

MOLONGLO

TOWN CENTRE ENVIRONS

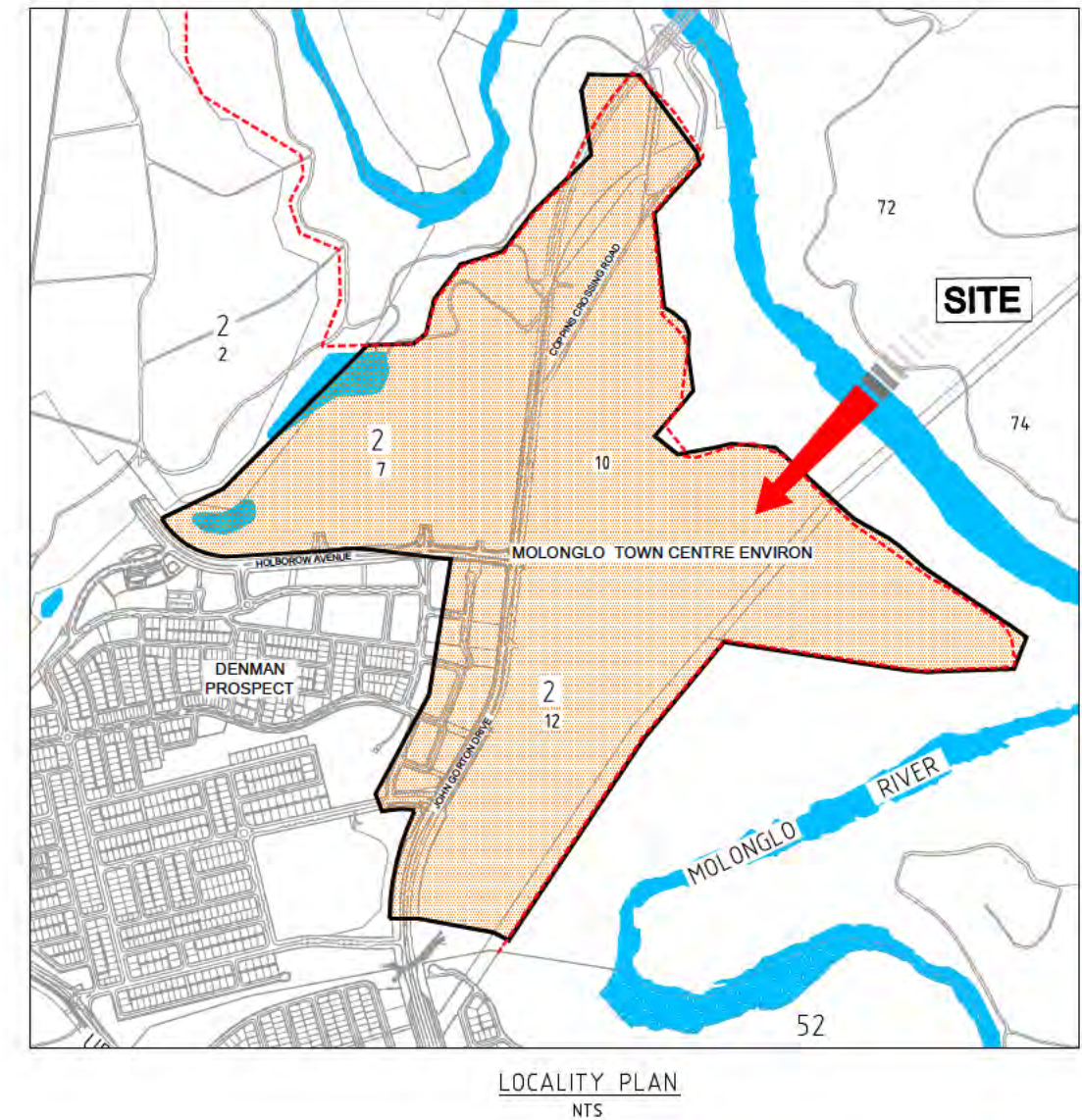
GROWTH SERVICING

SEWER, WATER AND STORMWATER SERVICING

MARCH 2020

DRAWING SCHEDULE

NAME	DRAWING TITLE
7194-000	COVER PAGE
7194-005	STAGING PLAN
7194-007	ZONING PLAN
7194-010	SEWER GROWTH SERVICING PLAN
7194-011	SEWER TABLE
7194-012	SEWER LONGITUDINAL SECTION LINE A
7194-013	SEWER LONGITUDINAL SECTION LINE B
7194-014	SEWER LONGITUDINAL SECTION OPTION 1 SHEET 1 OF 3
7194-015	SEWER LONGITUDINAL SECTION OPTION 1 SHEET 2
7194-016	SEWER LONGITUDINAL SECTION OPTION 1 SHEET 3
7194-017	SEWER LONGITUDINAL SECTION OPTION 2 SHEET 1 OF 3
7194-018	SEWER LONGITUDINAL SECTION OPTION 2 SHEET 2
7194-019	SEWER LONGITUDINAL SECTION OPTION 2 SHEET 3
7194-020	SEWER DETAIL PLAN
7194-030	WATER SUPPLY GROWTH SERVICING PLAN
7194-031	WATER SUPPLY TABLE
7194-032	WATER SUPPLY GROWTH SERVICING PLAN OFFSITE WORKS
7194-040	STORMWATER GROWTH SERVICING PLAN
7194-041	STORMWATER TABLE
7194-042	STORMWATER DETAIL PLAN POND 3
7194-043	STORMWATER DETAIL PLAN POND 4
7194-044	STORMWATER DETAIL PLAN POND 5
7194-045	STORMWATER DETAIL PLAN POND 6
7194-046	STORMWATER DETAIL PLAN POND 7



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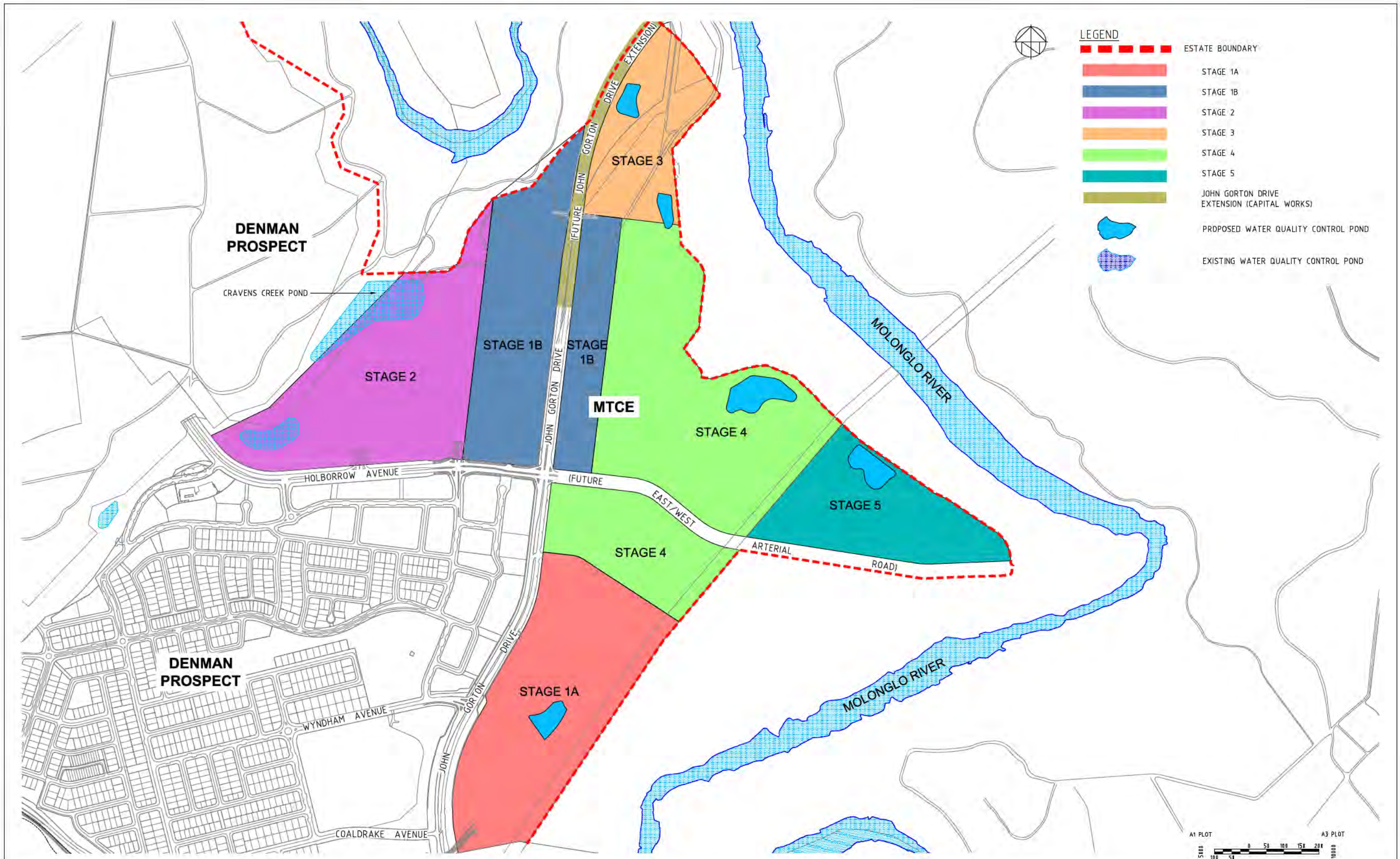
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CONSULTANTS:



7194-000



No.	AMENDMENT	APPROVED	DATE	APPROVED BY
B	FINAL REPORT	VL	14.12.2024	P
A	FOR PRELIMINARY REVIEW	VL	07.01.2020	RJ

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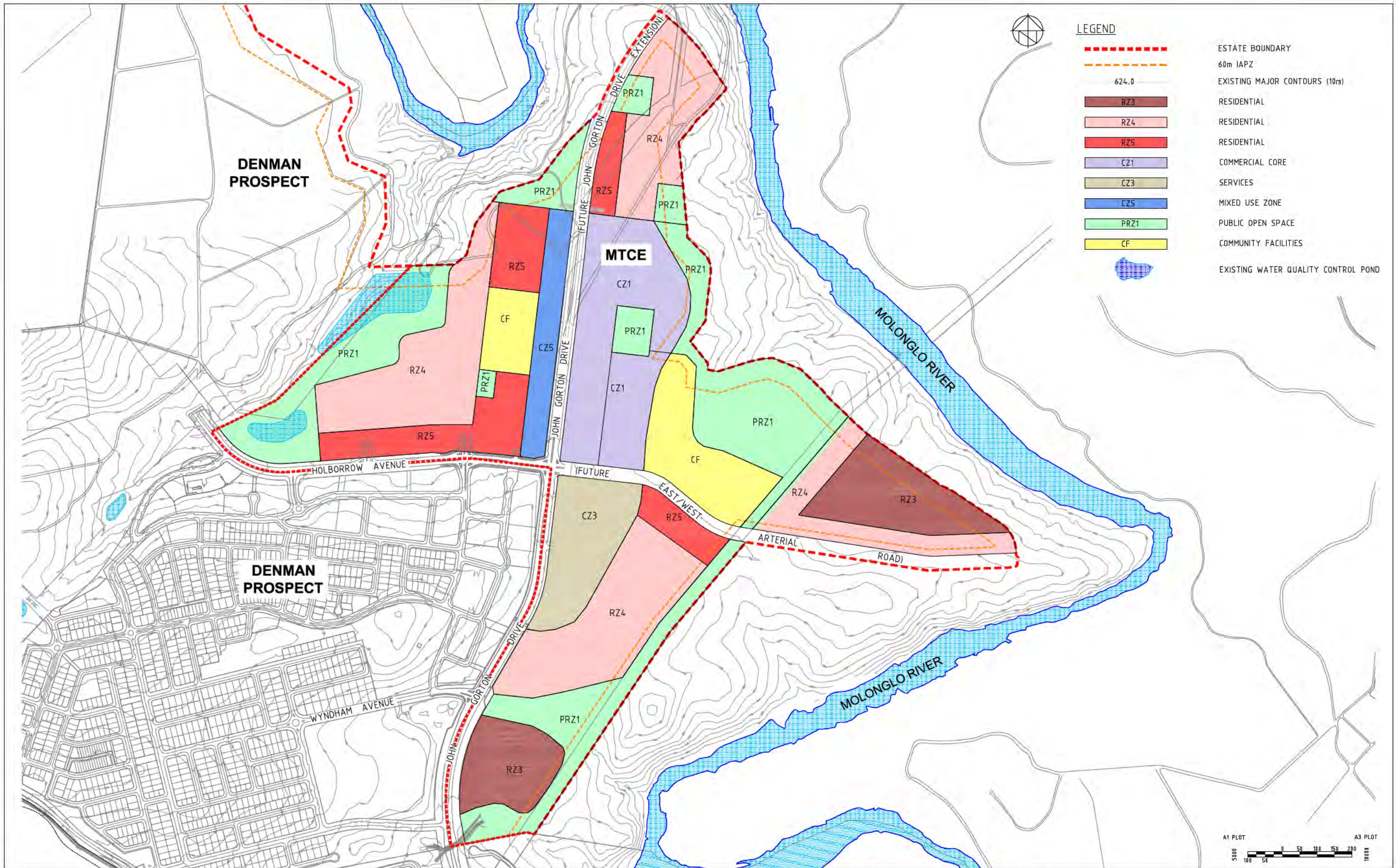
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PROJECT

MOLONGLO TOWN CENTRE ENVIRONS (MTCE) GROWTH SERVICING

DRAWING TITLE		
STAGING PLAN		
PROJECT No.	DRAWING No.	AMDT
7194	005	B





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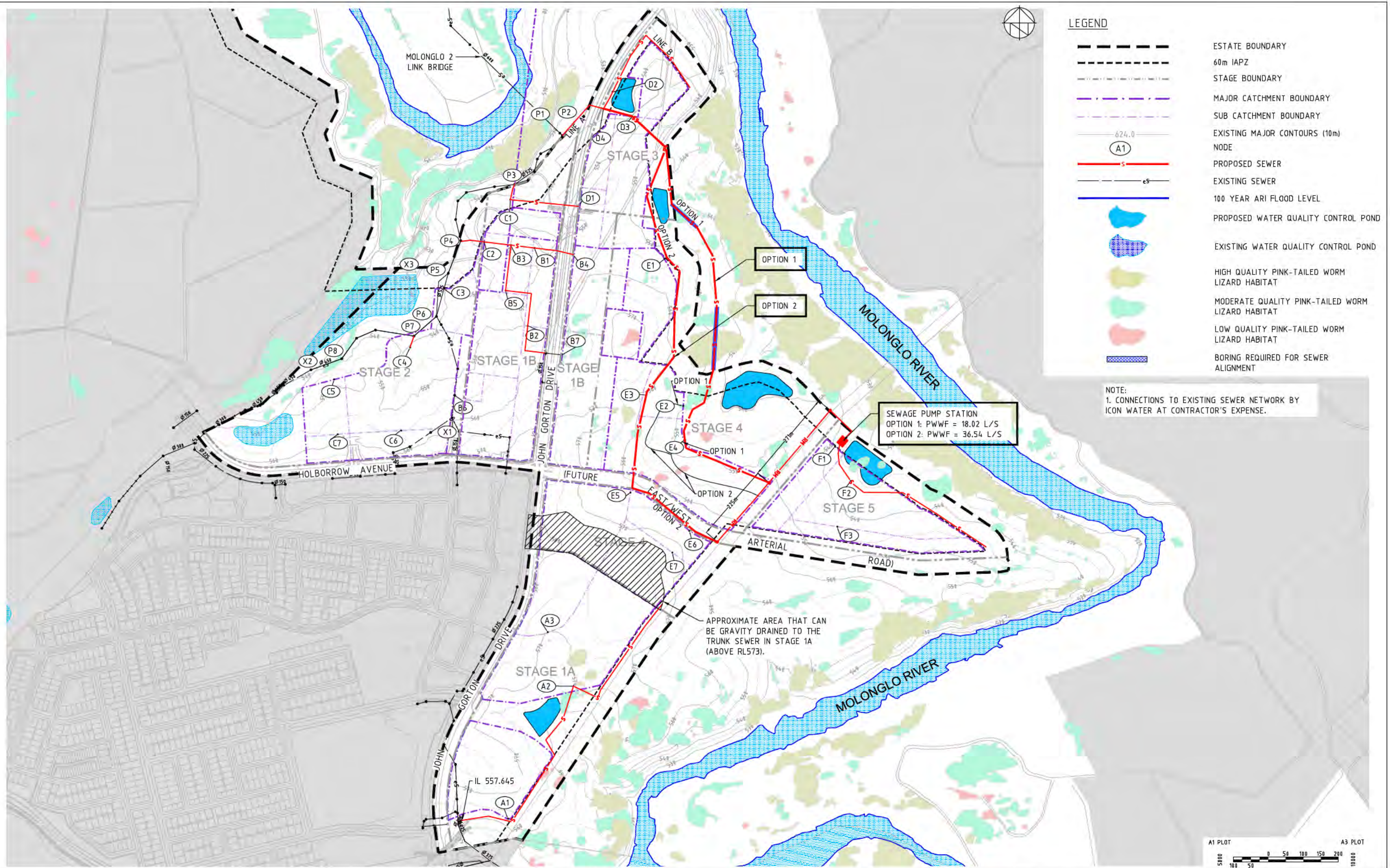

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PROJECT
MOLONGLO TOWN CENTRE ENVIRONS (MTCE) GROWTH SERVICING

DRAWING TITLE
ZONING PLAN

PROJECT No.	DRAWING No.	AMDT
7194	007	B



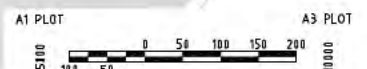
LEGEND

- ESTATE BOUNDARY
- 60m IAPZ
- STAGE BOUNDARY
- MAJOR CATCHMENT BOUNDARY
- SUB CATCHMENT BOUNDARY
- EXISTING MAJOR CONTOURS (10m)
- NODE
- PROPOSED SEWER
- EXISTING SEWER
- 100 YEAR ARI FLOOD LEVEL
- PROPOSED WATER QUALITY CONTROL POND
- EXISTING WATER QUALITY CONTROL POND
- HIGH QUALITY PINK-TAILED WORM LIZARD HABITAT
- MODERATE QUALITY PINK-TAILED WORM LIZARD HABITAT
- LOW QUALITY PINK-TAILED WORM LIZARD HABITAT
- BORING REQUIRED FOR SEWER ALIGNMENT

NOTE:
1. CONNECTIONS TO EXISTING SEWER NETWORK BY ICON WATER AT CONTRACTOR'S EXPENSE.

