AJM
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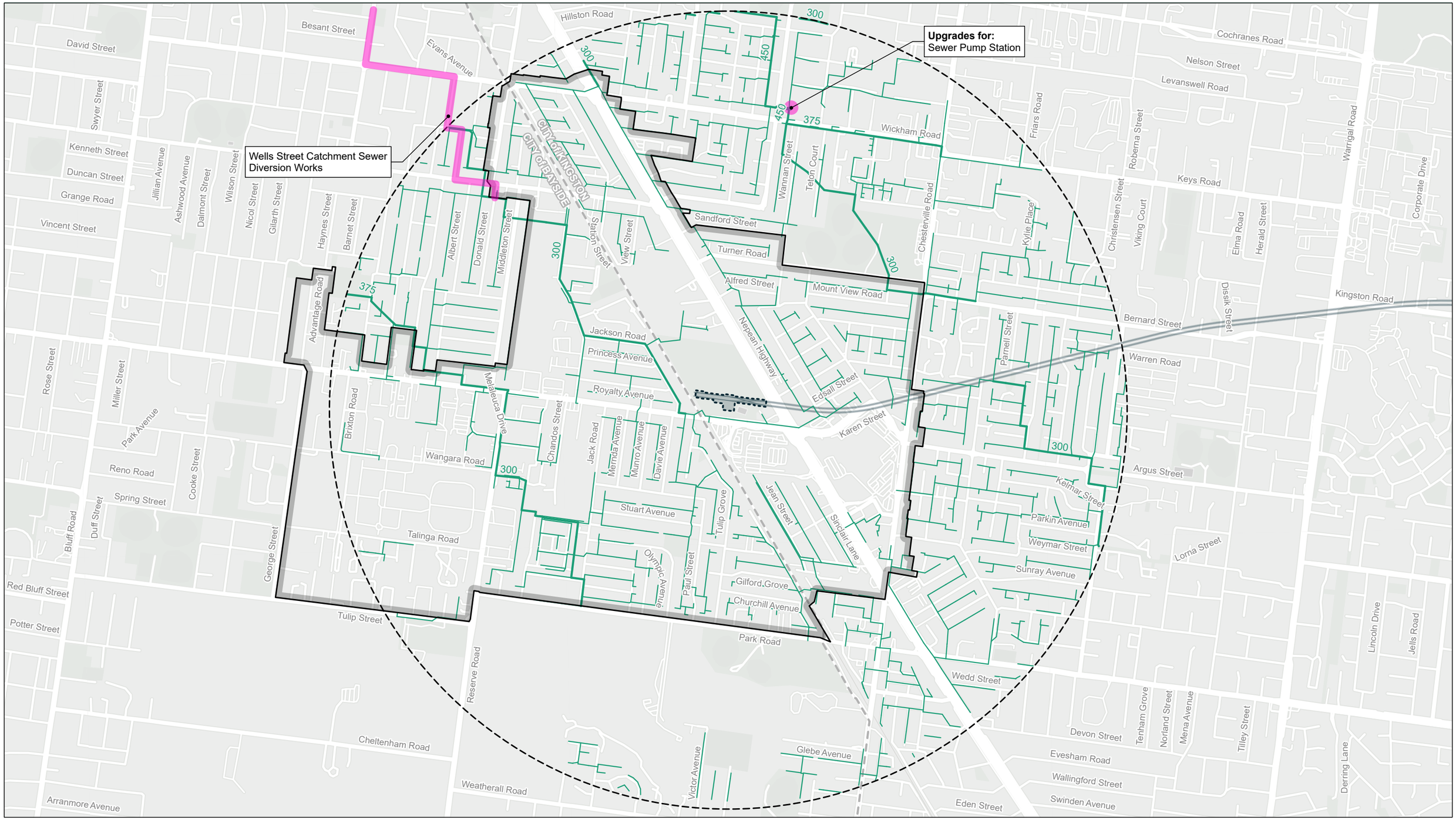
Appendix C

Structure Plan Area servicing capacity geographic information system (GIS) mapping

Appendix C.1 – Cheltenham Structure Plan Area servicing capacity



Sewer

- Identified Required Works Within Road Reserve

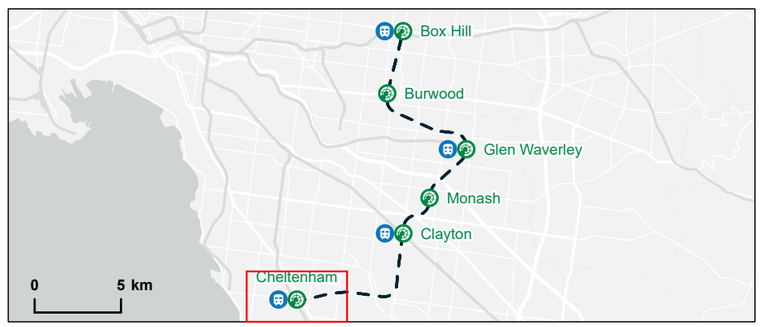
Asset Owner

- Melbourne Water
- Yarra Valley Water
- South East Water
- Private

Pipe Diameter (mm)

- 40–280
- 300–825
- 900–3050

- Suburban Rail Loop East Alignment
- Suburban Rail Loop East Station Box
- Structure Plan Area
- Local Government Area (LGA) Boundary



