100 or 150mm retic mains. In some instances, particularly with mixed use class buildings under the BCA, or high rise, multi-storey buildings, the fire servicing requirements under the BCA drive the need for a large domestic fire service which can't be provided off a 100mm main. In these cases, the developer/builder/landowner will need to fund and undertake a water retic. main upgrade.

6 Power Supply

6.1 Existing Situation

Western Power owns and operates the electrical supply network within the area and therefore all electrical supply equipment and cables will need to be installed in accordance with Western Power UDS specifications. Western Power's high voltage (HV) assets located within the study area are shown on Figure 6.1. These include an existing 132kV transmission line and several high voltage distribution line assets.

The site area currently uses a combination of overhead and underground power networks. To improve the amenity of the town centre overhead lines may be moved underground. As planning progresses, discussion with Western Power and the City of Kalamunda would need to occur regarding this.

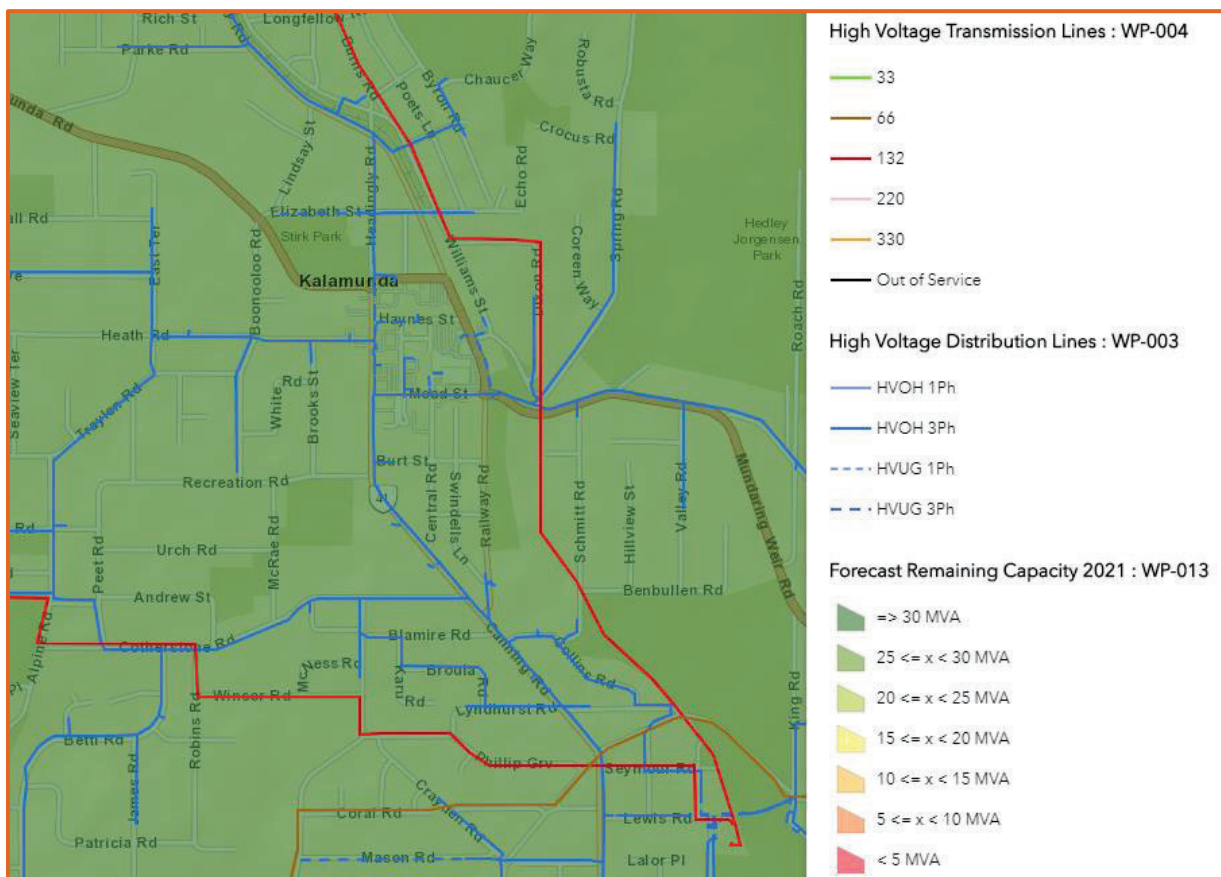


Figure 6.1: HV Assets and Forecasted Capacity (Western Power Network Capacity Mapping Tool), September 2018)

6.2 Current Planning

Western Power regularly monitor their current network demand and take into account proposed Council Structure Plans to forecast potential network shortfalls across their expansive network. While they currently have planning forecasts showing remaining capacity until 2036, Western Power will not allow the reservation of power supply for any future development. It is on a “first come, first serve” basis and, therefore, Western Power cannot advise with any certainty where the power supply to support the future development of the KACP will come from.