SEWAGE PUMP STATION
OPTION 1: PWWF = 18.02 L/S
OPTION 2: PWWF = 36.54 L/S

APPROXIMATE AREA THAT CAN BE GRAVITY DRAINED TO THE TRUNK SEWER IN STAGE 1A (ABOVE RL573).



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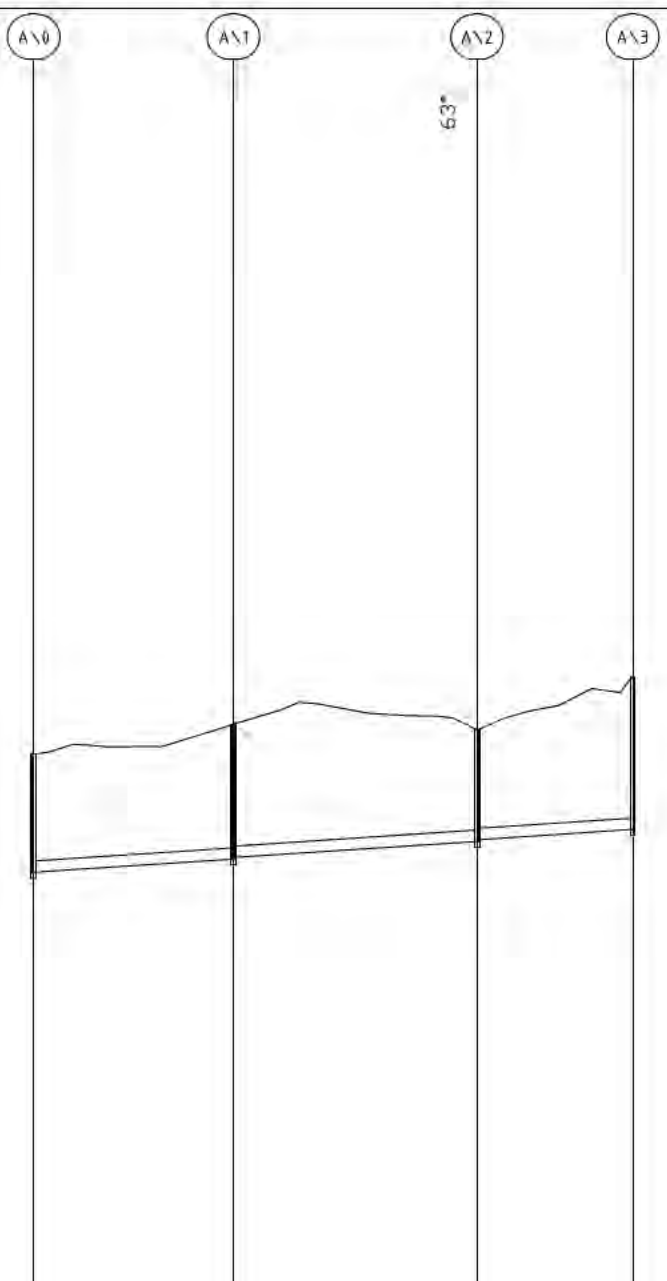
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PROJECT
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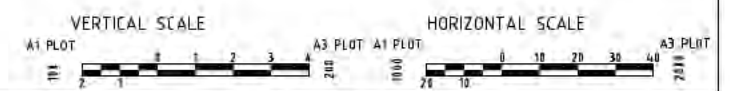
DRAWING TITLE
SEWER GROWTH SERVICING PLAN

PROJECT No. **7194** DRAWING No. **010** AMDT **B**



PIPE SIZE(mm) & CLASS	300Ø-PVC		300Ø-PVC		300Ø-PVC	
GRADE (%)	0.65%		0.65%		0.65%	
DATUM	515.000					
DEPTH TO INVERT	3.131	3.131	3.569	3.519	2.940	2.890
INVERT LEVEL	531.510	531.510	531.853	531.903	532.323	532.373
DESIGN SURFACE LEVEL	534.641		535.477		535.262	
CHAINAGE	0.000	52.819	52.819	64.500	117.319	158.504

LINE A



No.	AMENDMENT	APPROVED	DATE	AMENDED BY
B	FINAL REPORT	VL	16.12.2020	JP
A	FOR PRELIMINARY REVIEW	VL	11.01.2024	KJ

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PROJECT

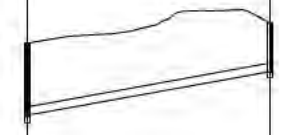
MOLONGLO TOWN CENTRE ENVIRONS (MTCE) GROWTH SERVICING

DRAWING TITLE

SEWER LONGITUDINAL SECTION LINE A

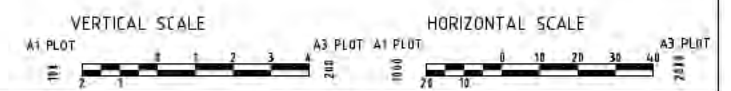
PROJECT No. **7194** DRAWING No. **012** AMDT **B**

01/18 01/19



PIPE SIZE(mm) & CLASS	225 ϕ -PVC	
GRADE (%)	1.78%	
DATUM	532.000	
DEPTH TO INVERT	1.953	1.297
INVERT LEVEL	549.568	550.758
DESIGN SURFACE LEVEL	551.521	552.054
CHAINAGE	134.2769	64.131

LINE 01



No.	AMENDMENT	APPROVED	DATE	APPROVED BY
B	FINAL REPORT	VL	06.12.2025	JP
A	FOR PRELIMINARY REVIEW	VL	01.01.2024	KJ

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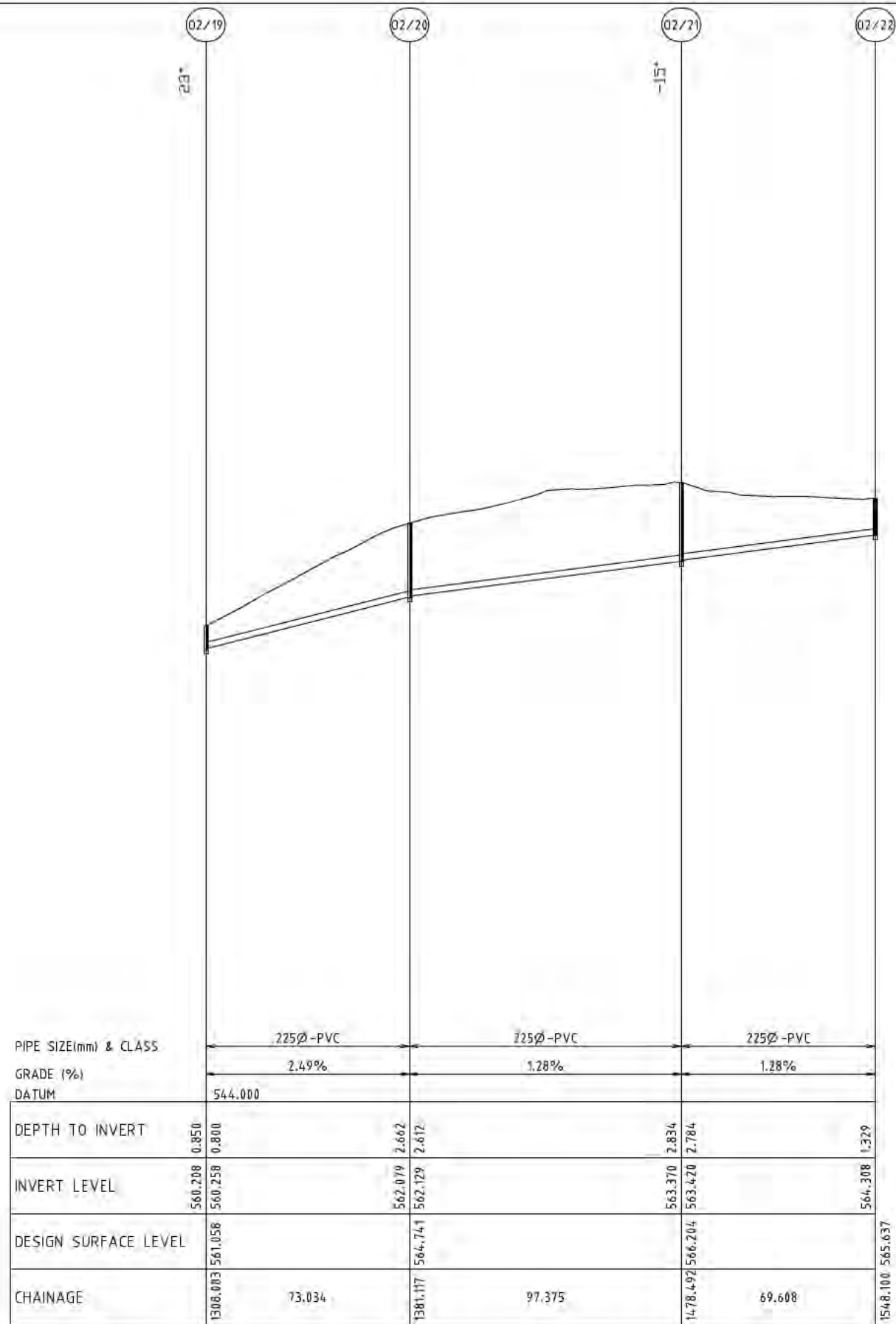
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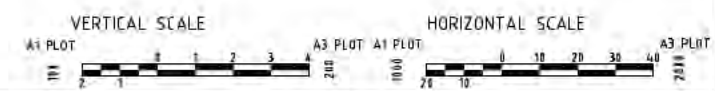
PROJECT

MOLONGLO TOWN CENTRE ENVIRONS (MTCE) GROWTH SERVICING

DRAWING TITLE		
SEWER LONGITUDINAL SECTION OPTION 1 SHEET 3		
PROJECT No.	DRAWING No.	AMDT
7194	016	B



LINE 02



No.	AMENDMENT	APPROVED	DATE	APPROVED BY
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A	FOR PRELIMINARY REVIEW	VL	01.01.2020	KJ

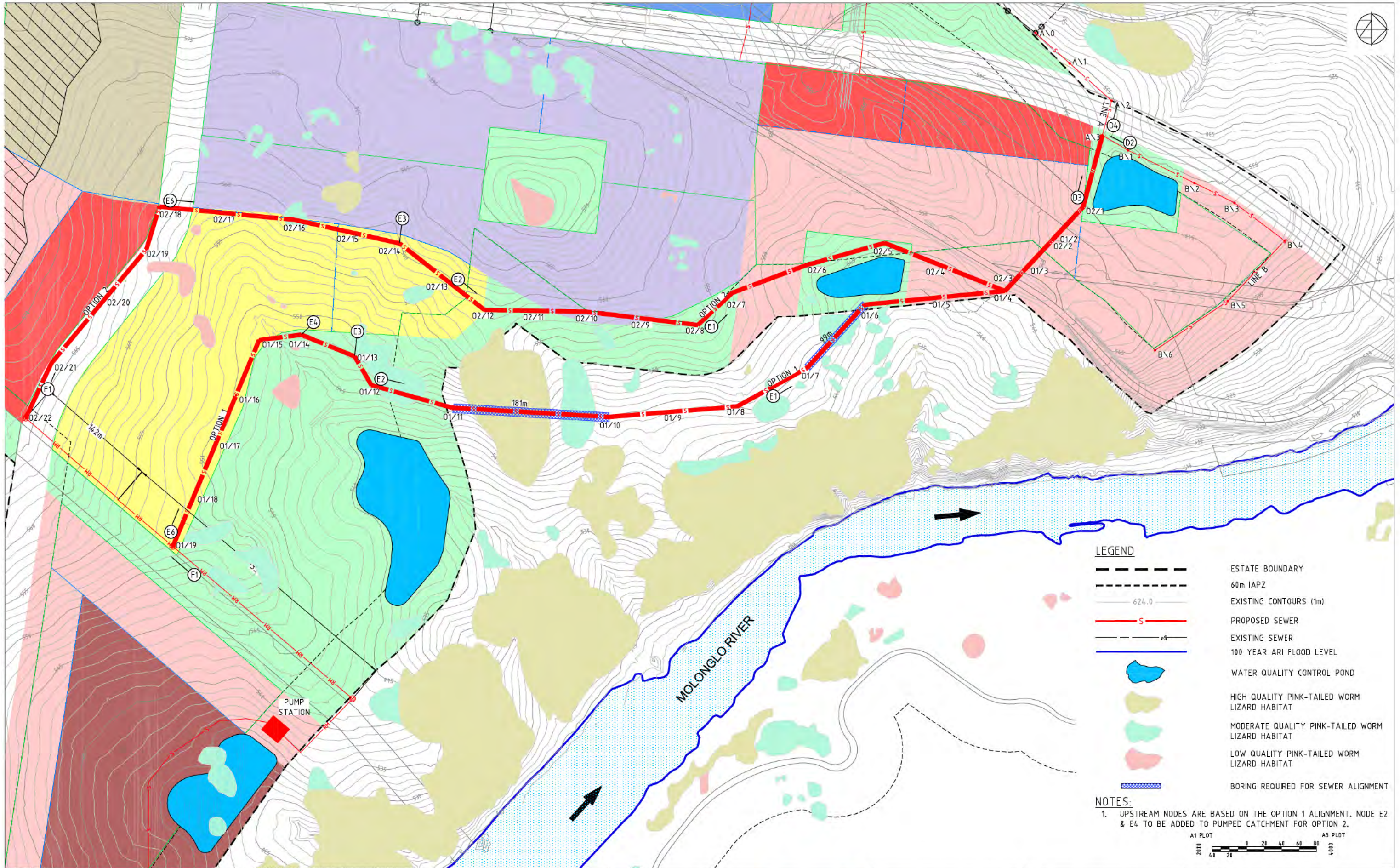


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SHEET No.		

PROJECT: MOLONGLO TOWN CENTRE ENVIRONS (MTCE) GROWTH SERVICING

DRAWING TITLE: SEWER LONGITUDINAL SECTION OPTION 2 SHEET 3

PROJECT No. 7194 DRAWING No. 019 AMOUNT B



NO.	AMENDMENT	APPROVED	DATE	AMENDED BY
B	FINAL REPORT	VL	14.02.2020	JP
A	FOR PRELIMINARY REVIEW	VL	07.01.2020	RJ

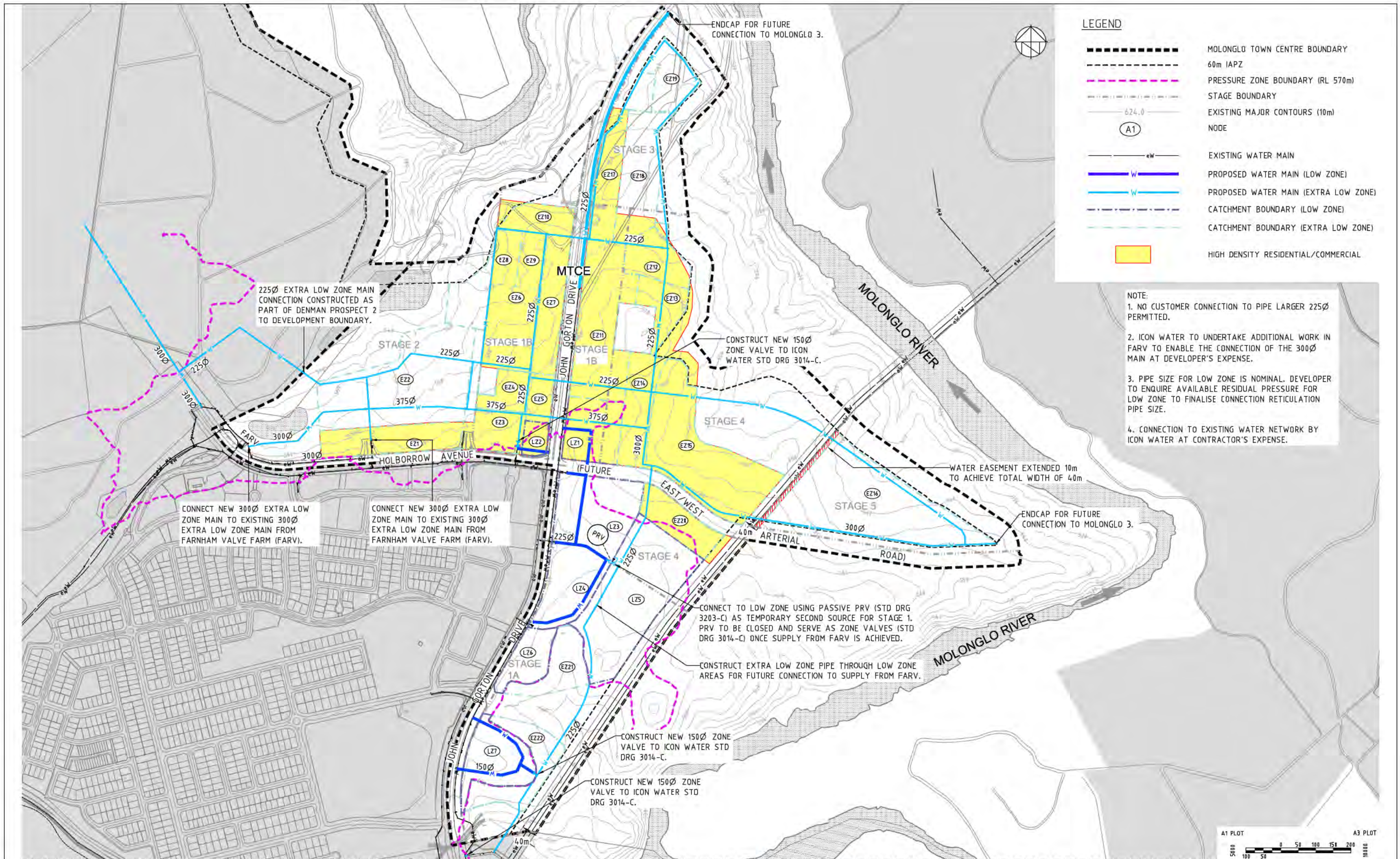
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DRAWN BY		
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SCALE	AS SHOWN	
	SHEET No.	