Data Sources:
AJMJV 2024
Esri 2024
Melbourne Water 2023
Yarra Valley Water 2024

Suburban Rail Loop

Cheltenham

Utilities Assessment — Sewer Upgrades

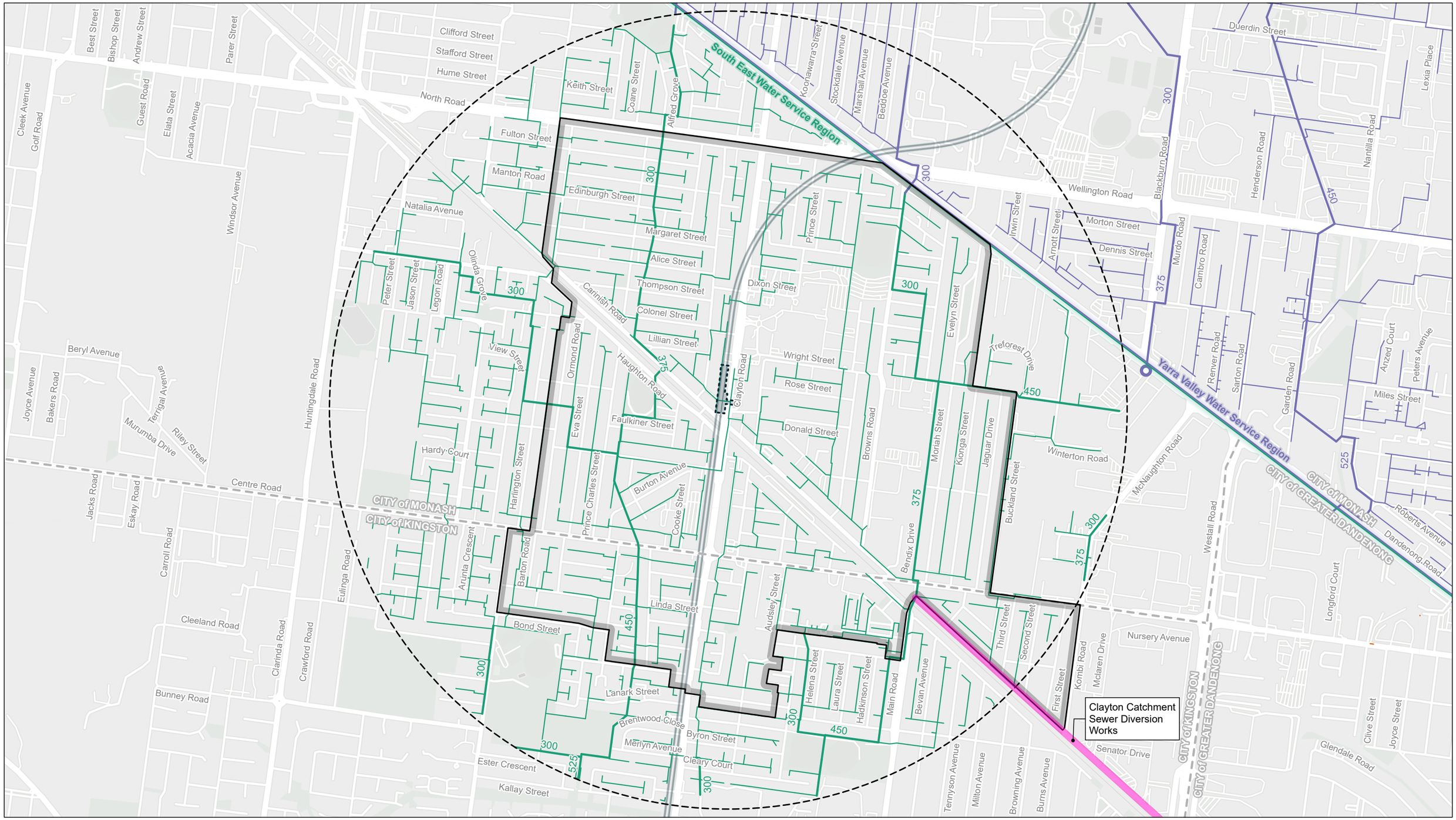
Drawing Number:			Revision:
SRL-TAV-AJM-TPWD-MAP-PPG-PWD-508194			A.5
Drawn By:	Approved By:	Date:	Map Size:
L. Tily	A. Raj	12/08/2024	A3

0 700
Metres

Coordinate System: GDA2020 MGA Zone 55

Joint Venture

Appendix C.2 – Clayton Structure Plan Area servicing capacity



Sewer

- Identified Required Works Within Road Reserve
- Identified Required Works Within Existing Easement. Easement Subject to Change

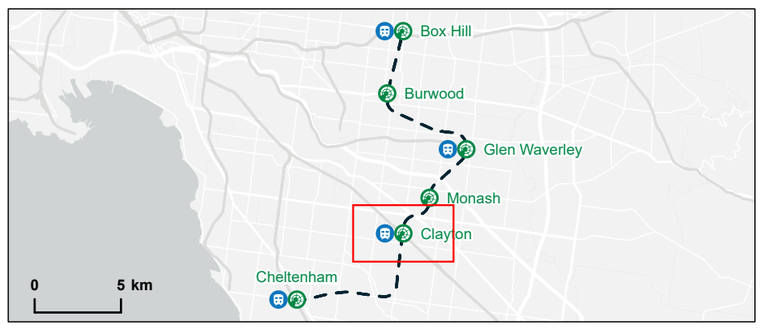
Asset Owner

- Melbourne Water
- Yarra Valley Water
- South East Water
- Private

Pipe Diameter (mm)

- 40–280
- 300–825
- 900–3050

- Suburban Rail Loop East Alignment
- Suburban Rail Loop East Station Box
- Structure Plan Area
- Local Government Area (LGA) Boundary



Data Sources:
AJMJV 2024
Esri 2024
Melbourne Water 2023
Yarra Valley Water 2024

SUBURBAN RAIL LOOP

Suburban Rail Loop

Clayton

Utilities Assessment — Sewer Upgrades

Drawing Number:			Revision:
SRL-TAV-AJM-TPWD-MAP-PPG-PWD-508194			A.5
Drawn By:	Approved By:	Date:	Map Size:
L. Tily	A. Raj	12/08/2024	A3