6.3 Future Upgrades

Based on the forecast loading, JDSi has calculated the required power demand for the ultimate development of the KACP to be in the order of 37MVA. A summary of the forecast demands is shown in Table 6.1 below.

Table 6.1 – Forecast Power Demands for the KACP

Precinct	Dwellings [no.]	Areas			Demands
		Commercial [ha]	Utilities [ha]	Conservation [ha]	Power [MVA]
Mixed Use - R40	133	3.4	0.0	0.0	2
Mixed Use - R60	548	9.7	0.0	0.0	8
Tourism - RAC4	204	8.7	0.0	0.0	6
Tourism - POS	0	0.0	0.0	13.4	0
Tourism - Public Purpose	370	6.6	0.0	0.0	5
Main Street - RAC4	74	3.2	0.0	0.0	2
Main Street - RAC3	204	7.2	0.0	0.0	5
Anchor - RAC4	116	4.9	0.0	0.0	3
Anchor - RAC3	171	6.1	0.0	0.0	4
Frame - R40	220	0.0	0.0	0.0	1
Frame - R60	98	0.0	0.0	0.0	0
Frame - POS	0	0.0	0.0	1.5	0
Total	2,138	49.8	0.0	14.9	37

The Western Power Network Capacity Mapping Tool indicates forecasted capacity of the subject area to be in excess of 30 MVA in 2021 and remains over 30 MVA in the 2026 and 2031 projections. This suggests that there would be sufficient capacity to service a rise in power demand following an increase in zoning density.

Western Power have advised they are willing to set up a working group with the City to work through planning of the area and review timing of developments to better inform both the City and themselves of the future upgrades required, and to help plan the upgrades through either their future network upgrading program, or working with the City and developers should upgrades be required due to specific development projects.

7 Telecommunications

7.1 Existing Situation

The National Broadband Network (NBN) rollout map indicates that the KACP is well serviced with NBN currently. An excerpt of the rollout map is shown on Figure 6.1. Early discussions with NBN should be undertaken to ensure adequate servicing for future planning requirements.

In addition to NBN there is an Optus fibre cabling along the entire length of Railway Road within the site, continuing along Canning Road to the south. There are also widespread Telstra assets present throughout the subject area.