PROJECT	MOLONGLO TOWN CENTRE ENVIRONS (MTCE) GROWTH SERVICING
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DRAWING TITLE	SEWER DETAIL PLAN
PROJECT No.	7194
DRAWING No.	020
AMDT	B



LEGEND

- MOLONGLO TOWN CENTRE BOUNDARY
- 60m IAPZ
- PRESSURE ZONE BOUNDARY (RL 570m)
- STAGE BOUNDARY
- 624.0
- EXISTING MAJOR CONTOURS (10m) NODE
- EXISTING WATER MAIN
- PROPOSED WATER MAIN (LOW ZONE)
- PROPOSED WATER MAIN (EXTRA LOW ZONE)
- CATCHMENT BOUNDARY (LOW ZONE)
- CATCHMENT BOUNDARY (EXTRA LOW ZONE)
- HIGH DENSITY RESIDENTIAL/COMMERCIAL

NOTE:

1. NO CUSTOMER CONNECTION TO PIPE LARGER 225Ø PERMITTED.
2. ICON WATER TO UNDERTAKE ADDITIONAL WORK IN FARV TO ENABLE THE CONNECTION OF THE 300Ø MAIN AT DEVELOPER'S EXPENSE.
3. PIPE SIZE FOR LOW ZONE IS NOMINAL. DEVELOPER TO ENQUIRE AVAILABLE RESIDUAL PRESSURE FOR LOW ZONE TO FINALISE CONNECTION RETICULATION PIPE SIZE.
4. CONNECTION TO EXISTING WATER NETWORK BY ICON WATER AT CONTRACTOR'S EXPENSE.

225Ø EXTRA LOW ZONE MAIN CONNECTION CONSTRUCTED AS PART OF DENMAN PROSPECT 2 TO DEVELOPMENT BOUNDARY.

CONNECT NEW 300Ø EXTRA LOW ZONE MAIN TO EXISTING 300Ø EXTRA LOW ZONE MAIN FROM FARNHAM VALVE FARM (FARV).

CONNECT NEW 300Ø EXTRA LOW ZONE MAIN TO EXISTING 300Ø EXTRA LOW ZONE MAIN FROM FARNHAM VALVE FARM (FARV).

CONSTRUCT NEW 150Ø ZONE VALVE TO ICON WATER STD DRG 3014-C.

WATER EASEMENT EXTENDED 10m TO ACHIEVE TOTAL WIDTH OF 40m

ENDCAP FOR FUTURE CONNECTION TO MOLONGLO 3.

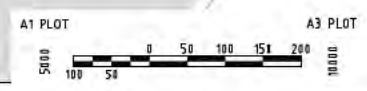
CONNECT TO LOW ZONE USING PASSIVE PRV (STD DRG 3203-C) AS TEMPORARY SECOND SOURCE FOR STAGE 1. PRV TO BE CLOSED AND SERVE AS ZONE VALVES (STD DRG 3014-C) ONCE SUPPLY FROM FARV IS ACHIEVED.

CONSTRUCT EXTRA LOW ZONE PIPE THROUGH LOW ZONE AREAS FOR FUTURE CONNECTION TO SUPPLY FROM FARV.

CONSTRUCT NEW 150Ø ZONE VALVE TO ICON WATER STD DRG 3014-C.

CONSTRUCT NEW 150Ø ZONE VALVE TO ICON WATER STD DRG 3014-C.

SEE DRAWING 7194-032 FOR OFFSITE WORK



No.	AMENDMENT	APPROVED	DATE	REVISION
C	REVISED BASED ON COMMENTS	AN	03.03.2020	P
B	FINAL REPORT	VL	14.12.2019	P
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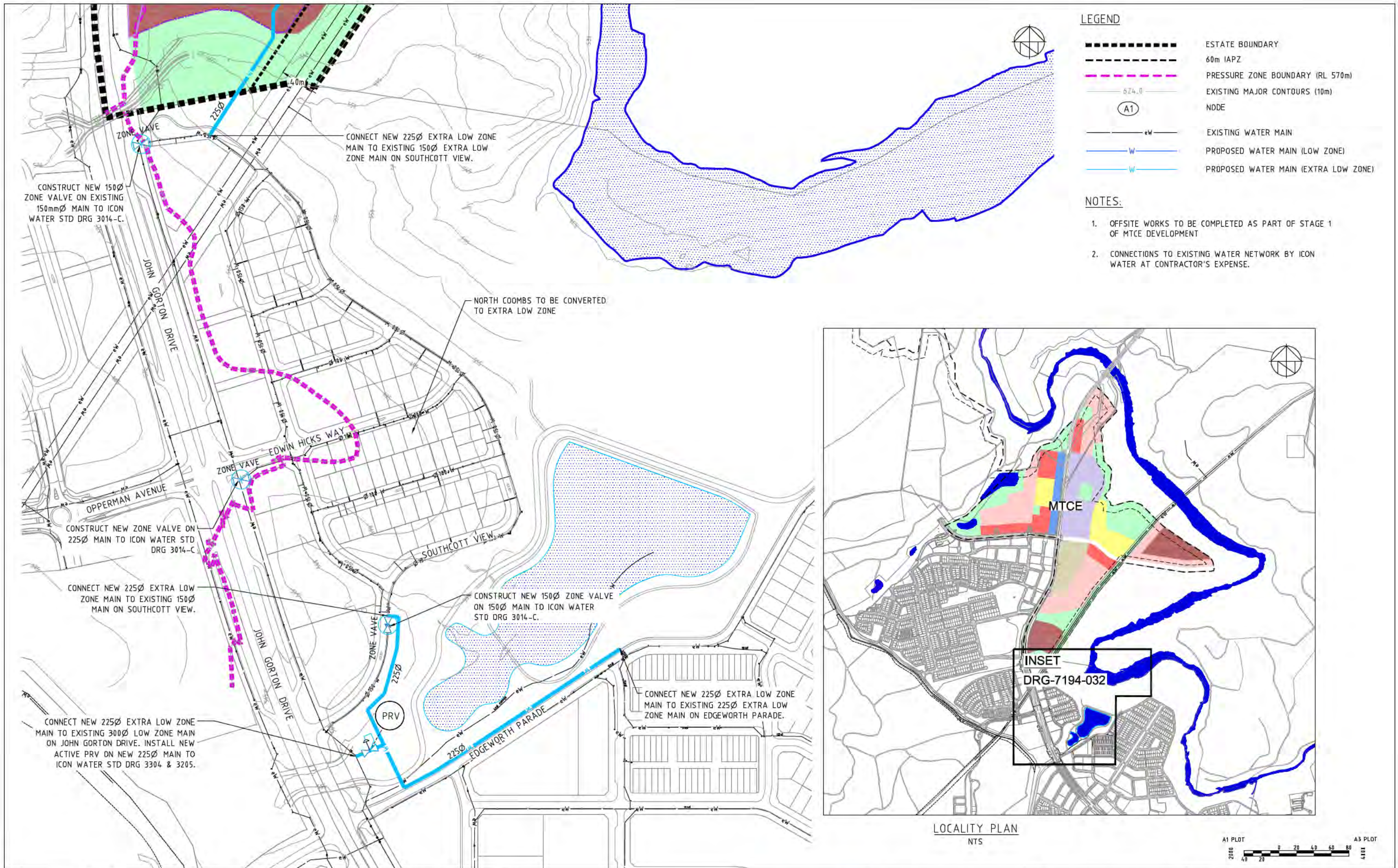
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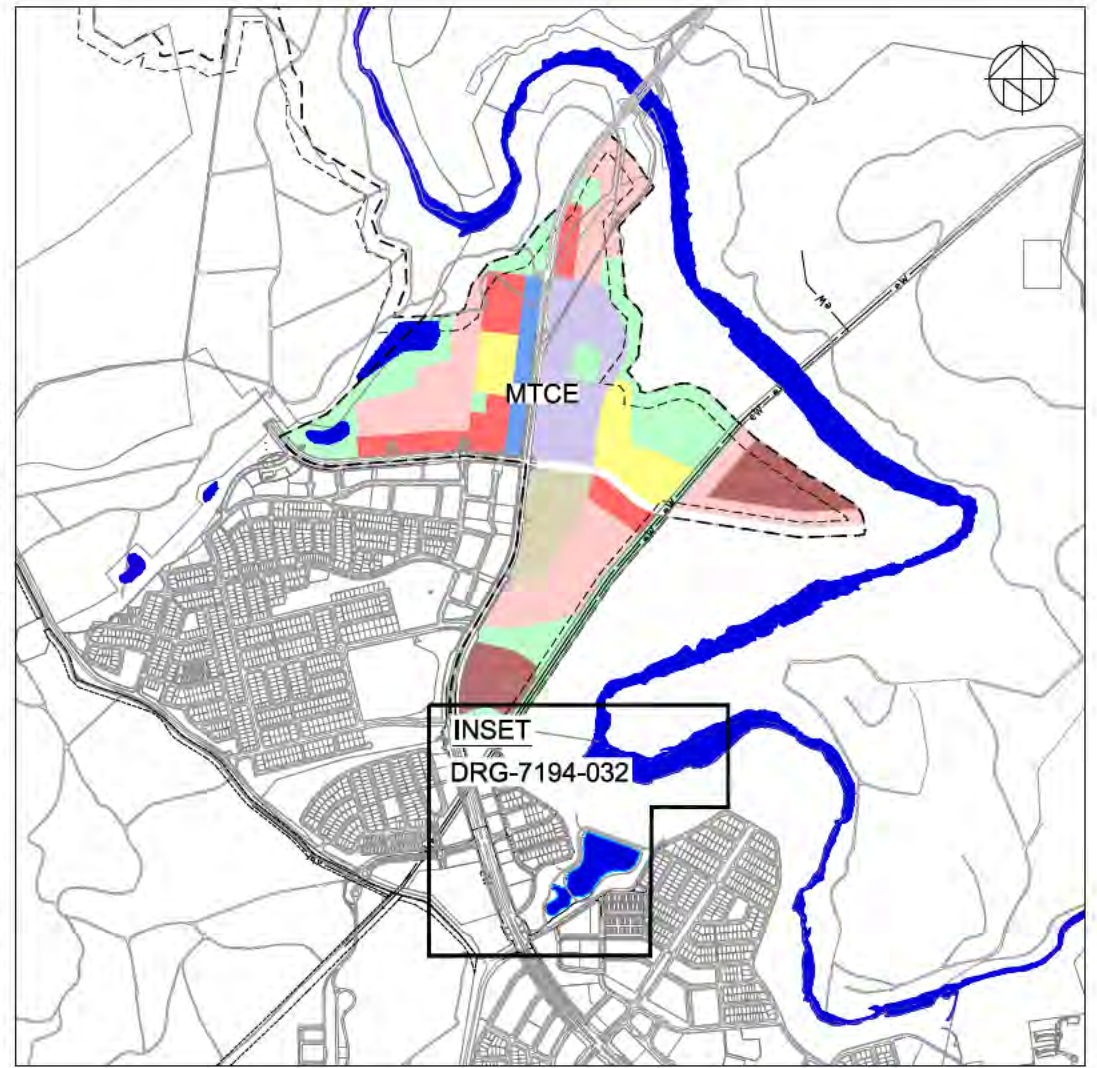
PROJECT: MOLONGLO TOWN CENTRE ENVIRONS (MTCE) GROWTH SERVICING

DRAWING TITLE: WATER SUPPLY GROWTH SERVICING PLAN
 PROJECT No. 7194 DRAWING No. 030 AMDT C



- LEGEND**
- ESTATE BOUNDARY
 - 60m IAPZ
 - PRESSURE ZONE BOUNDARY (RL 570m)
 - 674.0 EXISTING MAJOR CONTOURS (10m)
 - (A1) NODE
 - eW--- EXISTING WATER MAIN
 - W--- PROPOSED WATER MAIN (LOW ZONE)
 - W--- PROPOSED WATER MAIN (EXTRA LOW ZONE)

- NOTES:**
1. OFFSITE WORKS TO BE COMPLETED AS PART OF STAGE 1 OF MTCE DEVELOPMENT
 2. CONNECTIONS TO EXISTING WATER NETWORK BY ICON WATER AT CONTRACTOR'S EXPENSE.



LOCALITY PLAN
NTS



No.	AMENDMENT	APPROVED	DATE	APPROVED BY
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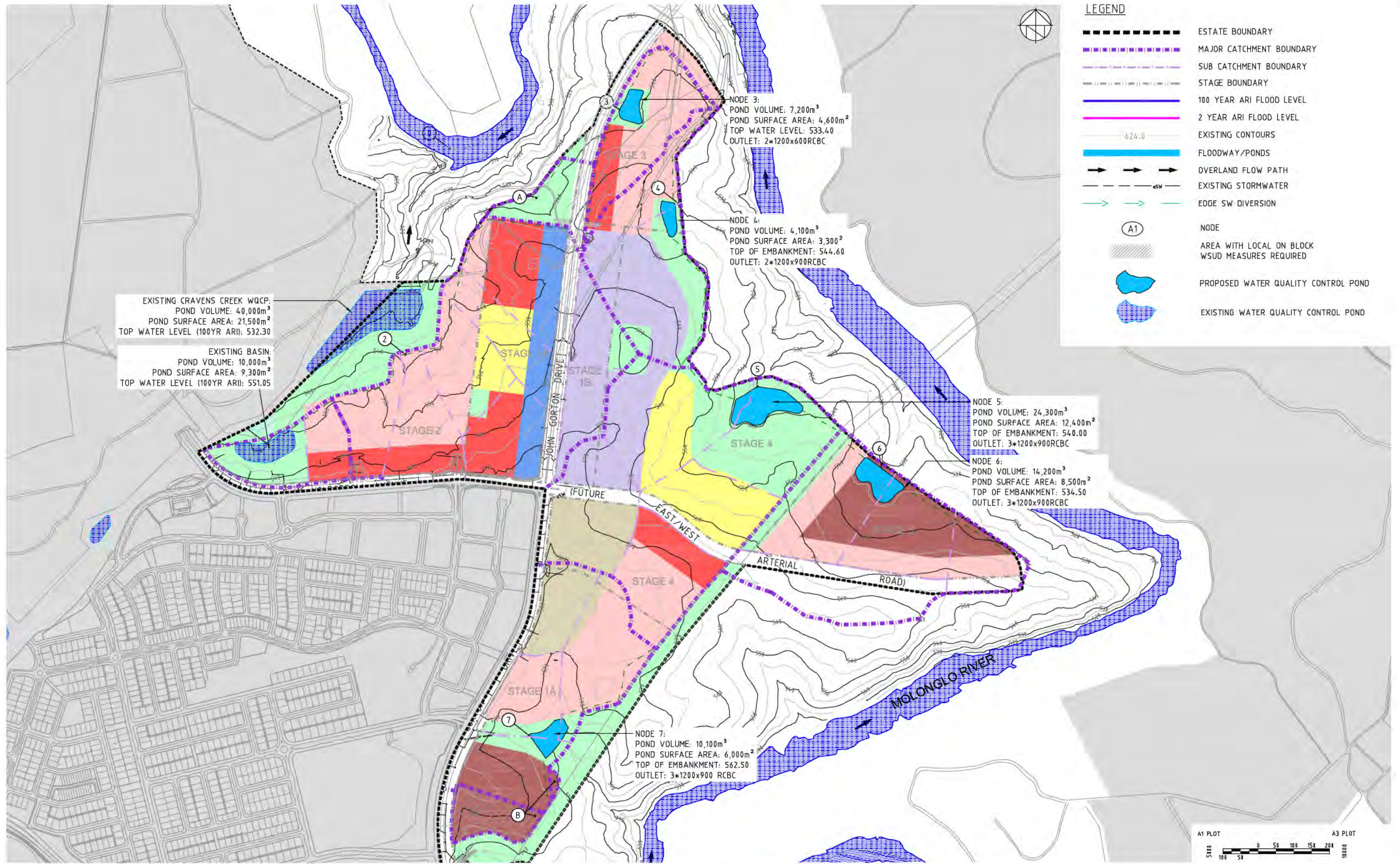
PROJECT

MOLONGLO TOWN CENTRE ENVIRONS (MTCE) GROWTH SERVICING

DRAWING TITLE

WATER SUPPLY GROWTH SERVICING PLAN OFFSITE WORKS

PROJECT No. **7194** DRAWING No. **032** AMOT **B**



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B	FINAL REPORT	VL	14.12.2024	P
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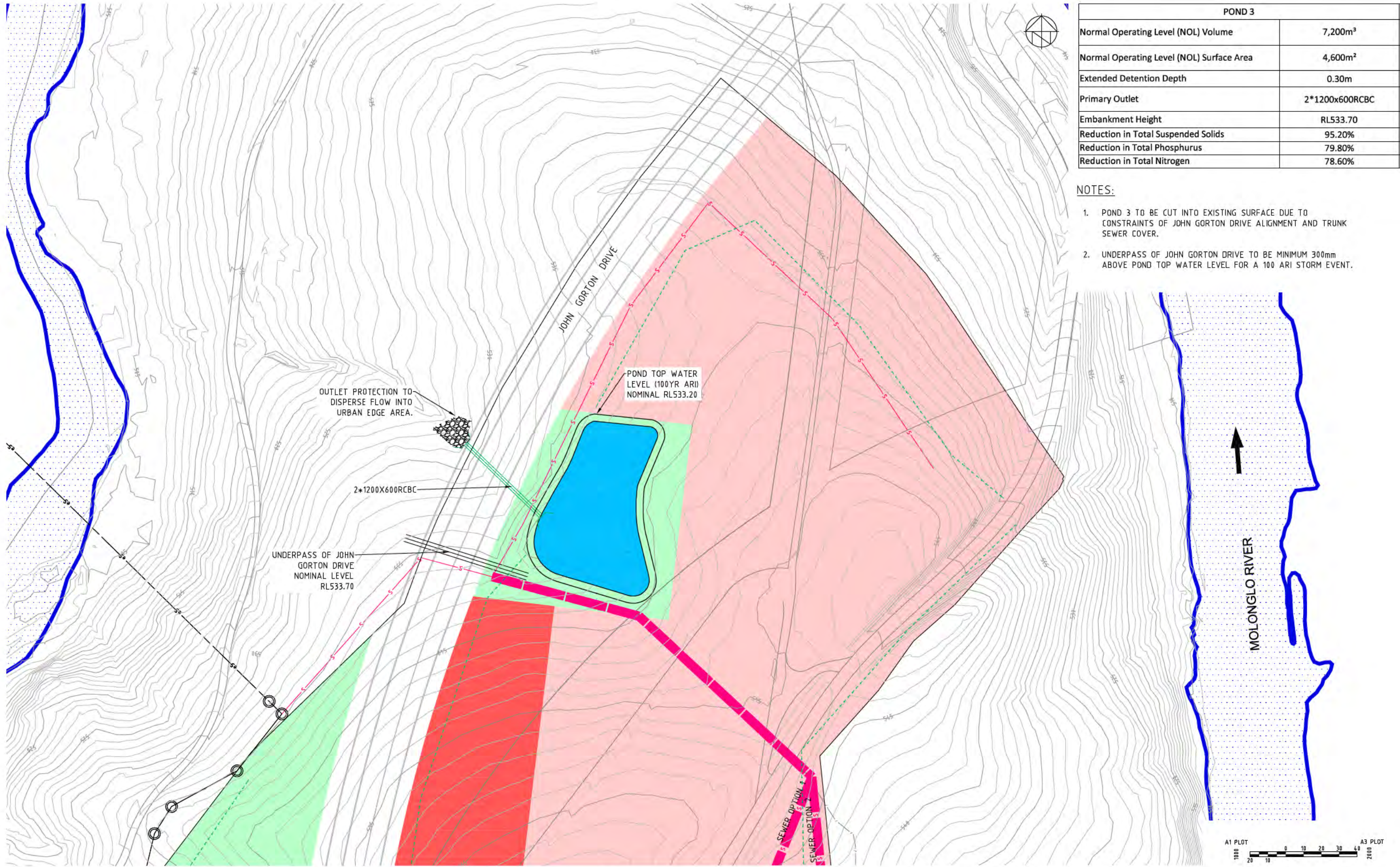
PROJECT