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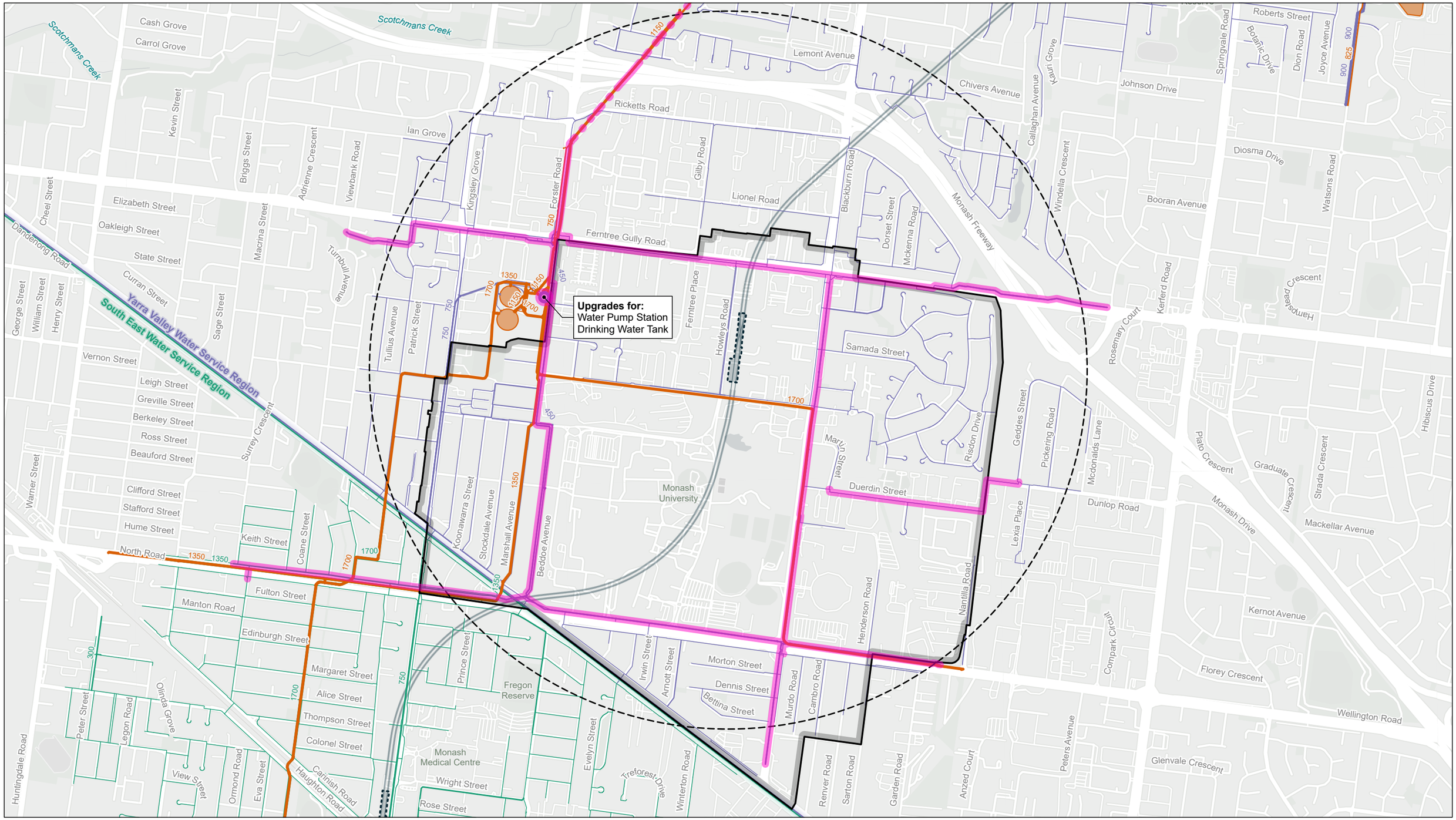
0 700
Metres

Coordinate System: GDA2020 MGA Zone 55

Appendix C.3 – Monash Structure Plan Area servicing capacity



Potable Water

- Identified Required Works Within Road Reserve
- Identified Required Works Within Existing Easement Easement Subject to Change

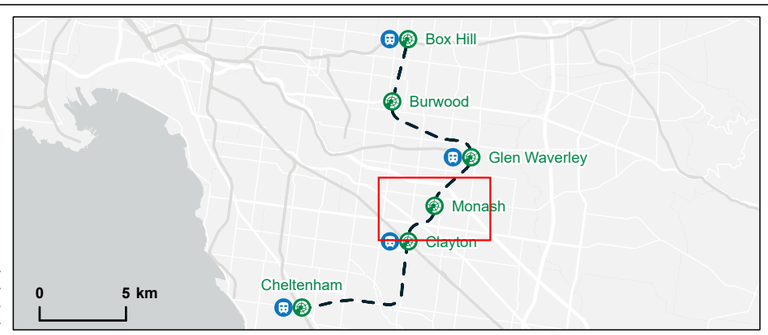
Asset Owner

- Melbourne Water
- Yarra Valley Water
- South East Water

Pipe Diameter (mm)

- 20–225
- 250–800
- 900–1700
- Water Storage

- Suburban Rail Loop East Alignment
- Suburban Rail Loop East Station Box
- Study Area (1.6 km)
- Structure Plan Area
- Local Government Area (LGA) Boundary



Data Sources:
AJMJV 2024
Esri 2024
Melbourne Water 2023
Yarra Valley Water 2024

SUBURBAN RAIL LOOP

Suburban Rail Loop

Monash

Utilities Assessment — Potable Water Upgrades

Drawing Number:			Revision:
SRL-TAV-AJM-TPWD-MAP-PPG-PWD-508193			A.4
Drawn By:	Approved By:	Date:	Map Size:
L. Tily	A. Raj	09/08/2024	A3

AJM Joint Venture

aurecon Jacobs M MOTT MACDONALD

0 800
Metres
Coordinate System: GDA2020 MGA Zone 55

Reticulation Sewer

Mile Creek Sewer Branch

Monash University Branch Sewer

Sewer Access Point: MON11

Yarra Valley Water Service Region

South East Water Service Region

Sewer

- Identified Required Works Within Road Reserve
- Identified Required Works Within Existing Easement. Easement Subject to Change

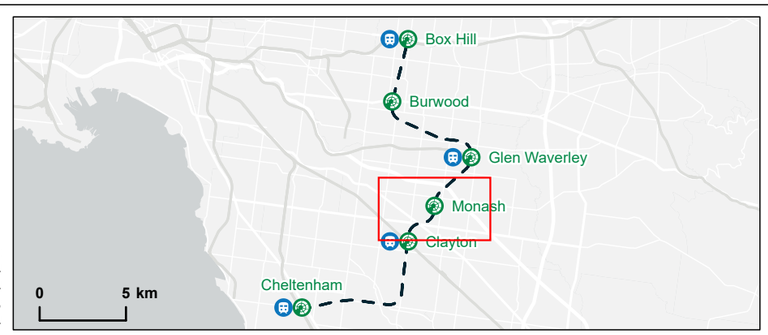
Asset Owner

- Melbourne Water
- Yarra Valley Water
- South East Water
- Private

Pipe Diameter (mm)

- 40–280
- 300–825
- 900–3050

- Suburban Rail Loop East Alignment
- Suburban Rail Loop East Station Box
- Structure Plan Area
- Local Government Area (LGA) Boundary