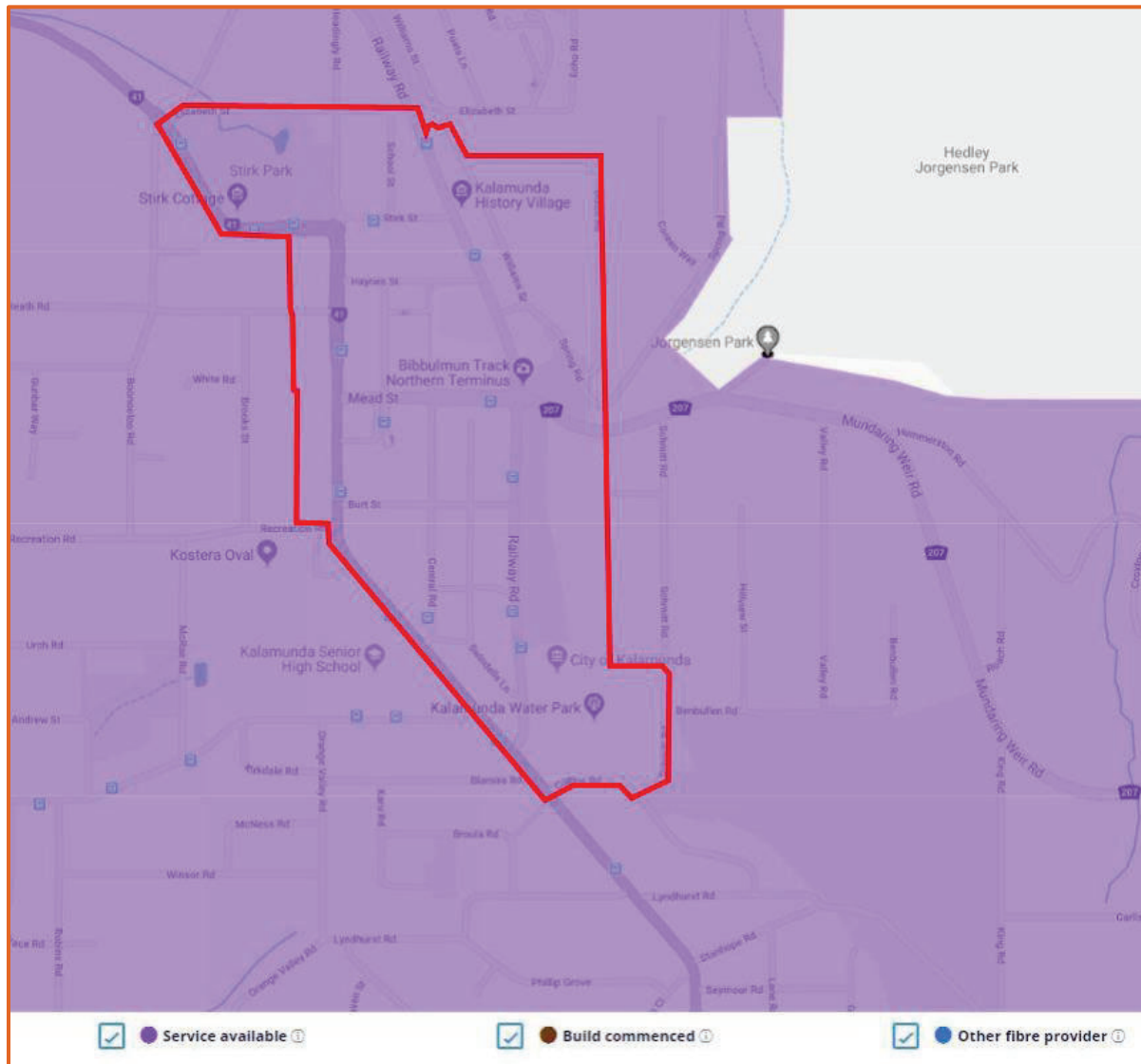


Figure 7.1: NBN rollout map (NBN Co, September 2018)

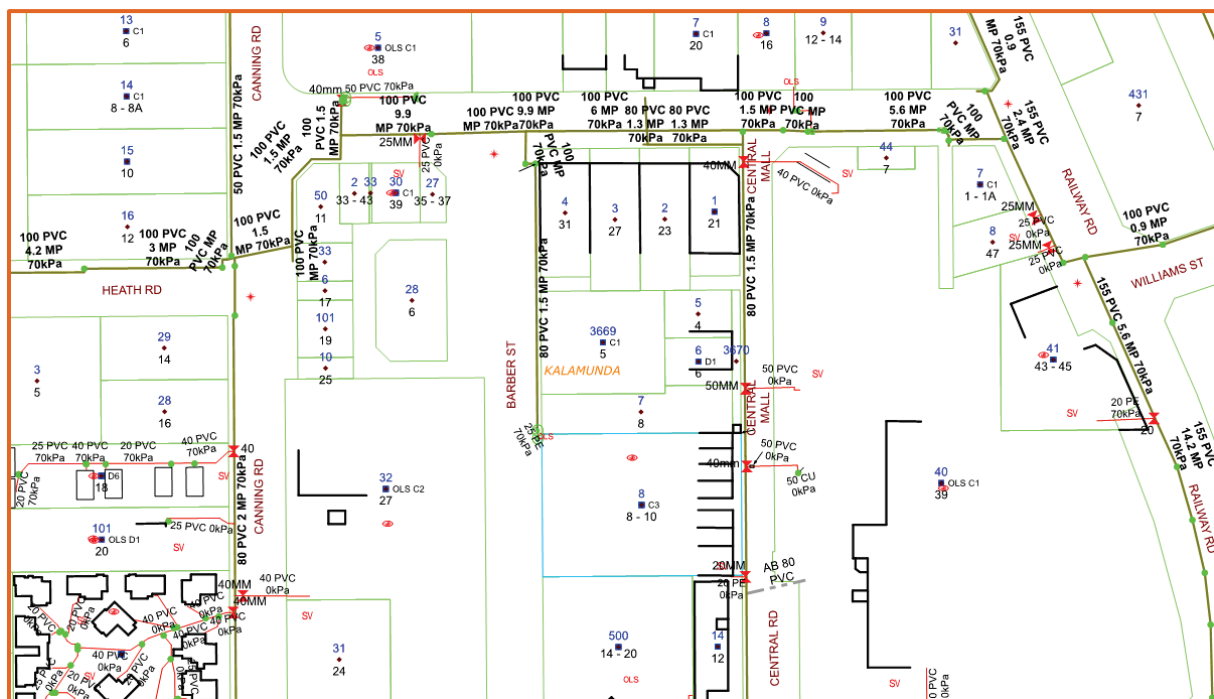
7.2 Future Upgrades

NBN have advised they have capacity to meet the required demands of the KACP as development occurs. It will assess each application on a case by case basis to determine load demand and will work with the developer to provide the relevant infrastructure.