MOLONGLO TOWN CENTRE ENVIRONS (MTCE) GROWTH SERVICING

DRAWING TITLE

STORMWATER GROWTH SERVICING PLAN

PROJECT No. **7194** DRAWING No. **040** AMDT **B**



POND 3	
Normal Operating Level (NOL) Volume	7,200m ³
Normal Operating Level (NOL) Surface Area	4,600m ²
Extended Detention Depth	0.30m
Primary Outlet	2*1200x600RCBC
Embankment Height	RL533.70
Reduction in Total Suspended Solids	95.20%
Reduction in Total Phosphorus	79.80%
Reduction in Total Nitrogen	78.60%

- NOTES:
- POND 3 TO BE CUT INTO EXISTING SURFACE DUE TO CONSTRAINTS OF JOHN GORTON DRIVE ALIGNMENT AND TRUNK SEWER COVER.
 - UNDERPASS OF JOHN GORTON DRIVE TO BE MINIMUM 300mm ABOVE POND TOP WATER LEVEL FOR A 100 ARI STORM EVENT.

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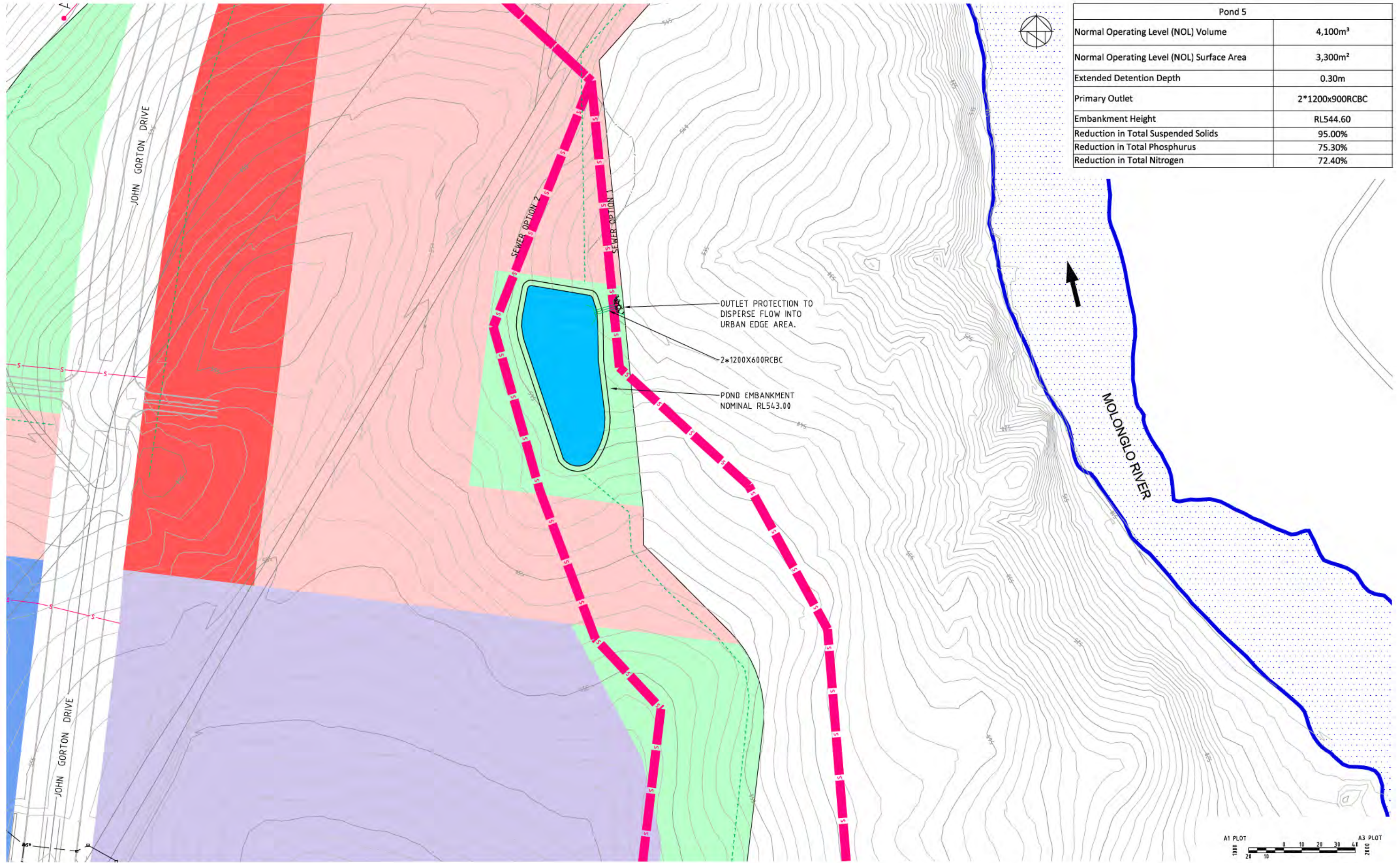
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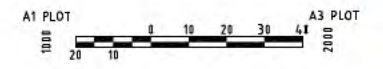
DRAWING TITLE

STORMWATER DETAIL PLAN POND 3

PROJECT No.	DRAWING No.	AMDT
7194	042	B



Pond 5	
Normal Operating Level (NOL) Volume	4,100m ³
Normal Operating Level (NOL) Surface Area	3,300m ²
Extended Detention Depth	0.30m
Primary Outlet	2*1200x900RCBC
Embankment Height	RL544.60
Reduction in Total Suspended Solids	95.00%
Reduction in Total Phosphorus	75.30%
Reduction in Total Nitrogen	72.40%



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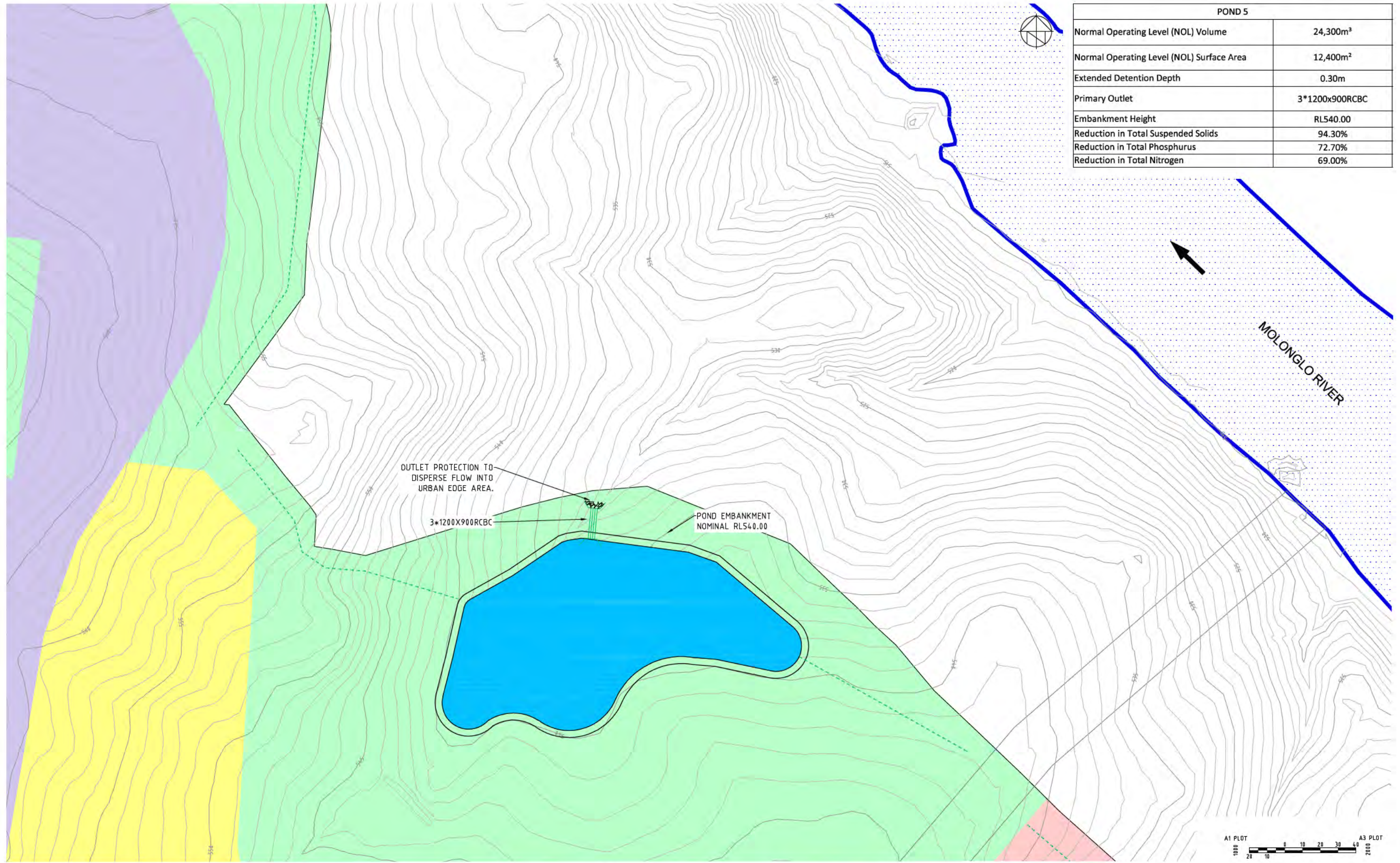
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DRAWING TITLE

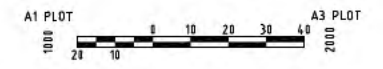
STORMWATER DETAIL PLAN POND 4

PROJECT No. **7194** DRAWING No. **043** AMDT **B**



POND 5	
Normal Operating Level (NOL) Volume	24,300m ³
Normal Operating Level (NOL) Surface Area	12,400m ²
Extended Detention Depth	0.30m
Primary Outlet	3*1200x900RCBC
Embankment Height	RL540.00
Reduction in Total Suspended Solids	94.30%
Reduction in Total Phosphorus	72.70%
Reduction in Total Nitrogen	69.00%

OUTLET PROTECTION TO DISPERSE FLOW INTO URBAN EDGE AREA.
 3*1200X900RCBC
 POND EMBANKMENT NOMINAL RL540.00



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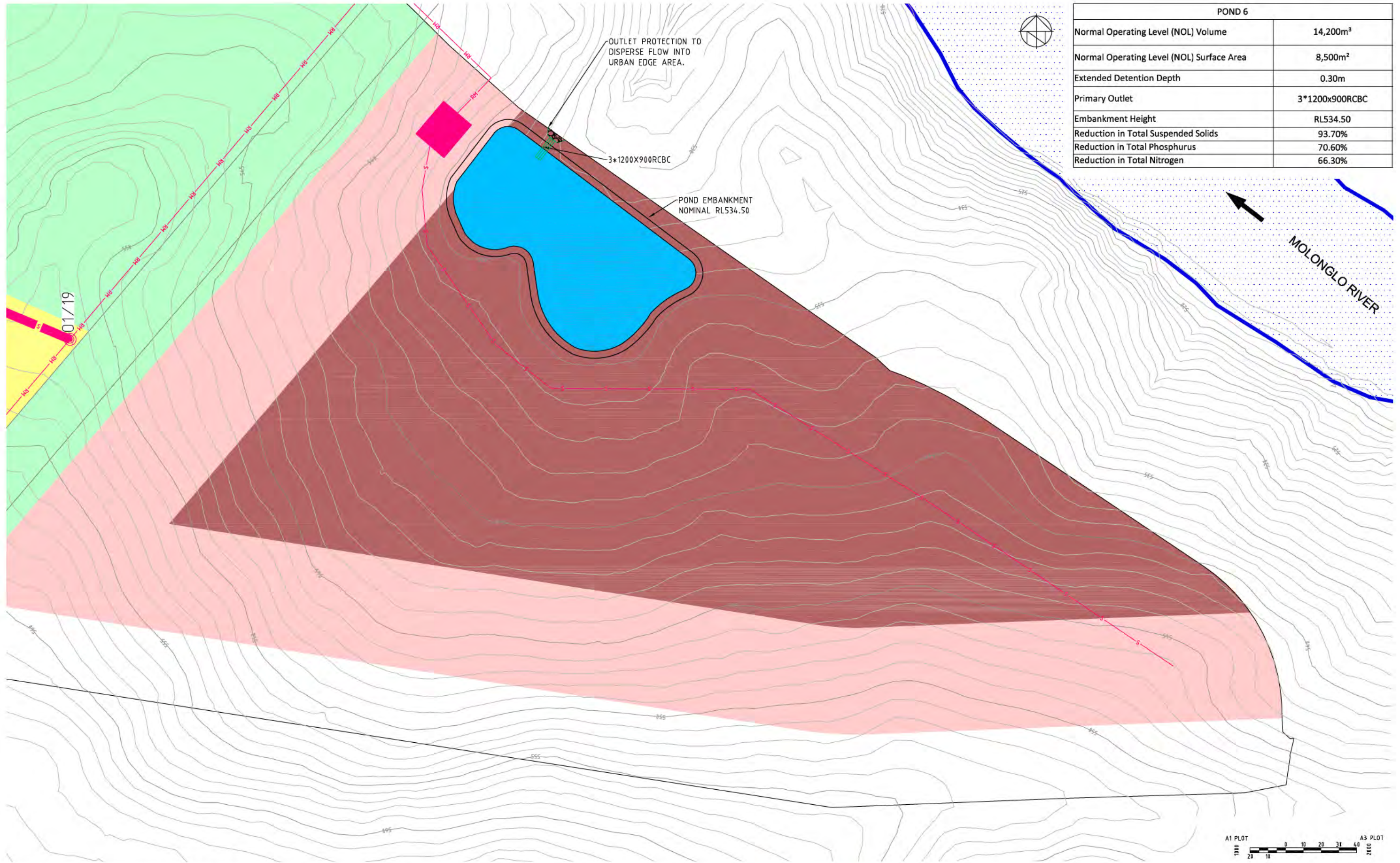
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MOLONGLO TOWN CENTRE ENVIRONS (MTCE) GROWTH SERVICING

DRAWING TITLE

STORMWATER DETAIL PLAN POND 5

PROJECT No.	DRAWING No.	AMDT
7194	044	B



POND 6	
Normal Operating Level (NOL) Volume	14,200m ³
Normal Operating Level (NOL) Surface Area	8,500m ²
Extended Detention Depth	0.30m
Primary Outlet	3*1200x900RCBC
Embankment Height	RL534.50
Reduction in Total Suspended Solids	93.70%
Reduction in Total Phosphorus	70.60%
Reduction in Total Nitrogen	66.30%

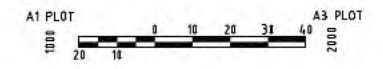
OUTLET PROTECTION TO DISPERSE FLOW INTO URBAN EDGE AREA.

3*1200X900RCBC

POND EMBANKMENT NOMINAL RL534.50

MOLONGLO RIVER

01/19



No.	AMENDMENT	APPROVED	DATE	REVISION
B	FINAL REPORT	VL	14.12.2024	P
A	FOR PRELIMINARY REVIEW	VL	07.01.2020	RJ

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APPROVED [Signature] DATE 17.01.2020
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 DRAWN BY [Signature]
 CAD FILE S:\3791 Molonglo 2 Team Centre Growth Services Plans\Asst\Current Develop\01\1791-145 POND 6.dwg
 SCALE AS SHOWN SHEET No.