Data Sources:
AJMJV 2024
Esri 2024
Melbourne Water 2023
Yarra Valley Water 2024

SUBURBAN RAIL LOOP

Suburban Rail Loop

Monash

Utilities Assessment — Sewer Upgrades

Drawing Number:	Revision:
SRL-TAV-AJM-TPWD-MAP-PPG-PWD-508194	A.4

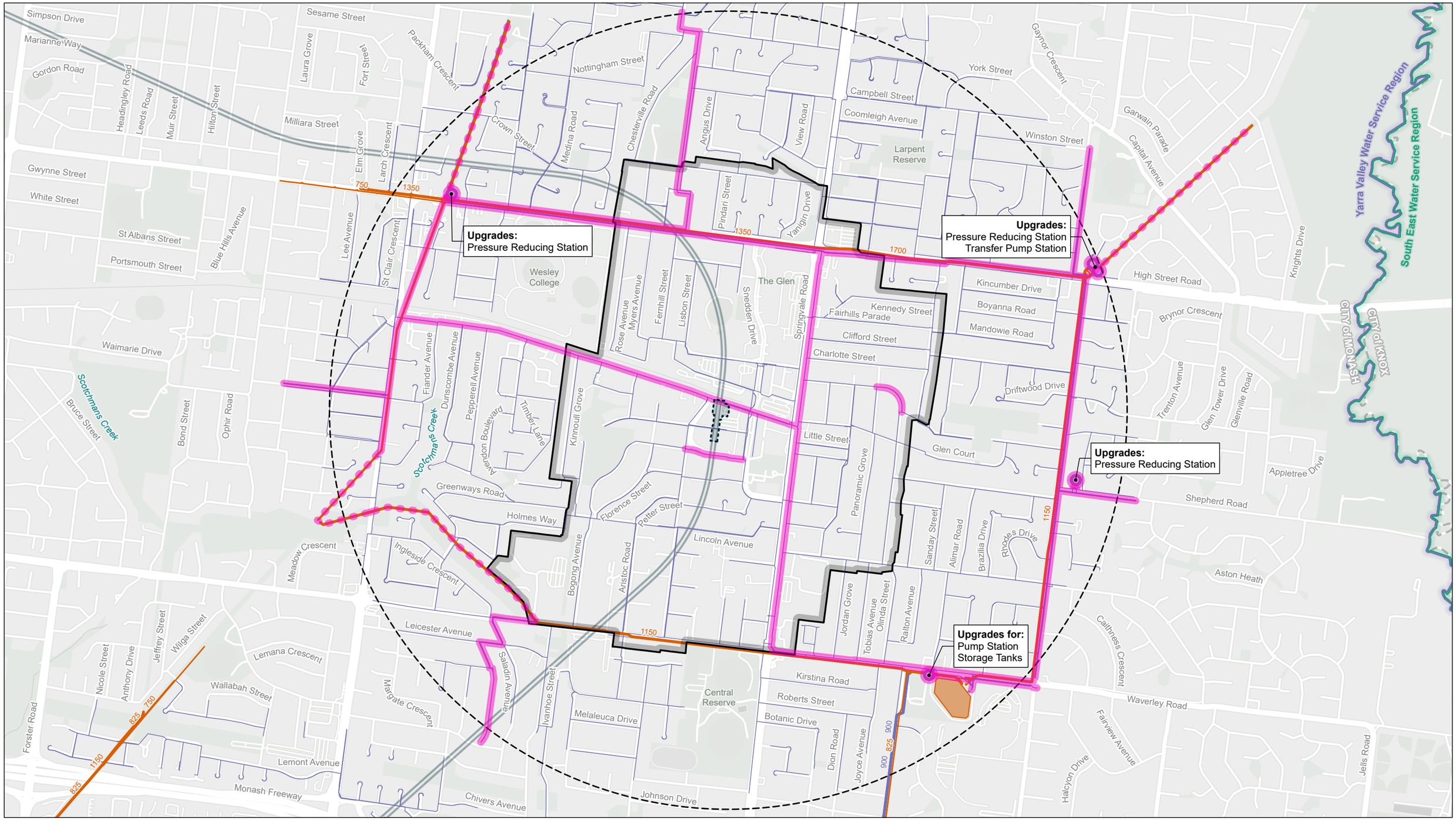
Drawn By:	Approved By:	Date:	Map Size:
L. Tily	A. Raj	08/08/2024	A3

AJM Joint Venture

aurecon Jacobs MOTT MACDONALD

0 800
Metres
Coordinate System: GDA2020 MGA Zone 55

Appendix C.4 – Glen Waverley Structure Plan Area servicing capacity



Potable Water

- Identified Required Works Within Road Reserve
- Identified Required Works Within Existing Easement
- Easement Subject to Change

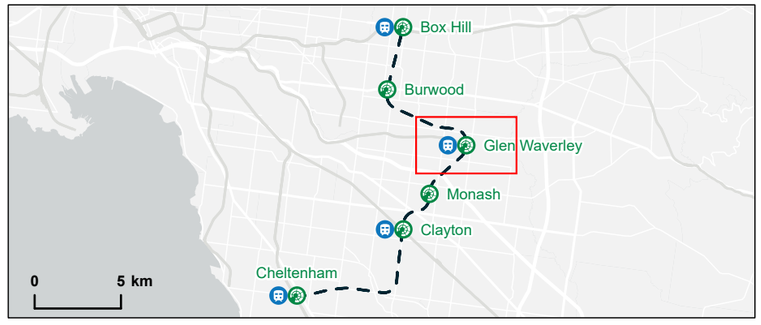
Asset Owner

- Melbourne Water
- Yarra Valley Water

Pipe Diameter (mm)

- 20–225
- 250–800
- 900–1700
- Water Storage

- Suburban Rail Loop East Alignment
- Suburban Rail Loop East Station Box
- Study Area (1.6 km)
- Structure Plan Area
- Local Government Area (LGA) Boundary



Data Sources:
AJMJV 2024
Esri 2024
Melbourne Water 2023
Yarra Valley Water 2024

SUBURBAN RAIL LOOP

Suburban Rail Loop

Glen Waverley

Utilities Assessment — Potable Water Upgrades

Drawing Number:			Revision:
SRL-TAV-AJM-TPWD-MAP-PPG-PWD-508193			A.4
Drawn By:	Approved By:	Date:	Map Size:
L. Tily	A. Raj	09/08/2024	A3

AJM Joint Venture — aurecon Jacobs MOTT MACDONALD

0 700
Metres
Coordinate System: GDA2020 MGA Zone 55

Sewer Access Point: MOA37-17

Sewer Access Point: MOA37-14

Reticulation Sewer

Scotchmans Creek Branch Sewer

Wesley College

Larpent Reserve

Central Reserve

Scotchmans Creek

Yarra Valley Water Service Region

South East Water Service Region

CITY of KNOX

CITY of MONASH

Sewer

- Identified Required Works Within Road Reserve
- Identified Required Works Within Existing Easement. Easement Subject to Change