General communication services for development will consist of the installation of a standard pit and pipe network in accordance with NBN Co guidelines and standards. The current design practice for road reserves, pavement and verge provisions will make adequate allowance for services including broadband in accordance with the agreed Utilities Service Providers handbook. There will be some local land requirements for equipment sites, similar to current provisions which

8 Gas

ATCO Gas infrastructure is well reticulated through the KACP area. No High-pressure mains exist, however an extensive network of medium pressure 70kPa PVC lines and lot connections are present throughout the site. ATCO gas will provide additional advice on the capacity to service the subject area once proposed changes to the current planning are finalised.



8.2 Future Upgrades

9 Drainage

The City of Kalamunda have advised they do not have any planning / management strategies currently in place for the subject area. They do, however, have plans to upgrade drainage within Barber Street, Haynes Street, Canning Road and Kalamunda Road as per Figure 9.1.

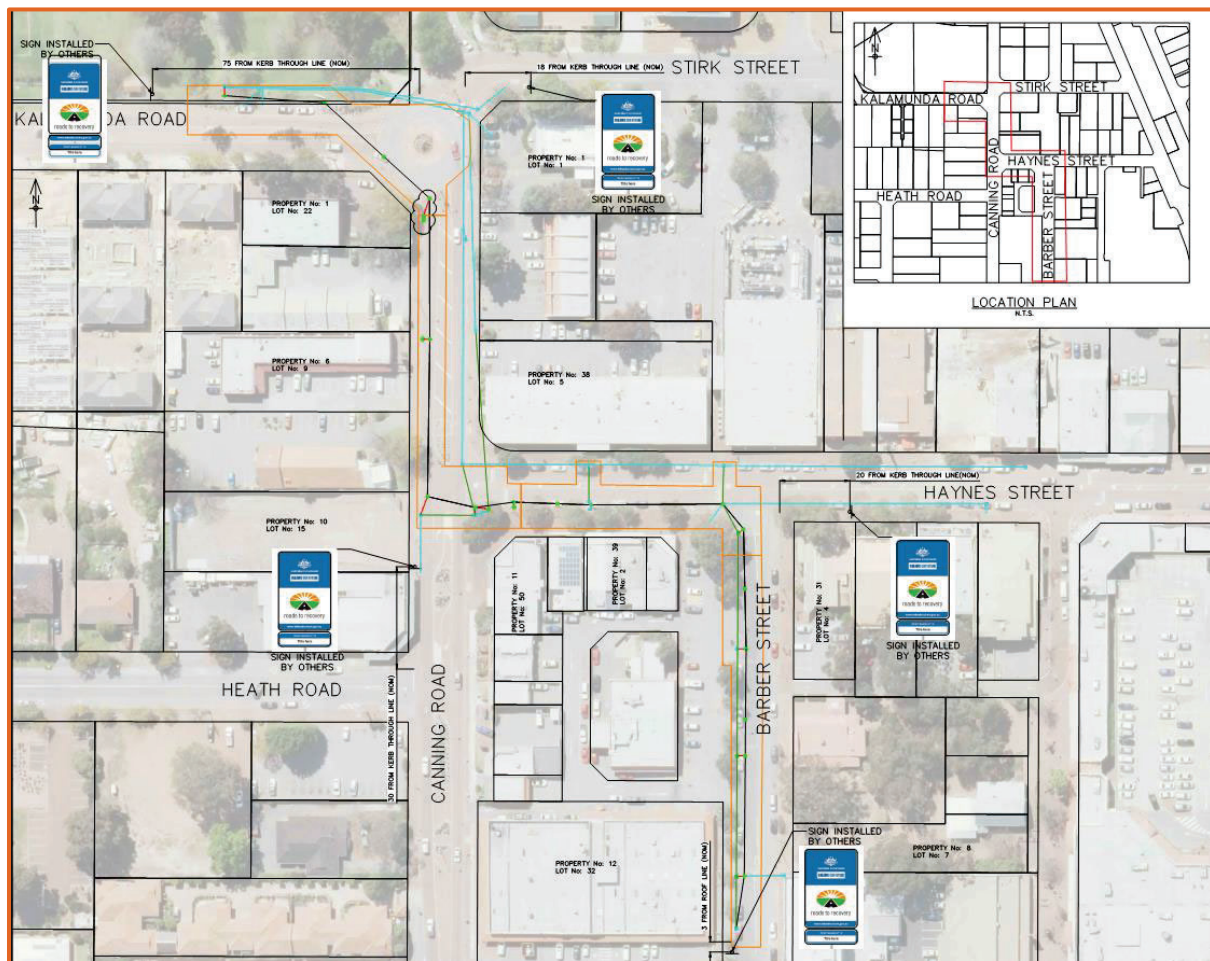


Figure 9.1: Proposed Drainage Upgrades, Kalamunda City Centre (City of Kalamunda, 2017)

A portion of the proposed upgrade works have been completed to date.