PROJECT

MOLONGLO TOWN CENTRE ENVIRONS (MTCE) GROWTH SERVICING

DRAWING TITLE

STORMWATER DETAIL PLAN POND 6

PROJECT No. **7194** DRAWING No. **045** AMDT **B**



ACT
Government

Environment, Planning and
Sustainable Development

MOLONGLO TOWN CENTRE ENVIRONS GROWTH SERVICING PLANS INVESTIGATION STUDY

FINAL REPORT

VERSION 3

FEBRUARY 2020



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PROJECT NUMBER: 7194			
Prepared by:		Date:	13.12.2019
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Amended Report

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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY	5
1.1 Introduction.....	5
1.2 Document Review	5
1.3 Water Supply Growth Servicing Plan	6
1.4 Sewer Growth Servicing Plan.....	6
1.5 Stormwater Growth Servicing Plan.....	6
1.6 Staging and Capital Work.....	7
1.7 Recommendations	8
2. INTRODUCTION.....	9
2.1 Overview and background.....	9
2.2 Scope of Works.....	10
2.2.1 Water Supply.....	10
2.2.2 Sewer	10
2.2.3 Stormwater	10
2.3 Molonglo 2 planning context.....	11
2.3.1 Land Uses	11
2.3.2 Indicative Development Yields	12
2.4 Reference Documents.....	13
2.4.1 General.....	13
2.4.2 Water Supply.....	13
2.4.3 Sewer	13
2.4.4 Stormwater	13
2.5 Basis of design	14
2.5.1 Water Supply.....	14
2.5.2 Sewer	14
2.5.3 Stormwater	14
2.6 Drawings.....	15
2.7 Abbreviations.....	16
3. DOCUMENT REVIEW	17
3.1 Overview.....	17
3.2 Rationale	17
3.3 Water Supply.....	18
3.4 Sewer	19
3.5 Stormwater	19
4. WATER SUPPLY GROWTH SERVICING PLAN.....	20
4.1 Background	20
4.2 Special Design Considerations.....	20
4.3 Existing Water Supply Network	21
4.3.1 Low Zone.....	21
4.3.2 Extra Low Zone	21
4.4 Proposed Water Supply Infrastructure	21
4.4.1 Low Zone.....	21
4.4.2 Extra Low Zone	21
4.5 Hydraulic Modelling	22
4.5.1 Peak Demand.....	22
4.5.2 Firefighting.....	22
4.6 Analysis of Results	23
4.7 Opinion of Probable Cost	23
5. SEWER GROWTH SERVICING PLAN	24
5.1 Background	24
5.2 Design Considerations	24
5.3 Existing Sewer Services.....	25
5.4 Population Estimation.....	25
5.5 Gravity Sewer Catchments.....	25
5.6 Pumped sewage catchments	26
5.7 Hydraulic Modelling	26
5.7.1 Flow Estimation	26

5.7.2	Pipe Alignment	27
5.7.3	Hydraulic Capacity.....	28
5.8	Proposed Sewer Infrastructure.....	29
5.8.1	Options Assessment	29
5.8.2	Opportunities and Constraints.....	29
5.8.3	Opinion of Probable Cost	30
5.8.4	Analysis of Results	30
6.	STORMWATER GROWTH SERVICING PLAN	31
6.1	Background	31
6.2	Existing Stormwater Infrastructure	31
6.3	Stormwater Catchments.....	32
6.4	Proposed Stormwater Infrastructure	32
6.4.1	Opportunities and Constraints.....	33
6.4.2	Hydrological Modelling.....	33
6.4.3	Water Quality Modelling	34
6.5	Opinion of Probable Cost	35
7.	STAGING AND CAPITAL WORKS	36
8.	CONCLUSION	38
8.1	Water Supply Growth Servicing Plan	38
8.2	Sewer Growth Servicing Plan.....	38
8.3	Stormwater Growth Servicing Plan.....	38
8.4	Recommendations	38
	APPENDIX A - DRAWINGS	39
	APPENDIX B - WATER SUPPLY MODELLING	40
	APPENDIX C - SEWER MODELLING.....	41
	APPENDIX D - STORMWATER MODELLING.....	42
	APPENDIX E – CORRESPONDENCE	43
	APPENDIX F – COMMENTS AND RESPONSES	44

LIST OF FIGURES

Figure 1	Staging Plan for MTCE.....	7
Figure 2	Zoning Plan for MTCE.....	9
Figure 3	Planning Principles for MTCE.....	11
Figure 4	Butter Bridge Connection Point	25
Figure 5	Staging Plan for MTCE.....	36

LIST OF TABLES

Table 1. Stage Specific Infrastructure Requirements	8
Table 2. Molonglo 2 Yields	13
Table 3. Abbreviations	16
Table 4. Molonglo 2 Water Supply Pressure Zones	18
Table 5. Demand Inputs for MTCE.....	22
Table 6. Firefighting provision for MTCE	22
Table 7. Opinion of Probable Cost for Trunk Water Infrastructure.....	23
Table 8. MTCE Sewer Contribution to Sewer Link Bridge.....	26
Table 9. MTCE Sewer Contribution to Southern Trunk Sewer	26
Table 10. Pumped Catchment Summary	27
Table 11. Minimum Grades for Trunk Mains	28
Table 12. Opinion of Probable Cost for Trunk Sewer Infrastructure	30
Table 13. MTCE Existing WQCP Details	31
Table 14. MTCE Stormwater Catchment Details.....	32
Table 15. MTCE Pond Water Level Requirements	32
Table 16. XP RAFTS Hydrological Modelling Results	33
Table 17. Regional water quality targets for MTCE	34
Table 18. MUSIC Water Quality modelling results	34
Table 19. Opinion of Probable Cost for Stormwater Infrastructure	35
Table 20. Stage Specific Infrastructure Requirements	37
Staging of the water supply will need to be considered at detailed design stage.....	37

1. EXECUTIVE SUMMARY

1.1 INTRODUCTION

Indesco has been engaged by Environment, Planning and Sustainable Development Directorate (EPSDD) to undertake Growth Servicing Plans for water, sewer and stormwater for the development of Molonglo Town Centre Environs (MTCE). MTCE is part of Molonglo 2 and is surrounded by Denman Prospect 1B to the southwest, Denman Prospect 2 to the west and the Molonglo River to the north and east.

Growth Servicing Plans provide a high-level view of the trunk infrastructure that will be required to service the MTCE in the longer term. They are undertaken to provide the most economic structure/asset to meet services provisions over the whole of life cycle. As part of the study a review of previous documentation was conducted. In addition, the Growth Servicing Plans have been formulated based on identifying constraints such as:

- Completed construction work relevant to the subject area.
- Updates to design standards and hydraulic supply strategies from utility authorities.
- Staging of the development.

They are also used to formulate development conditions for the estate and identify potential capital works projects required as part of the development.

1.2 DOCUMENT REVIEW

A desktop review of existing reports and investigations into the Molonglo 2 area was conducted to assist in informing existing planning principles and parameters for the Growth Servicing Plans. The review outlined the design constraints for the site and taken into account the constructed work to date relevant to the MTCE area.

Key design constraints for the site involved the Pink-tailed Worm Lizard (PTWL) habitat adjacent to the estate area and steep, variable topography throughout the site.

Existing infrastructure constructed around the site of the MTCE mostly adhered to previous design studies with the exception being the water supply infrastructure. Past studies oftentimes mentioned a Extra Low Zone reservoir that has been replaced with a valve farm.

1.3 WATER SUPPLY GROWTH SERVICING PLAN

The purpose of the water supply growth servicing was to update the MTCE water supply planning to current Icon Water design standards with particular emphasis on network connectivity, pressure zone boundaries and pipe alignments. Peak demand and firefighting provisions were calculated using input from EPSDD on yield and Icon Water standards for Fire Risk categories.

In consultation with Icon Water, this project has identified that the following offsite works are required to service the Extra Low Zone of the MTCE. This will convert the existing connection from North Coombs to an Extra Low zone supply:

- A new 225Ø main from the corner of Telfer Street and Southcott View in North Coombs to the existing Extra Low Zone stub connection on Edgeworth Parade in Coombs.
- A new PRV off John Gorton Drive to connect to the aforementioned new 225Ø main.
- Zone valves at the new zone boundaries in North Coombs.

A duplicated 300Ø water supply main is required from the FARV on the northern verge of Holborow Avenue to meet the minimum residual head requirements for peak demand and firefighting flows in the town centre. Alternatively, the replacement of the existing 300Ø along this alignment can be adopted. Additional work will be required on the FARV whilst undertaking the connection.

1.4 SEWER GROWTH SERVICING PLAN

The purpose of the sewer growth servicing plan was to update the MTCE sewer planning to the current Icon Water design standards with particular emphasis on depth, capacity and grading requirements. Additionally the pumped catchment needed to be optimised to ensure the development of this catchment is economical. Two options for critical alignments were developed to ensure decision making for the sewer infrastructure is adequately justified.

Population demand was calculated using inputs from EPSDD on yield and compared to previous studies. This showed the design flows are lower than previous studies due to the reduction in development area which allow for changes to trunk alignment sizing.

Two main options were investigated for the vertical and horizontal alignments of critical trunk sewer infrastructure. From these alignments the hydraulic modelling showed adequate capacity, a general reduction in pumped catchment from past studies and achievable, compliant grades.

Option 1 provided an optimised design to reduce the pumped catchment; however the traversing of PTWL habitat significantly adds to the cost and risk associated with environmental constraints. Option 2 provides a sewer alignment entirely within the estate boundary. Option 2 is preferable at this time based on reduced environmental constraints.

1.5 STORMWATER GROWTH SERVICING PLAN

The purpose of the stormwater growth servicing plan was to review previous Water Sensitive Urban Design (WSUD) framework for the MTCE and confirm that it achieves the best outcome whilst meeting statutory requirements.

Within the estate there are two existing Water Quality Control Ponds which will be utilised in Molonglo 2 with sub-catchments draining to them. In addition there will be 5 proposed WQCPs serving sub-catchments of sizes ranging from approximately 5 to 48 hectares. The WQCPs have been sized to ensure water quality and stormwater detention requirements are met for "Regional Targets". Additional WSUD measures required for the estate include grassed swales, rainwater tanks and GPTs.

Stage	“Offsite works”	Timing
3	Extension of John Gorton Drive. Connection of sewer to the west of John Gorton Drive. Extension of Extra Low Pressure Zone water main from Western Low Pressure Zone. Significant excess spoil material.	Link to capital works construction Link to Stage 4
4	Extension of East/West Arterial Road Significant imported fill material.	Link to capital works construction Link to Stage 1B and Stage 3
5	Extension of East/West Arterial Road Construction of sewage pump station and rising main to Stage 4. Imported fill material.	Link to capital works construction Link to Stage 3

Table 1. Stage Specific Infrastructure Requirements

1.7 RECOMMENDATIONS

It is recommended that for further developing the design of the hydraulic infrastructure for the MTCE the following work is undertaken:

- Future planning including Estate Development Planning is informed by the growth servicing infrastructure.
- Ongoing coordination with utility authorities and stakeholder in implementing the growth servicing plans in undertaken as future projects within the region are designed, developed and constructed.

As the estate design develops with additional detail and added constraints the growth servicing plans can be used to inform stakeholders of the required outcomes for the trunk infrastructure of the MTCE.

2. INTRODUCTION

2.1 OVERVIEW AND BACKGROUND

Indesco has been engaged by Environment, Planning and Sustainable Development Directorate (EPSDD) to undertake Growth Servicing Plans for water, sewer and stormwater infrastructure for the future development areas of the Molonglo Town Centre Environment (MTCE) in Molonglo 2. Growth Servicing Plans provide a high-level view of the trunk infrastructure required to service the future development.

The Molonglo Valley is approximately 9km west of Canberra’s CBD. The future development area of MTCE extends north east from the intersection of John Gorton Drive and Holborow Avenue and is approximately bounded by Cravens Creek to the northwest, and then by the Molonglo River to the north and northeast. The area of Molonglo 2 is outlined in Figure 1 below. Molonglo 2 includes the study area, Denman North and Denman Prospect; however, for the purposes of this study, Denman Prospect is not included within the study area. Denman North is currently being designed and whilst not included within the study area has been allowed for within the hydraulic designs, based on inputs provided by Icon Water.

The Molonglo Valley has been developed in a staged manner. Existing development and key infrastructure consists of:

- Molonglo 1 included the suburbs of Coombs, Wright and Weston. Trunk infrastructure within Molonglo 1 included John Gorton Drive Stage 1, Cotter Road upgrade and Weston Creek Pond.
- Within Molonglo 2, trunk infrastructure that has been constructed prior to completion of Denman Prospect Stage 1 includes the Cravens Creek pond, the trunk sewer along the western edge of Molonglo 2, the sewer bridge crossing of the Molonglo River (Butters Bridge) and the water supply infrastructure including the Low Zone Oddie reservoir.
- John Gorton Drive has been constructed to approximately 1km from the Molonglo river to the north. The next stage of construction for this road, which includes a bridge over the Molonglo River, is currently being designed.
- Molonglo 3 is located to the north of the Molonglo River, and does not form part of the key infrastructure considerations for this study, except allowance for water supply extension as directed by Icon Water

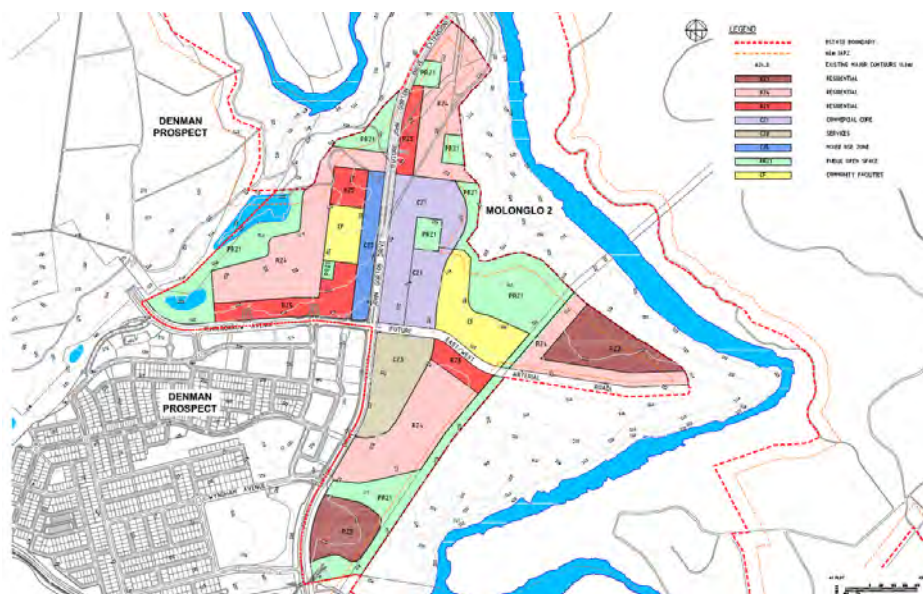


Figure 2 Zoning Plan for MTCE

2.2 SCOPE OF WORKS

The scope of works for the project is outlined below:

2.2.1 Water Supply

- Identify, in conjunction with Icon Water, a preferred Water Supply Growth Servicing Plan for the Town Centre area that achieves the best outcome for the Territory.
- The preferred Water Supply Growth Servicing Plan will include:
 - Pressure zones and boundaries;
 - Connections to the existing network;
 - Temporary reticulation options based on the proposed staging; and
 - Water supply reticulation pressure analysis

2.2.2 Sewer

- Identify up to 3 design options, based on the review of existing studies; Each option will describe:
 - Catchments;
 - Connections to the existing network;
 - Comparative construction costs;
 - Environmental impacts based on incursion into offset areas;
 - Sewerage Pump Station locations; and
 - Pipe depths and locations, and any requirements for special installation/protection (e.g. under John Gorton Drive, or within Molonglo River Corridor).
- Identify, in conjunction with Icon Water, a preferred Sewer Growth Servicing Plan for the Town Centre area that achieves the best outcome for the Territory.

2.2.3 Stormwater

- Identify, in conjunction with EPSDD, a preferred Stormwater Growth Servicing Plan for the Town Centre area that achieves the best outcome for the Territory and to meet the WSUD targets.
- The preferred Stormwater Growth Servicing Plan will include:
 - Pond locations inside the estate boundary and indicative sizes;
 - Compliance with regional pollution retention targets;
 - Connections to the existing network;
 - Temporary options based on the proposed staging; and
 - Maximise land use in conjunction with water supply and sewer alignments;

2.3 MOLONGLO 2 PLANNING CONTEXT

2.3.1 Land Uses

This study will form one of the inputs into the Molonglo 2 Structure Plan. EPSDD has provided the plan shown in Figure 2 below for the purposes of this study. MTCE is anticipated to accommodate 156 ha of net development area. The residential area will cater for approximately 18,000 people with approximately 4,400 residential dwellings. The commercial area will cater for approximately 22 ha of commercial blocks, 14 ha of community facilities and 40 ha of Urban open space.

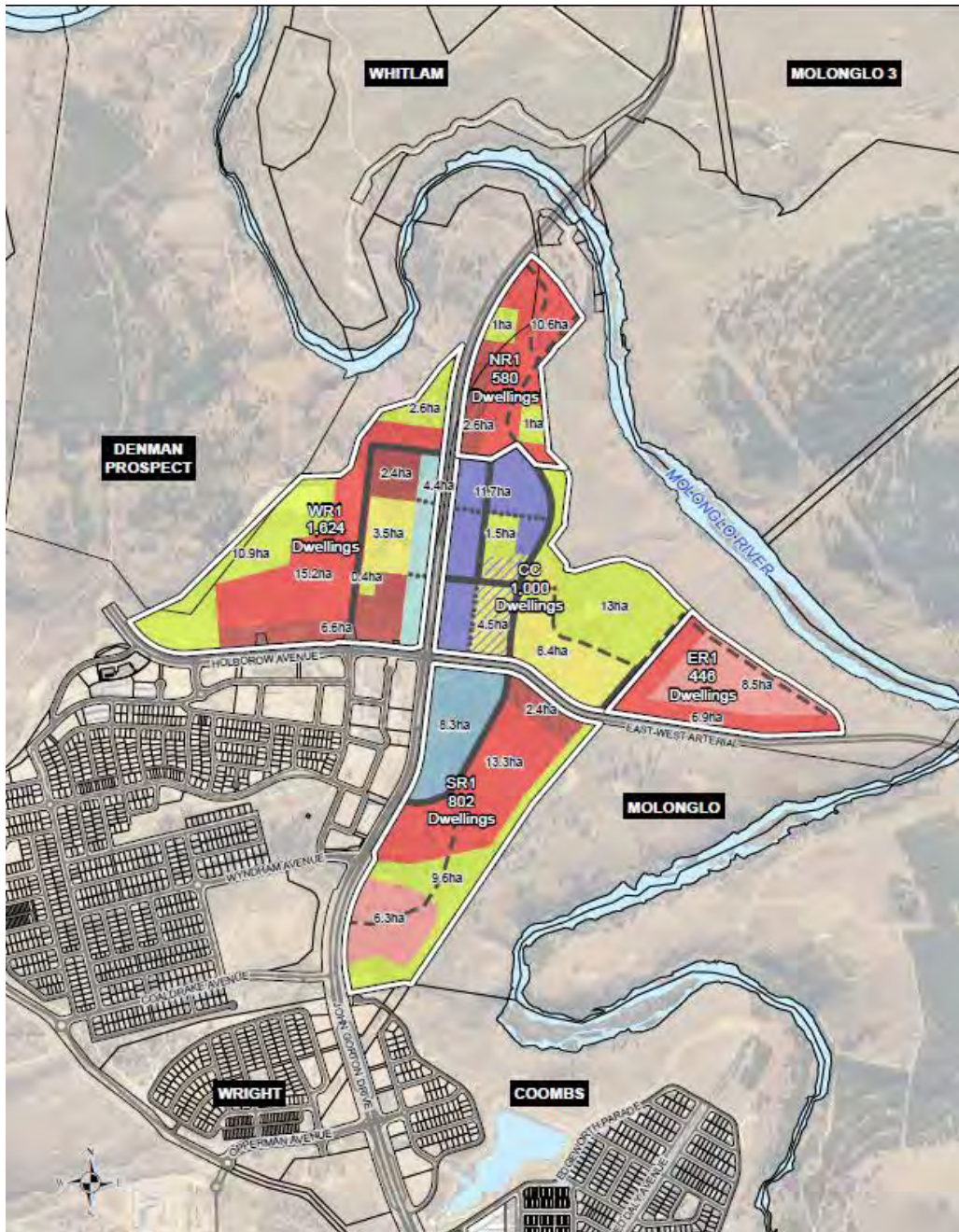


Figure 3 Planning Principles for MTCE

2.3.2 Indicative Development Yields

The plan includes five precincts with a central commercial core (precinct CC), a south residential area (precinct SR1), a west residential area (precinct WR1), a north residential area (precinct NR1) and an east residential area (precinct ER1). Figure 3 shows the current precincts. The high level areas and yields provided by EPSDD for the purposes of this study are in Table 1 below.