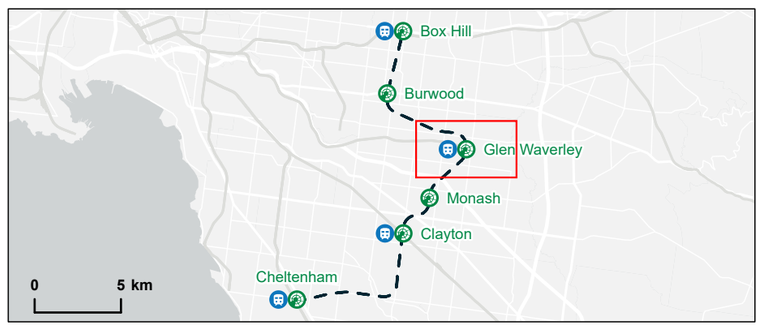
Asset Owner

- Melbourne Water
- Yarra Valley Water
- South East Water
- Private

Pipe Diameter (mm)

- 40–280
- 300–825
- 900–3050

- Suburban Rail Loop East Alignment
- Suburban Rail Loop East Station Box
- Structure Plan Area
- Local Government Area (LGA) Boundary



Data Sources:
AJMJV 2024
Esri 2024
Melbourne Water 2023
Yarra Valley Water 2024

SUBURBAN RAIL LOOP

Suburban Rail Loop

Glen Waverley

Utilities Assessment — Sewer Upgrades

Drawing Number:			Revision:
SRL-TAV-AJM-TPWD-MAP-PPG-PWD-508194			A.4
Drawn By:	Approved By:	Date:	Map Size:
L. Tily	A. Raj	08/08/2024	A3

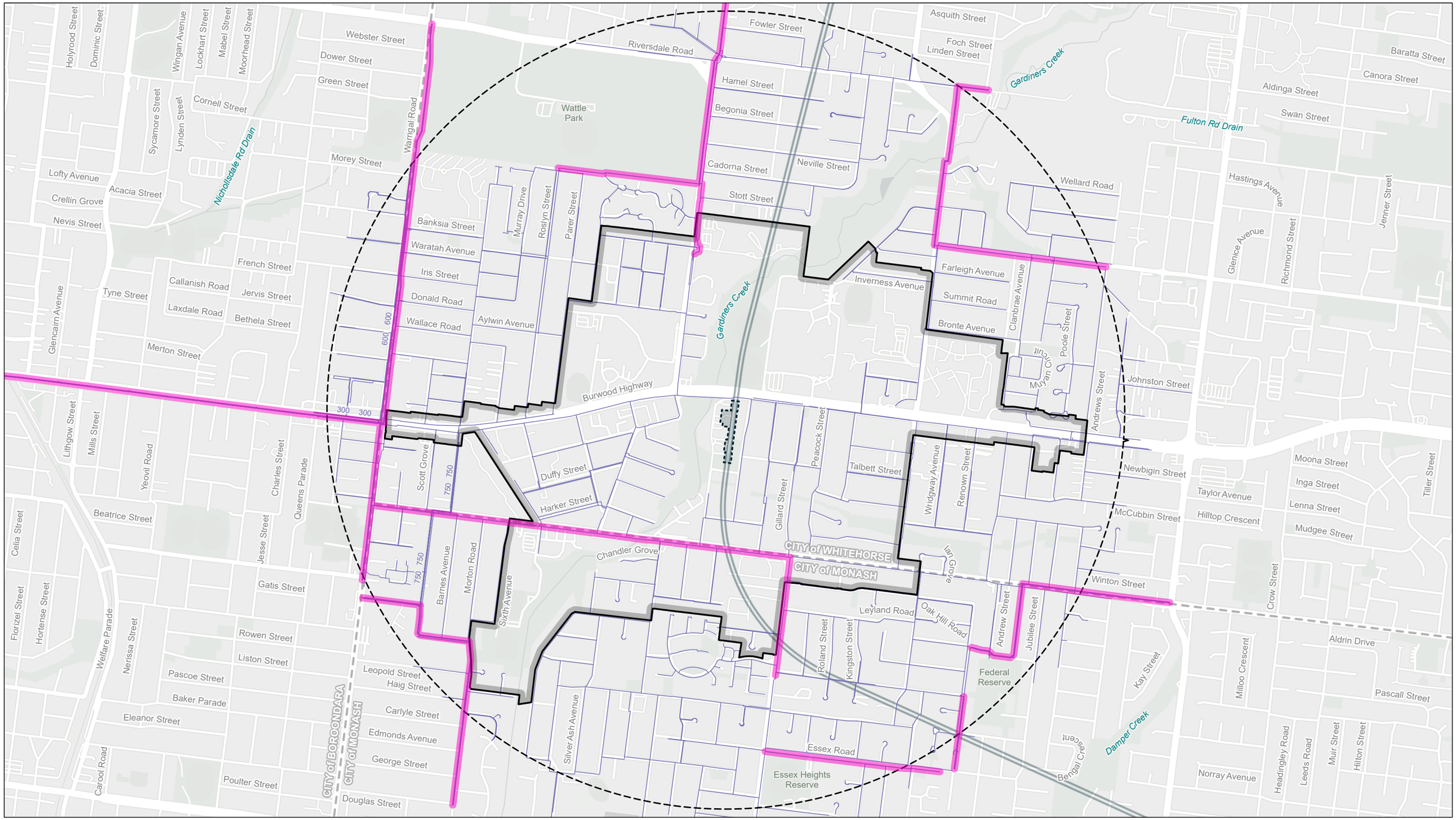
AJM Joint Venture

aurecon Jacobs MOTT MACDONALD

0 700
Metres

Coordinate System: GDA2020 MGA Zone 55

Appendix C.5 – Burwood Structure Plan Area servicing capacity



Potable Water

- Identified Required Works Within Road Reserve

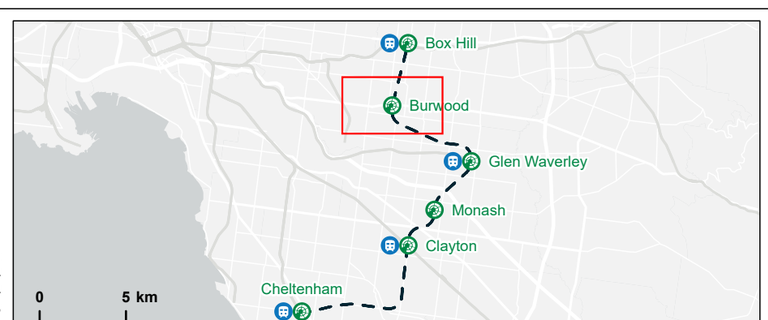
Asset Owner

- Yarra Valley Water

Pipe Diameter (mm)