9.2 Future Requirements

It is recommended that a detailed drainage study of the KACP area is completed to provide guidance on any further upgrades that may be required to allow future development of the area. It is recommended that this is carried out prior to any further road upgrades within the KACP, to avoid potential reworks being required should drainage infrastructure require upgrading.

Discussions with the City indicated a desire for lot owners to manage their drainage within their lot (up to a 1 in 100 ARI event), with the City to deal with road and POS drainage. However, this would pose quite an onerous condition on the lot owners due to the very low permeability of the ground in the area. Large onsite storage tanks would be required with low flow outlets still needing to be permitted into the City's stormwater drainage network to allow for emptying of the on-site storage. Alternatively, a DCP could be considered for the area to allow the City to maintain/upgrade the drainage network as required. More discussion with the City should be undertaken to determine a direction forward with this issue.

10 Key Drivers and Risks

There are a number of key drivers and risks for a project the magnitude of the KACP upgrade. Some of these are outlined below.

10.1 Key Drivers

The KACP is currently well serviced with power, water, wastewater, telecommunications and gas reticulation, based on the current land use status. However, the proposed increase in population, commercial and retail space, and associated increases in transport, energy and water use, as well as the incorporation of large public areas to attract more visitors to the area, are the key driver forces affecting the existing infrastructure capacities.

These drivers exert direct pressure onto these utilities and ultimately produce a number of challenges which are described below.

10.1.1 Overhead Power

While a number of overhead power lines have been converted to underground, there are still several HV & LV overhead lines within the KACP precinct. These will restrict road upgrade and verge treatments in these areas, as well as greatly detract from the amenity of the area. JDSi recommend the City liaise with Western Power to discuss opportunities for inclusion in their future State Underground Power Program (SUPP). This program presents an opportunity to share the cost of undergrounding power between the State Government, Western Power, local councils and property owners.



Figure 9.1: Overhead HV & LV Lines in Mead Street (Google Street View, August 2018)

10.1.2 Staging of Works

With over 50Ha of developable land being rezoned, and with a major portion of the area being owned by individual lot owners, staging of the works becomes a very complex situation. Should a majority of landowners wish to develop within a very short timeframe, a significant pressure would be put on a majority of services, forcing upgrades to be required earlier than would be expected through “organic growth”. Western Power, ATCO Gas, and to a lesser extent the Water Corporation develop their forward works programs based on a steady rate of development. By staging the re-zoning of particular precincts, and reducing the “instant” impact on services, service reinforcements are more likely to be funded by the utilities as opposed to needing to be funded upfront by the developer.

10.1.3 Collaborative Approach

Due to the size of the proposed KACP and the impact it will have on multiple service provider assets, JDSi recommends a working group be formed between the City of Kalamunda and the relevant Authorities. This will enable open dialogue between all parties, and help identify required upgrades, critical timing of upgrades, and any potential fatal flaws or network modifications.

The following people would be the initial contact people from the relevant authorities:

- ▶ Water Corporation: Ian Kininmonth, Senior Urban Planner
ian.kininmonth@watercorporation.com.au
- ▶ Western Power: Julie Hodges, Customer Relations Consultant
julie.hodges@westernpower.com.au
- ▶ ATCO Gas: Chris Pemberton, Senior Business Development Representative
chris.pemberton@atcogas.com.au
- ▶ NBN Co: Gillian Murphy, Customer Delivery Specialist
gillianmurphy@nbnco.com.au

10.2 Key Risks

10.2.1 Community Consultation

Due to the scale of the required upgrades to roads and services, and the extent of time over which these upgrades will need to occur, community consultation will be key to ensuring residents are well informed of the proposed changes, and more importantly timing of any changes that will have a direct impact on those affected. Early community consultation, including public information sessions, community workshops, newsletter drops etc, allows residents to better prepare themselves for any disruptions that will affect their circumstances, which should allow for a smoother rollout of upgrades throughout the KACP.

10.2.2 Health

Because of the brownfield redevelopment nature of the KACP upgrades, it is imperative that appropriate Dust, Noise and Vibration management plans are implemented during construction works so as to minimise any impact on the existing residents. These management plans should comply with all statutory requirements and guidelines, and closely monitored for compliance during the construction works.