Precinct CC - Commercial Core	Area (hectare)	Estimated Dwellings	Dwelling per hectare	Max. Storeys
Commercial Core - CZ1	11.7	1,000	130	6 with one tower
Community Facilities - CF	8.4			
Mixed Use - CZ1 and CF	4.5			
Urban Open Space - PRZ1	14.5			
TOTAL	39.1	1,000		
Precinct SR1 - South Residential 1				Max. Storeys
Services - CZ3	8.3			
Urban Residential - RZ3	6.3	126	20	2
Medium Density Residential - RZ4	13.3	532	40	3
High Density Residential - RZ5	2.4	144	60	6
Urban Open Space - PRZ1	9.6			
TOTAL	39.9	802		
Precinct WR1 - West Residential 1				
Medium Density Residential - RZ4	15.2	608	40	3
High Density Residential - RZ5	9.6	516	60	6
Mixed Use Dwellings - CZ5	4.4	440	100	6
Urban Open Space - PRZ1	13.9			
Community Facility - CF	3.5			
TOTAL	46.0	1,564		

Precinct NR1 - North Residential 1	Area (hectare)	Estimated Dwellings	Dwelling per hectare	Max. Storeys
Medium Density Residential - RZ4	10.6	424	40	3
High Density Residential - RZ5	2.6	156	60	6
Urban Open Space - PRZ1	2.0			
TOTAL	15.2	580		
Precinct ER1 - East Residential 1				
Medium Density Residential - RZ4	8.5	170	20	2
High Density Residential - RZ5	6.0	276	40	3
TOTAL	15.4	446		

Table 2. Molonglo 2 Yields

2.4 REFERENCE DOCUMENTS

The following reference documents have been utilised in the preparation of this study.

2.4.1 General

- 08046.08 Molonglo Master Survey
- Estate Boundary and Bushfire Asset Protection Zones provided by EPSDD

2.4.2 Water Supply

- WSA 03-2011-3.1 Water Supply Code of Australia (Water Services Association of Australia);
- STD-SPE-G-012 Supplement to WSA 03-2011-3.1 Water Supply Code of Australia (Icon Water)
- Water Supply Strategy for Molonglo Development Stages 1 and 2

2.4.3 Sewer

- WSA 02-2014-3.1 Gravity Sewerage Code of Australia (Water Services Association of Australia);
- STD-SPE-G-011 Supplement to WSA 02-2014-3.1 Gravity Sewerage Code of Australia (Icon Water)
- WSA 04-2005-2.1 Sewerage Pumping Station Code of Australia (Water Services Association of Australia)
- STD-SPE-G-013 Supplement to WSA 04-2005-2.1 Sewerage Pumping Station Code of Australia (Icon Water)

2.4.4 Stormwater

- Municipal Infrastructure Standards 08: Stormwater
- Waterways Water Sensitive Urban Design General Code
- Australian Rainfall & Runoff: A guide to flood estimation 2016

2.5 BASIS OF DESIGN

2.5.1 Water Supply

The following design inputs have been utilised in the preparation of this study:

- Population and demand inputs have been modelled based on yield information provided by EPSDD.
- Water supply pressures at key boundaries have been provided for normal operating conditions by Icon Water, and are included in Appendix B

Hydraulic water supply models have been prepared using PIPES ++ software.

2.5.2 Sewer

The following design inputs have been utilised in the preparation of this study:

- Population and demand inputs have been modelled based on yield information provided by EPSDD.
- Existing sewer network peak flows have been provided for normal operating conditions by Icon Water, and are included in Appendix C.
- PTWL habitat areas provided by EPSDD

Trunk sewer vertical alignments have been modelled using 12d software.

2.5.3 Stormwater

The following design inputs have been utilised in the preparation of this study:

- Land use zoning and dwelling numbers provided by EPSDD

Hydrological modelling has been undertaken using XP RAFTS software and Water Quality modelling has been undertaken using MUSIC.

2.6 DRAWINGS

The following drawings are prepared as part of the Growth Servicing Plan study and should be referred to in conjunction with this report.

DRAWING NUMBER	TITLE
7194-000 COVER	COVER PAGE
7194-005 STAGING PLAN	STAGING PLAN
7194-007 ZONING PLAN	ZONING PLAN
7194-010 SEWER PLAN	SEWER GROWTH SERVICING PLAN
7194-011 SEWER TABLE	SEWER TABLE
7194-012 SEWER LS	SEWER LONGITUDINAL SECTION LINE A
7194-013 SEWER LS	SEWER LONGITUDINAL SECTION LINE B
7194-014 SEWER LS	SEWER LONGITUDINAL SECTION OPTION 1 SHEET 1 OF 3
7194-015 SEWER LS	SEWER LONGITUDINAL SECTION OPTION 1 SHEET 2
7194-016 SEWER LS	SEWER LONGITUDINAL SECTION OPTION 1 SHEET 3
7194-017 SEWER LS	SEWER LONGITUDINAL SECTION OPTION 2 SHEET 1 OF 3
7194-018 SEWER LS	SEWER LONGITUDINAL SECTION OPTION 2 SHEET 2
7194-019 SEWER LS	SEWER LONGITUDINAL SECTION OPTION 2 SHEET 3
7194-020 SEWER DET	SEWER DETAIL PLAN
7194-030 WATER PLAN	WATER GROWTH SERVICING PLAN
7194-031 WATER TABLE	WATER TABLE
7194-032 OFFSITE WORK	WATER GROWTH SERVICING PLAN OFFSITE WORKS
7194-040 SW PLAN	STORMWATER GROWTH SERVICING PLAN
7194-041 SW TABLE	STORMWATER TABLE
7194-042 POND 3	STORMWATER DETAIL PLAN POND 3
7194-043 POND 4	STORMWATER DETAIL PLAN POND 4
7194-044 POND 5	STORMWATER DETAIL PLAN POND 5
7194-045 POND 6	STORMWATER DETAIL PLAN POND 6
7194-046 POND 7	STORMWATER DETAIL PLAN POND 7

2.7 ABBREVIATIONS

The following abbreviations and acronyms are used throughout this document.

Table 3. Abbreviations

Abbreviation	Definition
EPSDD	Environment Planning And Sustainable Development Directorate
MTCE	Molonglo Town Centre Environs
DICL	Ductile Iron Cement Lined
JGD	John Gorton Drive
PTWL	Pink-Tailed Worm Lizard
AHD	Australian Height Datum
MVIS	Molonglo Valley Interceptor Sewer
FARV	Farnham Valve Farm
PRV	Pressure Reducing Valve
TCCS	Transport Canberra & City Services
WQCP	Water Quality Control Pond
APZ	Asset Protection Zone
IL	Invert Level
NSA	Net Seweraged Area
AEP	Annual Exceedance Probability

3. DOCUMENT REVIEW

3.1 OVERVIEW

A desktop review of existing reports and investigations into the Molonglo 2 area was conducted to assist in informing existing planning principles and parameters for the Growth Servicing Plans. The documents provided by EPSDD and Icon Water for this purpose were:

- Strategic Sewerage Master Plan Molonglo Valley - Stage 2 Development Amended (2010, ActewAGL)
- Water Supply Strategy for Molonglo Development Stages 1 & 2 (ActewAGL, 2010)
- Molonglo Stage 2 - Water, Sewer and Stormwater Master Plans & Concept Design (Brown Consulting, November 2011)
- Molonglo Group Centre and Environs Hydraulic Master Plans (Indesco, February 2013)
- Molonglo 2 Urban Edge Landscape Masterplan and Feasibility Study (Indesco, September 2014)
- Molonglo 2 Commercial Centre Infrastructure Investigation Study (Indesco, March 2019)

Key findings and relevant information from these reports are outlined in Section 3.1. A rationale for changes to existing masterplans where necessary is provided in Section 4-6.

3.2 RATIONALE

Hydraulic Growth Servicing plans for the entire Molonglo 2 were prepared by Brown Consulting and endorsed by Icon Water in 2011. These plans for the Town Centre were subsequently prepared by Indesco in 2013, to reflect revised planning outcomes for the Town Centre. At that time, Icon Water endorsement was obtained by a different (Asset Acceptance) division within Icon Water. As a result, the 2013 plans have not been included in Icon Water growth area planning for Molonglo 2.

Design standards have since been updated by TCCS (stormwater) and Icon Water (Water and Sewer). In addition several factors that have recently been developed and/or confirmed which might affect the past plans. Hence the need for updating servicing plans. These factors include:

- Re-mapping of Pink-Tailed Worm Lizard habitats;
- Adjustments to the Molonglo River Corridor Boundary;
- Realignment of the East West Arterial road and John Gorton Drive; and
- As-built service connections.

Where design constraints have been identified to varying significantly from previous assumptions, they are highlighted in the relevant discussion.

3.3 WATER SUPPLY

Molonglo 2 is serviced by the Low and Extra Low water supply pressure zones, with TWL RL 645m and RL 605m respectively. The current water supply standards require that the maximum pressure in the system is 75m and this requires the previous level of the zone boundary between the Low and Extra Low Zone to change from RL 560m to RL 570m. The design parameters for these zones, and the adjacent Intermediate pressure zone, are summarised in the Table 4 below.

Zone	TWL m AHD	Highest Served Area m AHD	Lowest Served Area m AHD
Intermediate	685	655	610
Low	645	610	570
Extra Low	605	570	530

Table 4. Molonglo 2 Water Supply Pressure Zones

Key findings from the existing documentation and updated advice from Icon Water as they relate to Molonglo 2 included:

- Water supply for the Low Zone must come from the two supply sources: the Oddie Reservoir, located to the west of Denman Prospect and from the Western Low Zone, which is supplied by Duffy and Chifley Reservoirs. There is a 300Ø main located along the eastern side of John Gorton Drive that forms part of the Western Low Zone. A 300Ø main in Holborow Avenue provides the second source of supply from the Oddie Reservoir.
- The Extra Low Zone of Molonglo 2 will require connection to the FAVF serviced by the Low Zone Oddie reservoir and the Extra Low Zone network in Coombs serviced by the Low Zone Chifley and Duffy reservoirs as its two feeds of water supply. Denman Prospect 2 and MTCE are both serviced from a 300Ø main extending from the FARV with one feed extending west to Denman Prospect 2 and one extending east to the MTCE. The Extra Low Zone in Denman Prospect 2 and MTCE serviced by these 300Ø main will need to be cross-connected through a looped 225Ø main to ensure backup supply is maintained.
- The existing 900Ø and 1200Ø parallel Aranda bulk supply mains are located within the southeast boundary of the site. These mains do not directly service the site, however, their location influences infrastructure alignments where services are required to cross them. A 40m easement must allow for this bulk water supply mains.
- Denman Prospect Stages 1A and 1B (now complete), Denman Prospect Stage 2, Denman North and MTCE may be completed progressively and concurrently.

3.4 SEWER

The majority of the sewer system serving MTCE will discharge to the Molonglo Valley Interceptor Sewer (MVIS) on the northern side of the Molonglo River via a sewer bridge (Butters Bridge) across the Molonglo River. A series of connections are proposed to a trunk sewer located along the southern side of Cravens Creek that connects to the sewer bridge.

A smaller area in southern MTCE discharges to the existing Trunk Sewer along Coombs..

Key findings from the existing documentation related to MTCE included:

- MTCE will contain both gravity and pumped sewer catchments. Approximately 10% of the catchment will require pumping. Localised filling has been assumed in some catchments to enable gravity flow.
- The eastern area of MTCE, approximately 10 ha, cannot be drained by gravity to the Sewer Bridge. A sewage pump station was proposed to sewer this area.
- An area of approximately 0.4 ha located in north of Molonglo 2 and adjacent to John Gorton Drive is serviceable by gravity flow. It was noted that this areas below RL 536m AHD are within the 60m IAPZ and therefore are unlikely to have land use associated with sewerage requirements.

3.5 STORMWATER

Previous documentation shows that the stormwater catchments in MTCE predominantly drain towards Cravens Creek Water Quality Control Pond (WQCP). Smaller areas of catchment will rely on local treatment to achieve water quality targets.

Two ponds downstream of Denman Prospect have been constructed and will also be downstream of catchments within the MTCE site area. The Cravens Creek pond, completed in 2016, has a surface area of approximately 21,500 m² and approximate volume of 40,000m³. Basin C1, completed in 2018, has a surface area of approximately 9,200m² and an approximate volume of 10,000m³.

Key findings from the existing documentation as they relate to MTCE included:

- Attenuation of the 20% AEP and 1% AEP events has mostly been achieved.
- Water quality assumptions utilised bioretention basins within the estate i.e. rain gardens to meet objectives and reduce pond sizing. This strategy is no utilised in this report to enable flexibility in the estate design.

4. WATER SUPPLY GROWTH SERVICING PLAN

4.1 BACKGROUND

As part of the scope of work for this study, Icon Water has provided comments on previous hydraulic masterplans, with the following water supply specific comments:

- Overall Network Connectivity and Functionality: Insufficient information has been provided on the functionality and connectivity of the network to ensure that overall water supply requirements are met, particularly to areas outside of the specific Molonglo study area, such as Denman Prospect and Coombs/Wright. Further discussion with Icon Water is needed to outline the details of the investigation phase that was completed and identify any omissions or improvements that can be made to the previous work.
- Water Supply Zone Boundaries: There are potential improvements in the setting of the zone boundaries in the development that will improve water supply servicing in these areas. Icon Water can provide information that will aid in the final alignments of where these boundaries should be set.
- Pipe Alignments: Further detail is required on specific pipe alignments and how they are supplying required services and network redundancy to specific areas of the development to meet overall strategic servicing requirements. There is also scope to improve the alignments of some of the required mains to reduce overall costs of the network and improve servicing to development areas. Further discussions with Icon Water are required to outline these potential options and improvements.

Additionally there was general comments that design constraints need to be clarified, options assessment need to be provided and cost information elaborated. This study addresses these comments.

4.2 SPECIAL DESIGN CONSIDERATIONS

The key design constraints for the MTCE in terms of the water supply network are staging, pressure requirements within town centres, supply sources and the existing water supply infrastructure

The proposed staging of the MTCE has the southern residential estate below the ridge being released as Stage 1A. The main constraint in regards to staging is that it is the furthest area from the ultimate second source of water supply (FARV) and the limit for a single feed is 40 to 100 dwellings. EPSDD confirmed two areas of priority with ACT Fire & Rescue requiring a block in the CZ3 services zone, in the Low Zone, and the southernmost RZ3 urban residential zone, in the Low and Extra Low Zone, have been proposed for an early land release. Therefore the water supply infrastructure will require provision for these areas to be constructed earlier in the estate before the ultimate estate is completed. This will require the use of temporary works to allow two feeds into these areas to be from two sources of supply.

MTCE has large areas of high density residential with a maximum height of 6 storeys. Icon Water standards require these sites to consider gross floor area in peak hour demand calculations. The estate will therefore have a significantly higher demand than a low density residential estate and careful provision will be required to ensure high density areas meet pressure during peak demand and firefighting provisions.

4.3 EXISTING WATER SUPPLY NETWORK

The existing water supply network for the MTCE is serviced by infrastructure predominantly from the Oddie Reservoir. The infrastructure for the two pressure zones is outlined below.

4.3.1 Low Zone

The Low Zone for the MTCE is serviced from two trunk sources: a 300-450Ø main along the southern verge of Holborow Avenue connected to the Oddie reservoir and a 300Ø main on the eastern verge of John Gorton Drive connected to the Western Low Zone. The MTCE can be connected to this Low Zone through existing stub or new connection points pending the detailed design.

4.3.2 Extra Low Zone

The Extra Low Zone for the MTCE will be primarily serviced from two sources. The first source is the 300Ø main on the northern verge of Holborow Avenue originating from the FARV. A stub connection has been provided on the northern verge of Holborow Avenue at the existing western intersection.

The second source is an Extra Low Zone connection to the 150Ø main on Southcott View.

4.4 PROPOSED WATER SUPPLY INFRASTRUCTURE

Through extensive discussion with Icon Water the proposed water servicing network for each zone is outlined below.

4.4.1 Low Zone

The services zone and core zone above the RL570m contour will be serviced by connections to the 300Ø main in John Gorton Drive.

4.4.2 Extra Low Zone

The residential zones and commercial zones below the RL570m contour will be serviced by Extra Low Zone connections. The first source of supply will be the FARV with a 300Ø stub connection on the northern verge of Holborow Avenue. The second source of supply will be a connection to the Extra Low Zone network in Coombs.

The existing 300Ø main on John Gorton Drive running north to the future area of Molonglo 3 may be utilised for the Extra Low zone. This will be investigated as part of the detailed design.