- 20–225
- 250–800
- Water Storage

- Suburban Rail Loop East Alignment
- Suburban Rail Loop East Station Box
- Study Area (1.6 km)
- Structure Plan Area
- Local Government Area (LGA) Boundary



Data Sources:
AJMJV 2024
Esri 2024
Melbourne Water 2023
Yarra Valley Water 2024

Suburban Rail Loop

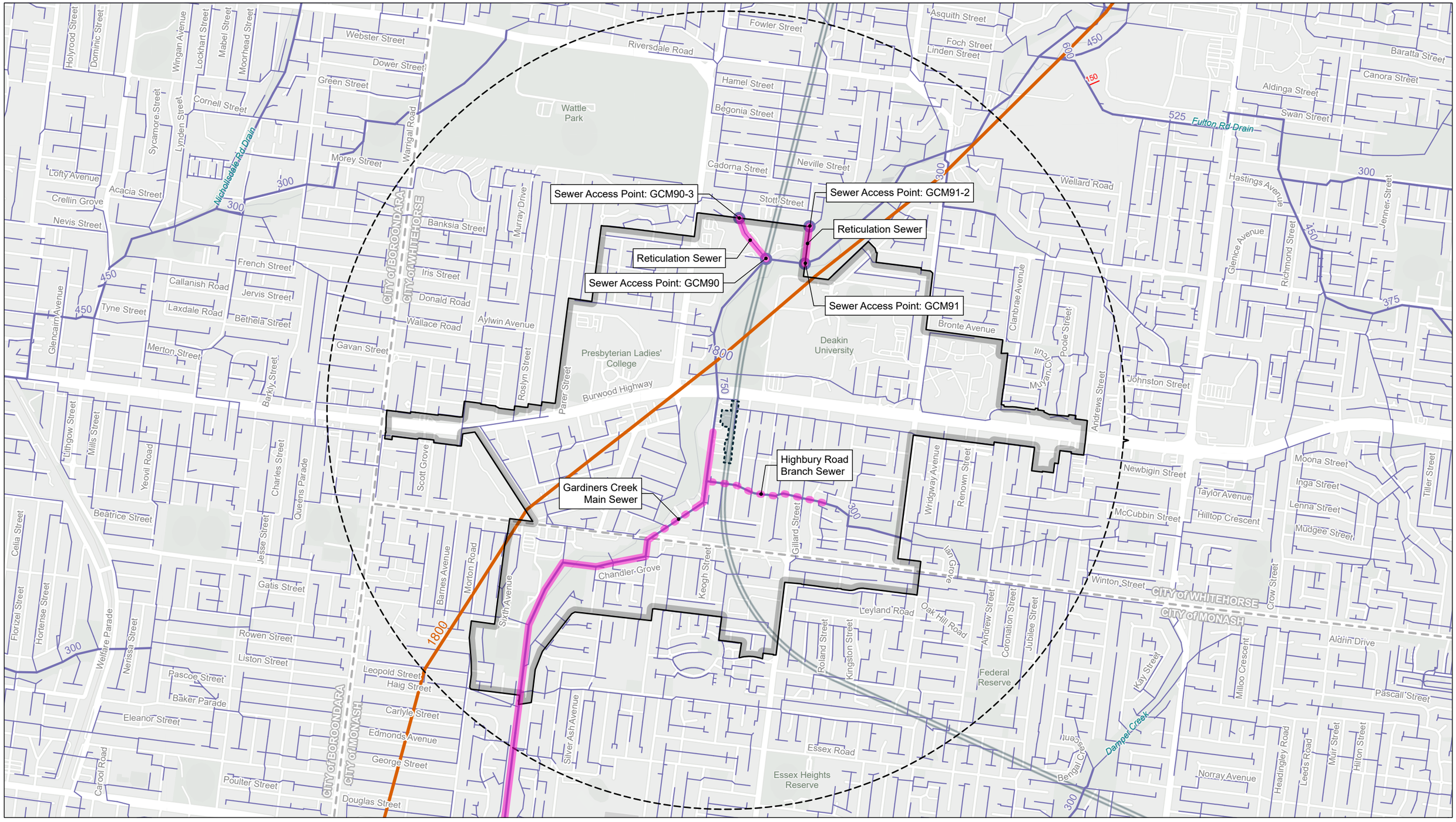
Burwood

Utilities Assessment — Potable Water Upgrades

Drawing Number:			Revision:
SRL-TAV-AJM-TPWD-MAP-PPG-PWD-508193			A.4
Drawn By:	Approved By:	Date:	Map Size:
L. Tily	A. Raj	09/08/2024	A3

0 700
Metres

Coordinate System: GDA2020 MGA Zone 55



Sewer

- Identified Required Works Within Road Reserve
- Identified Required Works Within Existing Easement. Easement Subject to Change

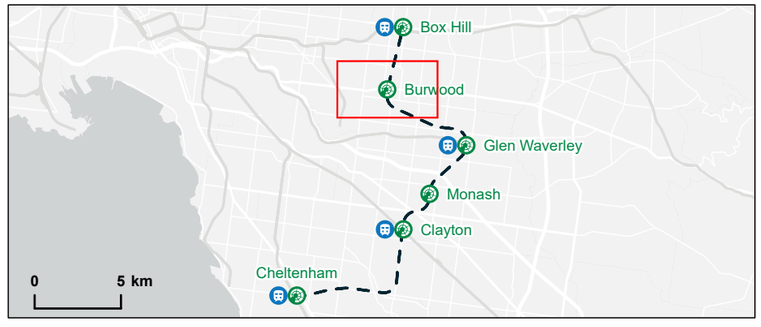
Asset Owner

- Melbourne Water
- Yarra Valley Water
- South East Water
- Private

Pipe Diameter (mm)

- 40–280
- 300–825
- 900–3050

- Suburban Rail Loop East Alignment
- Suburban Rail Loop East Station Box
- Structure Plan Area
- Local Government Area (LGA) Boundary