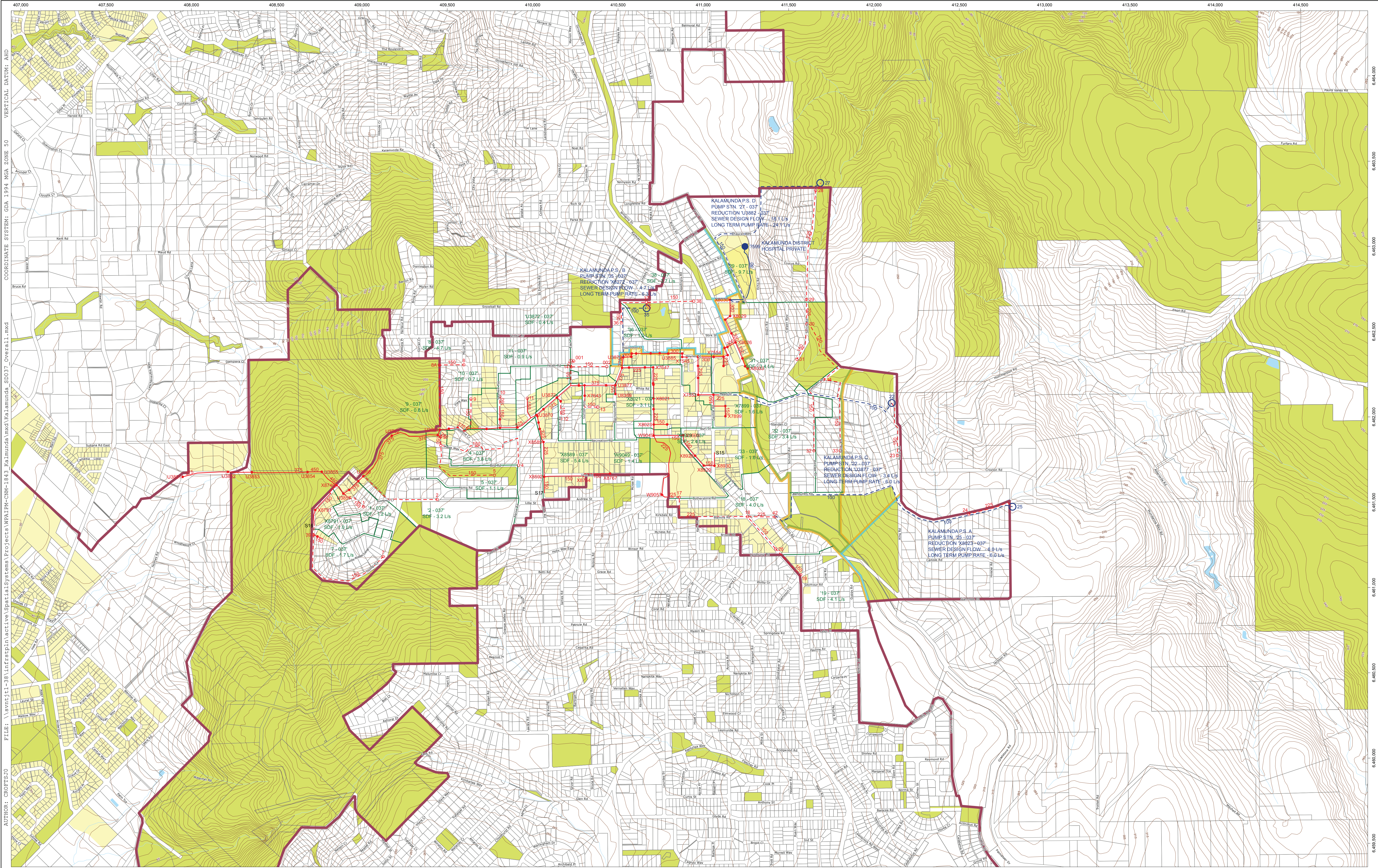
11 Conclusion

While the area is well serviced by all utilities to meet current demands, several upgrades will be required to meet the ultimate development requirements. These include:

- ▶ Potential upgrades to water reticulation subject to development demands (particularly for fire water requirements)
- ▶ Potential upgrades to sewer reticulation subject to development demands
- ▶ Undergrounding of power as required by Western Power during redevelopment of land
- ▶ Potential upgrades to ATCO Gas reticulation subject to development demands

Some of the above upgrades will be carried out by the relevant service authority as “organic growth” of the area occurs (such as pump station upgrades, power and gas reinforcements). However, if there is a development with a singularly high demand, then some or all of the cost to upgrade infrastructure to service the development may be borne by the developer.