The 300Ø main from the FARV will run east along Holborow Avenue cross through the Town Centre and then continue east on the verge of the East-West arterial for a potential future connection. A 225Ø connection will extend south to connect to the Extra Low Zone network in Coombs which is immediately south of MTCE. A looped 225Ø main will connect North Denman to the MTCE.

Currently the Coombs area in the southern side of MTCE is served by the Low Zone instead of Extra Low Zone. This need to be converted to enable the second connection offsite works in North Coombs. These works include:

- Constructing a new 225Ø main from the corner of Telfer Street and Southcott View in North Coombs to the existing Extra Low Zone PRV connection on Edgeworth Parade in Coombs.
- A new PRV off John Gorton Drive will be required to connect to the aforementioned new 225Ø main.
- Zone valves will be required at the new zone boundaries in North Coombs.

A second supply to Stage 1A will need to be provided with a temporary connection to the 300mm Low Zone main in John Gorton Drive with the use of a PRV.

4.5 HYDRAULIC MODELLING

4.5.1 Peak Demand

The peak demand for the MTCE was calculated using the demand outlined in STD SPE-G-012. For the estate and building floor area an efficiency factor was applied to obtain the demand area. The demand inputs are presented in the table below:

Development Type	Estate Efficiency (%)	Building Efficiency (%)	Max Hourly Rate (L/s/net ha)	Peak Hour Demand (% of Max Hourly Rate)
Urban and Medium Density Residential	70	-	1.5	100
High Density Residential	70	70	1.5	100
Mixed Use	70	70	1.5	100
Core/Services Zone	70	70	1.8	60
Community Facility	70	-	1.9	60

Table 5. Demand Inputs for MTCE

Peak demand was calculated using the above inputs and fed into the hydraulic model to ensure minimum pressure requirements are met. The total Low Zone demand was calculated as 32.64L/s and the total Extra Low Zone demand was calculated as 166.60L/s. Detailed calculations for the peak demand pressures can be found in Appendix B.

4.5.2 Firefighting

The Fire Risk Types for the MTCE have been received based on Icon Water standards. The firefighting inputs are presented in the table below:

Development Type	Fire Risk Type	Minimum Firefighting Flow Provision (L/s)
Urban and Medium Density Residential	F6	25
High Density Residential	F4	60
Mixed Use	F4	60
Core Zone	F3	100
Community Facility	F4	60
Services Zone	F4	60

Table 6. Firefighting provision for MTCE

A fire was simulated at each node in the hydraulic model using the above inputs to ensure minimum pressure requirements are met. Detailed calculations of the firefighting pressures can be found in DRG 7194-031 WATER SUPPLY TABLE.

4.6 ANALYSIS OF RESULTS

The Low Zone of MTCE will connect directly into the 300Ø main on John Gorton Drive. As individual developments are connected pressure inquiries can be made to ensure pressure and firefighting requirement are met.

The Extra Low Zone water modelling for MTCE showed that the demand from the town centre area was causing significant head loss within the existing 300Ø main extending from the FARV due to the high flow requirements. This caused issues achieving a minimum 30m of residual head during peak demand for high density & commercial areas. To alleviate this pipe needs to be upgraded to 375Ø where demand dictated to achieve acceptable losses over the length of pipe. Alternatively a duplicated 300Ø can be used to reduce head losses in this section. Icon Water has advised additional work to the FARV will be required when undertaking this connection.

From the PIPES++ for the Extra Low Zones of all development types meet the minimum residual head requirements for peak demand and firefighting provisions. Results of this analysis can be found in DRG 7194-031 WATER SUPPLY TABLE.

4.7 OPINION OF PROBABLE COST

The following is a cost estimate for the trunk water supply within the MTCE:

OPTION 1				
Item	Unit	Quantity	Rate	Cost
Preliminaries	Item	1	\$150,000	\$150,000
225Ø water supply main	m	2000	\$270	\$540,000
300Ø water supply main	m	2600	\$400	\$1,040,000
375Ø water supply main	m	440	\$600	\$264,000
TOTAL				\$1,994,000

Table 7. Opinion of Probable Cost for Trunk Water Infrastructure

5. SEWER GROWTH SERVICING PLAN

5.1 BACKGROUND

As part of the scope of work for this study, Icon Water has provided comments on the previous hydraulic masterplans with the following sewerage specific comments:

- Sewer Depths: There are large sections of sewer at depths greater than 6m, the maximum depth allowable under the standards and no discussion or rationale is provided as to why this has occurred.
- Capacities, Self-Cleansing and Sulphide Slimes Control Grades: There is no information provided on the flow loadings as to whether the design meets the required hydraulic capacities and grades for self-cleansing and the sulphide slimes control.
- Pumped Sewer Catchment: The previously agreed pumped area to the east of the development has been increased dramatically from previous work without any supporting information, options assessment or cost estimation being provided.

Additionally there was general comments that design constraints need to be clarified, options assessment need to be provided and cost information elaborated. This study addresses these comments.

5.2 DESIGN CONSIDERATIONS

The key design constraints for MTCE in terms of sewerage infrastructure are the topography of the site, environmental boundaries including the Molonglo river corridor boundary and Pink-Tailed Worm Lizard (PTWL) habitats and the need to cross at the existing Butters Bridge to reach the Molonglo Valley Interceptor Sewer (MVIS).

The topography of the site has a typical slope of 10% and has hills and gullies throughout the estate. Where possible, the vertical design of the sewer has limited sewer depths to less than 6m, and identified areas of fill/embankment construction.

PTWL habitats have been considered outside the Estate boundary. In design options where trunk sewers have been designed outside the Estate boundary, any crossing of PTWL habitat areas has been assumed to require micro-tunnelling. Moreover, the design would not permit future maintenance access in these locations.

The invert level of the connection at Butters Bridge provides a downstream boundary for this study.

5.3 EXISTING SEWER SERVICES

Work As Executed records (C12023-029) show the Butters Bridge sewer invert level of RL531.51m. The sewer has a diameter of 375Ø and 0.4% grade.

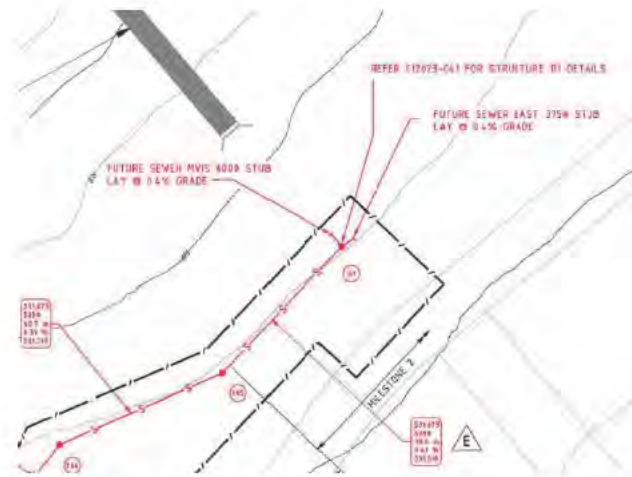


Figure 4 Butters Bridge Connection Point

Additionally the trunk sewer main connecting Denman Prospect to this bridge has been constructed with 5 stubs provided along this main for connections to western areas of MTCE.

The existing trunk sewer main to the north of Coombs will service a small part of MTCE with an existing stub connection provided at IL557.645m.

5.4 POPULATION ESTIMATION

Using input from EPSDD (as outlined in Section 2.3) the total yield was distributed among the NSA for each area. Commercial yield was assumed based on efficiency factors for the total area. Equivalent population was then calculated in accordance with Icon Water standards. These calculations can be found in Appendix C.

5.5 GRAVITY SEWER CATCHMENTS

Sewer catchments were defined by existing topography information. For the purposes of yield calculation and flow estimation the catchments were divided into sub-catchments by zoning, staging boundaries and downstream connection points.

All area of the MTCE drains to Butters Bridge. Additionally parts of Denman Prospect Stage 1 and Denman North drain to this point. Though these catchments are not shown in the Growth Servicing Plans the area and yield associated with these catchments have been accounted for in the calculations.

The majority of precinct SR1 will flow towards to the existing sewer which runs past Coombs with approximately 18.5 hectares of Net Sewerage Area (NSA) and 484 dwellings contributing to the system.

5.6 PUMPED SEWAGE CATCHMENTS

The use of a pump station is required to service precinct ER1. This is due to the significant distance between the bridge and catchment in combination with the steep topography between connection points.

Option 1 minimises the pumped catchment as the community facility area (Nodes E2 & E4) is captured with gravity flow. Additionally there is potential to capture part of Catchment F with gravity flow. Option 2 will require a larger sewage pump station to capture the community facilities site.

A section of precinct NR1 below RL635m will not be serviceable by gravity sewerage due to the existing IL of the sewer link bridge. It is assumed that this area will be utilised as road corridor and open space as it is within the 60m IAPZ and therefore cannot have residential use. If residential use is within this area localised filling will be required to service the area by gravity

5.7 HYDRAULIC MODELLING

5.7.1 Flow Estimation

The design flow calculations for the Molonglo 2 sewerage catchment is summarised below.

Downstream Node	NSA (ha)	Total Equivalent Population (TEP)	Design Flow (L/s)
D4	42.45	7,374	79.61
C1	2.73	355	6.15
C2	21.66	5,590	57.82
C4	9.55	1,060	17.18
C5	2.90	345	6.22
B6	4.09	665	10.15
TOTAL	83.38	15,389	177.13

Table 8. MTCE Sewer Contribution to Sewer Link Bridge

Downstream Node	NSA (ha)	Total Equivalent Population (TEP)	Design Flow (L/s)
A1	18.50	2,040	28.80

Table 9. MTCE Sewer Contribution to Southern Trunk Sewer

Comparing the design flows in Table 8 & Table 9 to equivalent nodes in past studies shows a consistent reduction in the design flows. This is expected due to current design standards have a daily per capita contribution (PCC) of 180L/EP/day compared to 300L/EP/day in the superseded standards. This has led to the downsizing of the 375Ø main to a 300Ø main for a significant extent of the sewer.

Node	Cumulative NSA (ha)	Total Equivalent Population (TEP)	Design Flow (L/s)
F1	10.28	1,115	18.02
E2 & E4	8.03	1,628	18.52
TOTAL	18.31	2,741	36.54

Table 10. Pumped Catchment Summary

Option 1 can service Catchment E with gravity drainage so only Catchment F will require pumping. Option 2 will require part of Catchment E to be pumped per Table 10. As outlined in Section 5.1, Icon Water identified concerns about the size of the pumped catchment within Molonglo 2. Previously, Brown Consulting (2011) planned for a pumped catchment with total pumped flow of 27.1 L/s. Based on the above calculations, the pumped catchment for the current MTCE proposal is within the typical range of flows Icon Water would prefer based on verbal advice.

A detailed calculation sheet can be found in Appendix C.

5.7.2 Pipe Alignment

As outlined in Section 5.1 sewer depths in Molonglo 2 have previously been planned with sections greater than the maximum depth of 6m to Icon Water standards.

Concept alignments have been designed for trunk sewer mains. Analysing these alignments shows that it is unavoidable to pass through multiple hills and valleys within the landscape of the MTCE. The most critical alignment services the ER1.

Additionally the urban edge of the MTCE, of which the sewer must traverse nearby, has large areas of environmental concern including high-quality PTWL habitats. Therefore significant earthworks cannot be conducted along the urban edge to reduce the sewer depth.

The concept alignments have been designed to minimise the pipe depths, particularly at maintenance holes, as reasonably as practical given these constraints.

5.7.3 Hydraulic Capacity

As outlined in Section 5.1 a key item for Icon Water was that the existing sewer mains met capacity and grade requirements as outlined in the relevant design standards. Past studies had 225Ø and above mains with grades that did not achieve minimum SSC grade requirements. The concept alignments have been designed to demonstrate the ability to meet minimum grade requirements.

For larger mains (225Ø and above) the grading is dictated by three limiting grades, absolute minimum, self-cleansing and sulphide slime control. The 300Ø main for the eastern area of Molonglo 2 (Node D4 & E1), the 300Ø main for the central area of Molonglo 2 (Node C2) & the 225Ø main for the southern catchment of Molonglo 2 (Node A1) were checked against these grades per Icon Water standards. The results of this design check is shown in Table 5. All the mains meet capacity and have sufficient grade.

Downstream Node	Qdmp (L/s)	Pipe Diameter (mm)	Nominal Design Grade (%)	Pipe Capacity (L/s)	Absolute Minimum Grade (%)	Minimum Grade for Self Cleansing (%)	Minimum Grade for Sulphide Slime Control (%)
D4	29.11	300	0.65	92.14	0.27	0.22	0.54
E1	25.20	300	0.65	92.14	0.27	0.23	0.57
C2	25.06	300	1.00	108.29	0.27	0.26	0.64
A1	8.67	225	1.00	53.07	0.38	0.38	0.94

Table 11. Minimum Grades for Trunk Mains

A detailed calculation sheet can be found in Appendix C.

5.8 PROPOSED SEWER INFRASTRUCTURE

5.8.1 Options Assessment

Indesco investigated two options for the critical sewer alignment to service the furthest areas of the MTCE includes the area of Precinct ER1, part of precinct SR1, part of precinct CC and part of precinct NR1. These options are outlined below:

- Option 1: The sewer alignment assumes crossing outside the boundary of the estate is acceptable if it provides efficiencies in the alignment for pipe cover and grade. Areas outside the estate boundary and crossing PTWL habitat will be micro-tunnelled to avoid excavation in this area. This alignment was the primary option investigated in the previous Brown masterplans.
- Option 2: The sewer alignment is contained entirely within the estate boundary with the constraints of pipe cover adopted as best as possible within the alignment.

5.8.2 Opportunities and Constraints

The opportunities and constraints of each option is outlined below:

OPTION 1: Sewer Alignment outside MTCE Estate Boundary	
Opportunities	<ul style="list-style-type: none"> • allows for potential saving in pumped catchment area. • Flexibility around other hydraulic infrastructure including stormwater ponds.
Constraints	<ul style="list-style-type: none"> • Area outside estate boundary will need to utilise micro-tunnelling to avoid disturbance to the PTWL habitat areas. • Future access to MH outside estate boundary will be difficult. • Depth >6.0m required in certain areas

OPTION 2: Sewer Alignment within MTCE Estate Boundary	
Opportunities	<ul style="list-style-type: none"> • Construction of sewer will be consistent with design and construction standards. • Access of sewer will be consistent with design standards.
Constraints	<ul style="list-style-type: none"> • Alignment requires passing through stormwater pond embankment which limit flexibility in these areas. • Areas of filling required in certain areas to achieve cover • Require additional pumped catchment

5.8.3 Opinion of Probable Cost

OPTION 1	Unit	Quantity	Rate	Cost
Preliminaries	Item	1	\$100,000	\$100,000
300mm uPVC incl. rock excavation	m	1410	\$300	\$423,000
E/O for directional drilling in PTWL habitat & hill areas	m	280	\$1,500	\$420,000
Standard 1050mm Maintenance Hole	No.	19	\$3,000	\$57,000
TOTAL				\$1,000,000
OPTION 2	Unit	Quantity	Rate	Cost
Preliminaries	Item	1	\$50,000	\$50,000
300mm uPVC incl. rock excavation	m	1580	\$300	\$507,000
Standard 1050mm Maintenance Hole	No.	23	\$3,000	\$69,000
TOTAL				\$626,500

Table 12. Opinion of Probable Cost for Trunk Sewer Infrastructure

5.8.4 Analysis of Results

Comparing the costs for Option 1 and Option 2 the main difference is the additional cost associated with micro tunnelling when crossing PTWL habitat. Both options have to cross similarly hilly terrain necessitating fill embankments or high depth areas at this preliminary stage.

Option 1 potentially allows for reduction in pumped catchment however given that the expected design flow of 18L/s is low in terms of past studies this is not a major constraint. Additionally the saving on pumped catchment is marginal with a calculation showing approximately 1 additional hectare in Catchment F could be gravity drained with a 2.12L/s reduction in pumped flow.

The predominant drawback of Option 2 is that depending on the staged release of planning and design, the sewer alignment will require flexibility so as not to sterilise future development areas. However, based on the current land use planning, the critical areas of the alignment are within open space area. Therefore it is not a significant hindrance to this option.

Option 2 will require the pumping of catchment E2 and E4. Conservatively assuming most of the community facility site area is developed for lettable floor space this represents an additional design flow of 18L/s to add to the pumped catchment. Given this site was previously planned to have a sporting field precinct within the site it is likely at detailed design this design flow will be significantly reduced. Therefore at this stage it is not viewed as a significant hindrance to this option.

Both options are technically viable for the purposes of planning future infrastructure for the MTCE. Long sections and details of both alignments can be found within the drawing set. Option 2 is preferable at this time based on reduced environmental constraints and risks however additional constraints at the Masterplan stage, such as road alignments, section boundaries and environmental factors, the actual alignment of the proposed sewer might need to be adjusted and additional flow to the sewerage pump station might need to be taken into account.

6. STORMWATER GROWTH SERVICING PLAN

6.1 BACKGROUND

Indesco has previously completed updated hydraulic master plans for the stormwater system as part of the 2013 study. This went into more detail than previous studies which were more confined in scope to critical infrastructure works for early development.

These hydraulic master plans are now being reviewed against the updated planning framework. This is being undertaken through the use of Growth Servicing Plans to identify key infrastructure works required for the future estate development.

6.2 EXISTING STORMWATER INFRASTRUCTURE

Within the area of MTCE there are two existing Water Quality Control Ponds (WQCP), a WQCP named Pond C3 built as part of Denman Prospect and the Cravens Creek WQCP. Details for these existing ponds are outlined below:

	Pond C3	Cravens Creek
Permanent Pond Volume (m ³)	10,093	40,000
Permanent Surface Area (m ²)	9,000	21,600
1% AEP Volume (m ³)	8,712	67,000
1% AEP Surface Area (m ²)	11,000	49,500

Table 13. MTCE Existing WQCP Details

More detail on the above pond can be located in the WAE documentation for each project and relevant previous studies.