Data Sources:
AJMJV 2024
Esri 2024
Melbourne Water 2023
Yarra Valley Water 2024

SUBURBAN RAIL LOOP

Suburban Rail Loop

Burwood

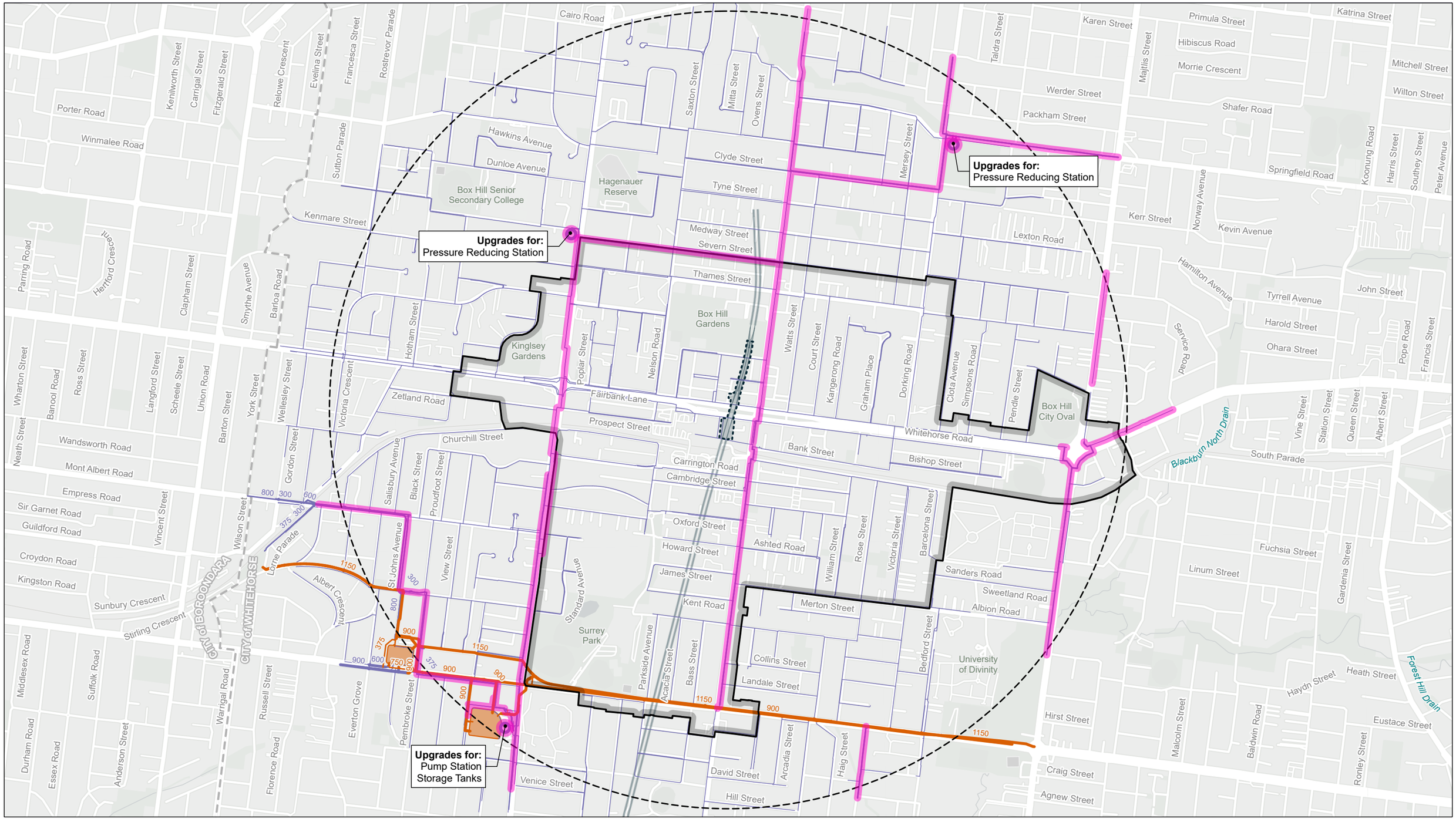
Utilities Assessment — Sewer Upgrades

Drawing Number:			Revision:
SRL-TAV-AJM-TPWD-MAP-PPG-PWD-508194			A.4
Drawn By:	Approved By:	Date:	Map Size:
L. Tily	A. Raj	08/08/2024	A3

AJM Joint Venture — aurecon Jacobs M — MOTT MACDONALD M

0 700
Metres
Coordinate System: GDA2020 MGA Zone 55

Appendix C.6 – Box Hill Structure Plan Area servicing capacity



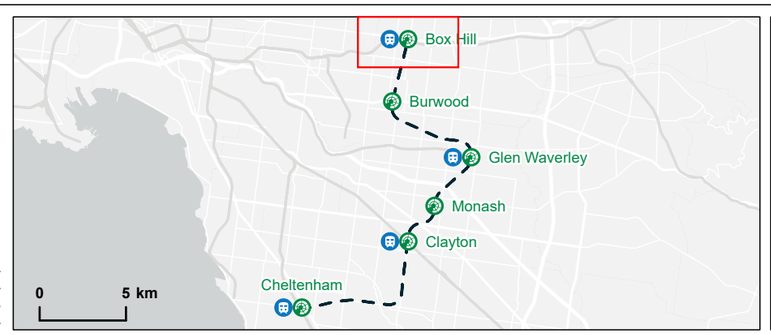
Box Hill North Branch Sewer
Box Hill Branch Sewer
Reticulation Sewer
Sewer Access Point: BOX21-35
Sewer Access Point: BOX21
Box Hill Senior Secondary College
Hagenauer Reserve
Box Hill Gardens
Kinglsey Gardens
Surrey Park
Box Hill City Oval
University of Divinity
Blackburn North Drain
CITY OF BOROONDARA
CITY OF WHITEHORSE

Sewer
- Identified Required Works Within Road Reserve
- Identified Required Works Within Existing Easement. Easement Subject to Change

Asset Owner
- Melbourne Water
- Yarra Valley Water
- South East Water
- Private

Pipe Diameter (mm)
- 40–280
- 300–825
- 900–3050

- Suburban Rail Loop East Alignment
- Suburban Rail Loop East Station Box
- Structure Plan Area
- Local Government Area (LGA) Boundary



Data Sources:
AJMJV 2024
Esri 2024
Melbourne Water 2023
Yarra Valley Water 2024

SUBURBAN RAIL LOOP

Suburban Rail Loop

Box Hill

Utilities Assessment — Sewer Upgrades

Drawing Number:			Revision:
SRL-TAV-AJM-TPWD-MAP-PPG-PWD-508194			A.4
Drawn By:	Approved By:	Date:	Map Size:
L. Tily	A. Raj	08/08/2024	A3

AJM Joint Venture
aurecon Jacobs M MOTT MACDONALD

0 700
Metres
Coordinate System: GDA2020 MGA Zone 55

AJM
Joint Venture

Appendix D

Additional Gas Considerations

GAS SERVICING CAPACITY – ADDITIONAL CONSIDERATIONS

LICENCING, REGULATION, STANDARDS AND RELEVANT LEGISLATION

The *Pipelines Act 2005* (Vic) is the primary legislation governing the construction and operation of pipelines carrying liquid and gaseous fuels and other industrial products at high pressure in Victoria.