Appendix A – Water Corporation Sewer Conceptual Planning Long Term Scheme



FILE: \\svt11-30\infostp\active\Spatial Systems\Projects\WPA\PM-CNW-1843 Kalamunda.mxd Kalamunda SD037_Overall.mxd
AUTHOR: CROFTS70
COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
VERTICAL DATUM: AHD

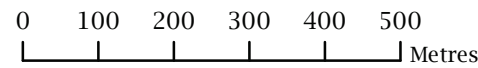
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LEGEND

- Existing Access Chamber
- Proposed Access Chamber
- Existing Vacuum Chamber
- Proposed Vacuum Chamber
- Existing Pump Station
- Proposed Pump Station
- Existing Gravity Sewer
- Proposed Gravity Sewer
- Existing Vacuum Sewer
- Proposed Vacuum Sewer
- Existing Pressure Main
- Proposed Pressure Main
- Node Catchment
- PS and Sewer Catchments
- Sewer District / WWTP Catchment
- Existing Sewered Areas
- Sewered By Private PS
- Parks and Public Open Space
- Bush Forever
- Cut / Fill
- Floodway / Flood Fringe
- Flood Plain

NOTATION

SEWER DISTRICT NUMBER
CATCHMENT NODE
CATCHMENT '7001 - 121'
R15 - 108.4 @75% (W)
R CODE ZONING
GROSS AREA (ha)
% OF LAND DEVELOPMENT
(W) - WET CONDITIONS
(D) - DRY CONDITIONS



SHEET INDEX



AQUA No. XXXXXXX
AQUA VERSION V1



ISSUED WITH THE AUTHORITY OF THE MANAGER
ASSET PLANNING GROUP
629 NEWCASTLE STREET, LEEDERVILLE 6007
WESTERN AUSTRALIA.
TELEPHONE (08) 9420 2420, FAX (08) 9420 3179

WASTEWATER SCHEME PLANNING SERIES

KALAMUNDA - SD037
CONCEPTUAL PLANNING
LONG TERM SCHEME

PLANNING BY M. FLYNN	COMPILED BY L. GABRIEL	ACCEPTED BY R. APOLONI
SCALE 1:10,000	FULL REVIEW 10 FEBRUARY 1999	FILE NO. JT1 2015 04054 V01

Appendix B – Water Corporation Advice

Peter Royle

From: Brett Coombes <Brett.Coombes@watercorporation.com.au>
Sent: Wednesday, 24 October 2018 12:36 PM
To: Peter Royle
Subject: RE: Kalamunda City Centre - Planning Advice Submission
Attachments: Kalamunda SD conceptual ww planning.pdf; Kalamunda water networks.pdf; Kalamunda sewer network.pdf

Peter,

Chas is still away from the office.

Without water demands for all the proposed land uses and long term wastewater flows, it is difficult to provide any useful response to the City's draft strategy in the against the water Corporation's planning. Here are some general comments and issues that you will need to consider and possibly examine further.

Water servicing

The Kalamunda town centre area has an established network of water distribution and reticulation mains. The town centre area straddles two water supply zones: the Kalamunda-Lesmurdie High Level zone (generally west of Canning Rd), and the Walliston Lower High Level Zone. The zones are separated by closed zone valves at key points in the system (see attached screen image – purple line is the zone boundary).

The network of existing water reticulation mains (<300mm dia) along local streets that provide services to existing customers are typically 100 or 150mm cast iron, 100 or 150mm AC, with some short lengths of 100P in a couple of locations. It is not possible to determine if any of this network will need to be upgraded to support servicing of the land use categories indicated in the draft townsite strategy. Depending on the hydraulic demands of individual land uses or buildings, it is possible that some short sections of retic. main may need to be upgraded, replaced, re-laid or duplicated as necessary.

In our experience, most domestic water services can be adequately provided off 100 or 150mm retic mains. In some instances, particularly with mixed use class buildings under the BCA, or high rise, multi-storey buildings, the fire servicing requirements under the BCA drive the need for a large domestic fire service which can't be provided off a 100mm main. In these cases, the developer/builder/landowner will need to fund and undertake a water retic. main upgrade.

Wastewater servicing

The Water Corporation's sewerage network covers only a part of Kalamunda, including most of the town centre area – see attached image.

The gravity sewers through the town centre area are typically 150 and 225 PVC. The 300PVC Kalamunda Collector Sewer extends from Elizabeth St in the north (takes private pump discharge from the hospital) heading south along Williams St and Railway Rd, and west along Haynes St traversing the town centre.

The Corporation's adopted, long term wastewater planning for the Kalamunda Sewer District is attached for your use. The green linework shows the various sub-catchments and assumed SDF's based on ultimate flows arising from the full development at the zonings and density codings shown in the City's current TPS.