Constructing new pipelines:

- High-pressure – licensing is administered by the Minister for Energy and Resources. DEECA and Energy Safe Victoria (ESV) are responsible for administrating the Pipelines Act and associated regulations.
- Low Pressure – licensing is administered by the Essential Services Commission under the *Gas Industry Act 2001* (Vic). The safety and technical aspects are regulated by ESV under the *Gas Safety Act 1997* (Vic).

Pipelines are designed, constructed, operated and maintained in accordance with AS 2885.6 (2018).

DESIGN AND PLANNING CONSIDERATIONS

Standard advice from Before You Dig Australia notes there are restrictions on erecting structures within 3 metres of an existing pipeline. This includes poles, footings and pits deeper than 450 millimetres.

If proposed works are outside this minimum clearance, the planning authority is required to progress through the correct referral process as detailed below.

PIPELINE NOTIFICATION AREAS

Notification areas have been established as radial distances from a pipeline, within which pipeline operators are required to be made aware of any proposed activity, particularly substantial changes in the intended land uses. This allows operators to work with planning authorities and developers to implement design changes that reduce the risk to and from the pipeline. This system encourages early consultation between pipeline operators, developers and planning authorities.

Multinet Gas Networks did not provide asset-specific notification areas for the two high-pressure mains identified within the Cheltenham, Clayton and Monash Structure Plan Areas, but it is important to note that distances can reach up to 1 kilometre from a pipeline (depending on the gas asset category).

PLANNING ASSESSMENT WITHIN A PIPELINE NOTIFICATION AREA

The following process should be followed to ensure that high pressure pipelines are adequately considered in the early stages of strategic planning:

- The centreline and the notification area of each licensed pipeline should be provided to land planning authorities (SRLA and local councils) as coordinated GIS themes.
    - » Multinet Gas Networks is yet to contribute to this process; pipeline-specific notification area GIS data had not been received at the time of writing this report.
- When preparing a structure plan, development plan or development plan amendment, the proponent should overlay the proposal on GIS data provided by the pipeline operator (Multinet Gas Networks) and if it overlaps a notification area, the operator (Multinet Gas Networks) must be notified.
- The planning authority and pipeline operator will assess the possible impact on pipeline safety.
- Considerations that should be discussed with pipeline operators are:
    - » Compatible land use within the notification area
    - » Potential noise and other impacts from high pressure pipeline above-ground facilities
    - » Proximity of other utilities and services, including roads and railways

» Future high pressure pipeline requirements (that is, protection of future corridors suitable for high pressure pipelines to service new development areas).

Safety management study

A Safety Management Study (SMS) will need to be undertaken to identify potential impacts and issues from any new development or major works that would be located within the notification area for a specific asset and resultant changed land use adjacent and/or over an existing pipeline asset. The SMS is a platform for stakeholders to derive a path towards ensuring pipeline safety for the public and that pipeline integrity can be maintained if the re-zoning and/or developments proceeds. Land use changes outside the notification area generally require no review.

Development restrictions on pipeline easements

The following development restrictions may apply within a pipeline easement.

1. Land use must be compatible with the conditions of pipeline easements. The pipeline easement should be used as public open space wherever practicable.

2. Permanent structures of any kind are not permitted on a pipeline easement. Exceptions must have the written approval of the pipeline operator and should be documented in a pipeline SMS.

3. Any further easement over the existing pipeline easement requires the written consent of the pipeline operator.

4. Activities over the pipeline easement may require approval from the pipeline operator and can only be performed under the operator's work permit system, which may require a job hazard analysis.

Threats to be considered for new developments

The major potential cause of pipeline failure is impact from external factors such as excavators or drills penetrating the pipeline.

There are two phases of threats to a high pressure pipeline that need to be managed for the duration of a land development project. They are:

1. Specific threats from the construction activity associated with a development such as:
    - Excavation for road construction or service installation
    - Vertical augers used to install poles and posts
    - Directional drills used to install new services
    - Vibrating compaction over the pipeline
    - Heavy vehicles crossing the pipeline at other than designated locations resulting in:
        - » Damage to the protective coating of the pipeline
        - » Excessive additional cover resulting in uneven external loading on the pipeline
        - » Removal of cover increasing the likelihood of third-party damage.
2. Threats that remain throughout the life of a high pressure pipeline or have the potential to interfere with maintenance of a pipeline include:
    - Excavation activity for maintenance of roads, services or other infrastructure
    - Vertical augers for fencing or post installation
    - Directional drilling to install new services under roads

- Electrical hazards (induced current) from adjacent high voltage power lines or substations
- Alternating current (AC) corrosion from adjacent power lines
- Interference with the pipeline cathodic protection system from adjacent electrified railway or tram line
- Interference with the pipeline cathodic protection system from installed cathodic protection systems on third-party services
- Noise from pressure regulation, compressor and vent stations impacting on residential developments
- Some landscaping which may be deep rooted or limit 'line of sight' between pipeline identification markers.

Measures that may reduce risk within the Notification Area

Protective measures are typically considered as part of future developments to prevent loss of an existing pipeline's integrity resulting from third-party interference, such as development in proximity to an existing gas main. Typical measures can physically prevent contact with the pipe by providing sufficient clearance or reinforce the gas main to provide adequate resistance to penetration.

Examples of protective measures can include (but are not limited to):

- Buried concrete encasement other hard cover above or adjacent to a pipeline to reduce potential for failure
    - » This directly impacts the feasibility of future development within a Structure Plan Area. The costs of these mitigations are typically fully borne by the developer.
- Restriction of access using bollards, fencing etc:
    - » This has several implications which could be considered when developing the Structure Plans. This includes constraining development envelopes, reducing accessibility and requiring substantial clearances.
- Pipeline relocation to a location where the consequence is reduced:
    - » This is not typically undertaken given the associated technical requirements of ongoing gas supply, complex approval pathway and the significant relocation cost implications.

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