The capacity limits of the various 150mm and 225mm retic. sewers will be based on the gravity hydraulic characteristics of gravity sewers (150 sewers typically can accept up to 6 L/s SDF depending on grade; 225 sewers can accept up to 22L/s SDF depending on grade).

You will need to overlay our sub-catchments and assumed SDF flows onto the City's strategy and determine if the long term flows from the full development of the proposed land uses can be accommodated in the downstream gravity sewers.

If the flows arising from the draft town centre strategy are higher than what is allowed for in our planning, then we will need to undertake a review of the entire Kalamunda SD planning at some point in the future. We would usually get our planners to do this review when the zoning actually changes in the City's TPS.

Ultimately, the maximum wastewater flow out of the Kalamunda Sewer District is limited by the capacity of the DN375 outlet sewer. There are no plans or projects on our capital program to duplicate or upgrade the outlet sewer.

Regards

Brett Coombes
Senior Urban Planner
Assets Planning Group
Water Corporation
T: (08) 9420 3165

From: Peter Royle [mailto:Peter.Royle@jdsi.com.au]
Sent: Tuesday, 23 October 2018 11:36 AM
To: Chas.Sabato@watercorporation.com.au
Cc: Brett Coombes
Subject: RE: Kalamunda City Centre - Planning Advice Submission

Hi Chas,

Just wanted to touch base with you to see if we would be able to get some comments back this week?

Please feel free to give me a call to discuss if needed.

Kind regards

Peter Royle
SENIOR CIVIL ENGINEER

M: 0413 025 039	Workzone	
P: 08 9227 0595	Level 6, 1 Nash Street	PO Box 8523
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From: Brett Coombes [mailto:Brett.Coombes@watercorporation.com.au]
Sent: Wednesday, 17 October 2018 11:52 AM
To: Peter Royle <Peter.Royle@jdsi.com.au>
Subject: RE: Kalamunda City Centre - Planning Advice Submission

Good morning Peter.

We are down a couple of people this week, so we haven't managed to get around to your query. The turnaround time we aim for is 20 days, but we can usually get a first pass advice to you pretty quickly if we have the resources.

Chas Sabato in our team will be your contact point when he returns next week. In the meantime I have attached an excerpt of the Kalamunda Sewer District conceptual wastewater planning showing assumed maximum flows into various gravity reticulation sewers (150 and 225) that head west towards the DN375 outlet main sewer. The green linework shows the various sub-catchments and assumed SDF's based on ultimate flows arising from the full development at the zonings and density codings shown in the City's current TPS. I suggest that you overlay these sub-catchments and flows over the city centre plan and see how your flow yields and flow estimates are apportioned across the various sewers.

If the flows are higher than what is allowed for in our planning (i.e. if SDF's into the 150 sewers are going to be >6l/s and flows into the 225 sewers are going to be >20l/s) then we will need to undertake a review of the entire Kalamunda SD planning at some point in the future. We would usually get our planners to do this review when the zoning actually changes in the City's TPS.

Regards

Brett Coombes
Senior Urban Planner
Development Services Branch

From: Land Servicing
Sent: Wednesday, 17 October 2018 8:51 AM
To: Land Planning
Subject: FW: Kalamunda City Centre - Planning Advice Submission

Jan Pryce
Support Officer – Business Services
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Keep in touch     **W:** watercorporation.com.au

From: Peter Royle [<mailto:Peter.Royle@jdsi.com.au>]
Sent: Wednesday, 17 October 2018 8:45 AM
To: Land Servicing; Building Services
Subject: Kalamunda City Centre - Planning Advice Submission

Hi there,

I submitted an online application for planning advice for the proposed rezoning of the Kalamunda City Centre precinct area, however, I never received a receipt for the online application. I have attached a copy of the proposed changes which was also attached in the application. Also below is a table showing probable dwellings and demands.

Precinct	Dwellings (no.)	Demands		
		Water (L/s)	Sewer (L/s)	Power (MVA)
Mixed Use - D1	195	16	2	3
Mixed Use - D2	685	42	7	8
Tourism - D2	307	26	4	6
Tourism - POS	0	0	0	0
Tourism - Public Purpose	370	26	5	5
Main Street - A1	89	10	1	2
Main Street - A2	255	22	2	5
Anchor - A1	140	14	2	3
Anchor - A2	171	17	3	4
Frame - D1	323	18	0	1
Frame - D2	98	7	0	0
Frame - POS	102	8	0	0
Total	2,733	206	26	38

I have been asked by our client to provide an update on when we may receive advice. It would be good if someone could call to discuss with me to make sure we are on the same track with what is proposed.

Kind regards

Peter Royle

SENIOR CIVIL ENGINEER

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