6.3 STORMWATER CATCHMENTS

There are a total of nine independent catchment areas within the MTCE draining to the Molonglo River. The details of these catchments are outlined below:

Node	Total Area (ha)	Impervious Area (%)	Slope (%)
0 (River)	176.29	71%	-
1	5.83	35%	5.5%
2	48.20	85%	7.2%
3	7.73	80%	6.7%
4	13.76	65%	7.5%
5	38.28	55%	6.0%
6	25.56	70%	5.5%
7	25.30	80%	4.5%
A	2.56	85%	3.3%
B	2.84	85%	7.1%

Table 14. MTCE Stormwater Catchment Details

6.4 PROPOSED STORMWATER INFRASTRUCTURE

Seven water quality control ponds have been indicatively located within the Stormwater Growth Servicing Plan with two ponds already constructed and in operation at Nodes 1 and 2. The pond requirements are outlined below:

Node	Pond Water Level Requirements	
	Volume (m ³)	Surface Area (m ²)
1 (existing)	10,000.00	9,300.00
2 (existing)	40,000.00	21,500.00
3	7,200.00	4,000.00
4	4,100.00	3,300.00
5	24,300.00	12,400.00
6	14,200.00	8,500.00
7	11,000.00	7,000.00

Table 15. MTCE Pond Water Level Requirements

It should be noted that Pond 7 received an additional 32 hectare catchment from Denman Prospect upstream. Stormwater infrastructure of a WQCP and wetland area within Denman Prospect has been constructed to address flow attenuation and water quality for this catchment.

Two small catchments (Nodes A-B) discharge directly to the Molonglo River without passing through a water quality control pond. Local “on block” Water Sensitive Urban Development measures were assumed for these areas in accordance with the relevant development codes.

6.4.1 Opportunities and Constraints

The opportunities and constraints are outlined below:

Stormwater Infrastructure within MTCE	
Opportunities:	
	Opportunity # 1; WQCP can be integrated into the landscape to provide recreational areas within the suburb.
Constraints:	
	<p>Constraint # 1; Site topography has steep grading making the design of pond embankments higher than normal.</p> <p>Constraint # 2; The urban edge corridor with PTWL habitat is downstream of the proposed WQCPs therefore requiring careful outlet provision for dispersing of discharge.</p>

6.4.2 Hydrological Modelling

The XP RAFTS model showed that the WQCP will attenuate the flow for the 20% AEP and 1% AEP storm events as required by the Estate Development Code. The results of the hydrological model are detailed below:

Node	Total Area (ha)	Pre-Development Flows		Post-Development Flows	
		20% AEP (m³/s)	1% AEP (m³/s)	20% AEP (m³/s)	1% AEP (m³/s)
1	5.83	1.45	2.81	Pre-development flows used as permissible site discharge	
2	48.20+(additional 78ha Denman catchment)	6.43	17.88	4.46	11.25
3	7.73	0.67	1.74	0.33	0.75
4	13.76	1.06	2.69	1.01	2.17
5	38.28	3.35	8.63	1.07	2.65
6	25.56	2.37	6.16	1.74	3.76
7	25.30+ (additional 32ha Denman catchment)	8.79	16.06	3.45	8.77

Table 16. XP RAFTS Hydrological Modelling Results

Craven Creek Pond design has been reviewed and it has capacity for the additional diverted catchment from MTCE of 18 hectare.

As previously discussed Nodes A-B will require local attenuation measures on-block to comply with the relevant codes.

6.4.3 Water Quality Modelling

The Estate Development Code requires that the Regional water quality target for the MTCE is met by the developer. Based on the proposed land zoning an urbanisation of 71%-80% and impervious area of 70% was assumed for the MTCE. The corresponding Regional target is per the below table:

Indicator	Reduction in Average Annual Solids (%)
Total Suspended Solids (TSS)	82
Total Phosphorus (TP)	67
Total Nitrogen (TN)	58

Table 17. Regional water quality targets for MTCE

A MUSIC model was created to ensure that the proposed WQCP could meet the regional target. Grass swales were assumed in overland flow paths and 200L/per/day/per dwelling of reuse were assumed for rainwater tanks. The critical results of the MUSIC model are in the table below:

	TSS (Total)	TP (Total)	TN (Total)	TSS (Residual)	TP (Residual)	TN (Residual)	%TSS	%TP	%TN
Pond 1	15200	22.8	265	1170	7.58	104	92.3	66.8	60.8
Pond 2	70900	104	1230	4900	33.9	254	93.1	67.4	79.3
Pond 3	5630	8.43	97.7	269	1.7	20.9	95.2	79.8	78.6
Pond 4	7310	11.5	128	410	3.07	40.3	94.4	73.3	68.5
Pond 5	20900	33.5	368	1190	9.16	114	94.3	72.7	69.0
Pond 6	16700	25.7	292	1060	7.55	98.3	93.7	70.6	66.3
Pond 7	38800	57.5	672	2640	16.7	207	93.2	71.0	69.2
A	939	1.7	16.9	88.5	0.78	11.7	90.6	54.1	30.8
B	2160	3.21	37.5	896	1.7	20.9	58.5	47.0	44.3
TOTAL (Node 0)	178539	268.34	3107.1	12623.5	82.14	871.1	92.9	69.4	72.0

Table 18. MUSIC Water Quality modelling results

The use of rainwater tanks, grassed swales and WQCPs meet the regional target with adequate reduction for suspended solids, phosphorus and nitrogen. Details of the model can be found in Appendix D

6.5 OPINION OF PROBABLE COST

In estimating the cost of the WQCP for the MTCE the methodology was formed based on the items of excavation, embankments, hard surface treatments, ancillaries (e.g. GPTs, outlet structures etc) and landscape. The price includes a contingency of 30% and 15% design and project management.

The opinion of probable cost for the proposed stormwater infrastructure for the MTCE is in the table below:

Proposed Stormwater Infrastructure	Cost Opinion (\$)
Pond 3	1,899,500.00
Pond 4	1,170,150.00
Pond 5	3,107,350.00
Pond 6	2,001,000.00
Pond 7	3,198,700.00

Table 19. Opinion of Probable Cost for Stormwater Infrastructure

Details of the cost estimation can be found in Appendix D

7. STAGING AND CAPITAL WORKS

The Molonglo 2 Commercial Centre Infrastructure Investigation Study (Indesco, March 2019) provides an updated staging masterplan for the MTCE. As part of the document review this staging plan has been adopted for the purposes of this study. A figure of the staging plan is shown below:

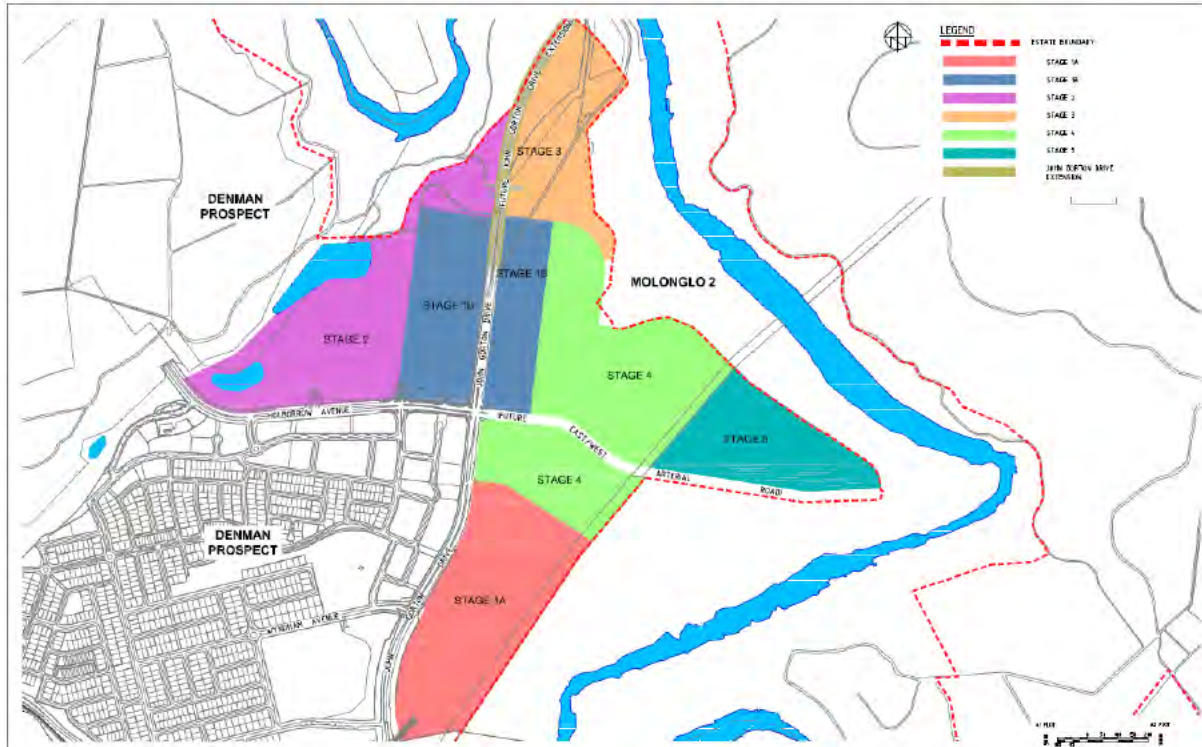


Figure 5 Staging Plan for MTCE

As part of the staging work the offsite works and broad infrastructure requirements on a stage by stage basis are summarised in the table below:

Stage	"Offsite works"	Timing
1A	Master planning for Extra Low Zone water supply Stage 3 and 4. Master planning for future road connections to Stage 4 and East-West Arterial. Temporary Extra Low Pressure Zone PRV. Imported fill material.	1A design 1A design 1A design Link to Stage 1B
1B	Master planning for sewer, water supply, stormwater, traffic for Stage 2. Construction of sewer and stormwater through Stage 2. Master planning for future road connections to Stages 2 and 4. Interim WSUD/OSD requirements for section draining to Pond A in Stage 4. Significant excess spoil material.	1B design 1B construction 1B design 1B design Link to Stage 1A and Stage 4
2	Extension of John Gorton Drive.	Link to capital works design
3	Extension of John Gorton Drive. Connection of sewer to the west of John Gorton Drive. Extension of Extra Low Pressure Zone water main from Western Low Pressure Zone. Significant excess spoil material.	Link to capital works construction Link to Stage 4
4	Extension of East/West Arterial Road Significant imported fill material.	Link to capital works construction Link to Stage 1B and Stage 3
5	Extension of East/West Arterial Road Construction of sewage pump station and rising main to Stage 4. Imported fill material.	Link to capital works construction Link to Stage 3

Table 20. Stage Specific Infrastructure Requirements

Staging of the water supply will need to be considered at detailed design stage.

8. CONCLUSION

8.1 WATER SUPPLY GROWTH SERVICING PLAN

The Low Zone for MTCE consists of connections to the 300Ø main running along John Gorton Drive. Existing infrastructure is sized appropriately to meet the demand from the proposed development types in the Low Zone of MTCE.

The Extra Low Zone consists of connections to the FARV and the water network in North Coombs. The network requires the construction of trunk water supply mains (225Ø-375Ø) through the town centre and continuing eastwards along the East-West arterial and southwards to North Coombs. Additional offsite works are required to convert North Coombs to an Extra Low zone to enable connection to this source of supply.

8.2 SEWER GROWTH SERVICING PLAN

The sewer servicing for MTCE has major design constraints in topography and PTWL habitat that have restricted the vertical and horizontal alignments. Additionally the servicing of the eastern residential area (ER1) requires a pump station .

Given these constraints, the sewer growth servicing plan for MTCE provides options for the proposed trunk infrastructure with adequate capacity, compliant grades and conceptual alignments. The design has also provided a response to the size of the pumped catchment, based on current yields and alignment options.

Option 1 provided a optimised design for reducing pumped flow. However the traversing of PTWL habitat significantly adds to the cost and risk associated with environmental constraints. Option 2 provides a sewer alignment entirely within the estate boundary. Option 2 is preferable at based on reduced environmental constraints and risks.

8.3 STORMWATER GROWTH SERVICING PLAN

The stormwater infrastructure required to meet the statutory requirements consist of 5 new WQCP. The WSUD measures have been sized to meet water quality and stormwater retention requirements outlined in the relevant codes and standards.

Detailed grading of the WSUD will need to be informed by the sizing requirements outlined in the stormwater growth servicing plan.

8.4 RECOMMENDATIONS

It is recommended that for developing the design of the hydraulic infrastructure for MTCE the following work is undertaken:

- Future planning including Estate Development Planning is informed by the growth servicing infrastructure.
- Ongoing coordination with utility authorities and stakeholder in implementing the growth servicing plans in undertaken as future projects within the region are designed, developed and constructed.

As the estate design of MTCE develops further with additional detail and added constraints, the growth servicing plans need to be reviewed to inform stakeholders of the required outcome for the trunk infrastructure of MTCE.

APPENDIX A - DRAWINGS

APPENDIX B - WATER SUPPLY MODELLING

APPENDIX C - SEWER MODELLING

APPENDIX D - STORMWATER MODELLING

APPENDIX E – CORRESPONDENCE

APPENDIX F – COMMENTS AND RESPONSES

From: Santosuosso, Daniel
Sent: Thursday, 8 April 2021 3:43 PM
To: Thorman, Rob; Tennent, Simon
Subject: Growth Servicing Plans for the remainder of Molonglo 2
Attachments: 7194-000 MTCE GSP.pdf; 7194 MTCE Growth Servicing Plans.pdf

Categories: Red Category

OFFICIAL

Hi Rob and Simon,

Please find attached the Growth Servicing Plans for the remainder of Molonglo 2 as discussed.

Kind Regards

Daniel Santosuosso | Project Director

Phone: 02 6207 7212 | Email: daniel.santosuosso@act.gov.au

Development and Implementation | Environment, Planning and Sustainable Development Directorate | ACT Government

480 Northbourne Avenue | GPO Box 158 Canberra ACT 2601 | www.planning.act.gov.au

I'm currently working remotely



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Subject: DA Assessment Tracks
Location: 480NBA 00.032 (Capacity 12, Seats 6 COVIDsafe, Webex Board)

Start: Tue 13/07/2021 3:00 PM
End: Tue 13/07/2021 4:00 PM
Show Time As: Tentative

Recurrence: (none)

Meeting Status: Not yet responded

Organizer: Burghardt, Greg
Required Attendees: Riches, Dominic; Rob Thorman; Tennent, Simon; Griffith, Andrew
Resources: 480NBA 00.032 (Capacity 12, Seats 6 COVIDsafe, Webex Board)

Thanks Dom

If we can have a chat re Impact Track Assessment that would be great. This relates to both Kenny and the Molonglo Town Centre EDPs which will be commencing shortly.

Regards

Greg

Subject: EDP Pre Circulation
Location: 480NBA 03.138 (Capacity 6, Seats 3 COVIDsafe, Webex Board)

Start: Tue 20/07/2021 1:00 PM
End: Tue 20/07/2021 2:00 PM
Show Time As: Tentative

Recurrence: (none)

Meeting Status: Not yet responded

Organizer: Burghardt, Greg
Required Attendees: Taylor, Bob; Cargill, James; Rob Thorman; Tennent, Simon; Griffith, Andrew
Resources: 480NBA 03.138 (Capacity 6, Seats 3 COVIDsafe, Webex Board)

Hi James

I ran into Bob yesterday arvo as he was heading out the door on leave. He mentioned he would be back for a short period commencing 19 July and that Tuesdays and Thursdays were a good time to catch up at the DOB.

We would like to discuss the EDP pre circulation process for two upcoming development fronts namely Kenny and the Molonglo Town Centre.

If you have any questions in the interim please do not hesitate to contact me.

Regards

Greg

Subject: EDPs for Kenny and Molonglo
Location: TBC

Start: Tue 06/07/2021 1:00 PM
End: Tue 06/07/2021 1:30 PM
Show Time As: Tentative

Recurrence: (none)

Meeting Status: Not yet responded

Organizer: Burghardt, Greg
Required Attendees: Thompson, Chris
Optional Attendees: Rob Thorman

Hi Chris

Further to our chat a couple of months ago. I would just like to give you a heads up on how things are progressing with the imminent preparation of EDPs for both of these development fronts. Happy to meet F to F for a chat, Teams or even a coffee if you like.

Regards

Greg

From: EPSDD Design Review
Sent: Wednesday, 12 May 2021 8:37 AM
To: Thorman, Rob; EPSDD Design Review
Cc: Tennent, Simon
Subject: NCDRP - Molonglo Group Centre - Package

Categories: Red Category

OFFICIAL

Hi Rob,
Sorry I missed your call yesterday.
The package for Molonglo will be issued to the Panel and observes next week.
It will include the Project Brief (prepared by the Secretariat) and the presentation from the proponent team.

Kind regards
Alyce

Alyce Fenwick | Design Services and Government Architect | National Capital Design Review Panel

Phone: 02 6207 3885 | Email: designreview@act.gov.au

Planning and Urban Policy | Environment, Planning and Sustainable Development Directorate | ACT Government

Level 2, Murrumbidgee | 480 Northbourne Avenue Dickson | GPO Box 158 Canberra ACT 2601 | www.planning.act.gov.au

From: Thorman, Rob <Rob.Thorman@act.gov.au>
Sent: Tuesday, 11 May 2021 5:02 PM
To: EPSDD Design Review <designreview@act.gov.au>; Fenwick, Alyce <Alyce.Fenwick@act.gov.au>
Cc: Tennent, Simon <Simon.Tennent@act.gov.au>
Subject: RE: NCDRP - Fortnightly Schedule Report - SLA

OFFICIAL

Hi Alyce

I tried to call. Thanks for the information on the DRP meeting on May 26 Regarding the Molonglo Group Centre. I note that Simon Tennant and I have been invited to attend the session. Would it be possible to get more information on the presentation in terms of who will be presenting and if there is any background information that has been (or will be) circulated to the panel?

Would you be able to please give me a call to discuss.

Regards Rob

From: EPSDD Design Review <designreview@act.gov.au>

Sent: Tuesday, 11 May 2021 9:35 AM

To: Thorman, Rob <Rob.Thorman@act.gov.au>; Sharp, Irena <Irena.Sharp@act.gov.au>

Cc: EPSDD Design Review <designreview@act.gov.au>

Subject: NCDRP - Fortnightly Schedule Report - SLA

OFFICIAL

Hi Irena and Rob,

FOR YOUR INFORMATION

Please see the below NCDRP fortnightly report for upcoming design review sessions for your use. Proposals known by us to have a SLA component are highlighted in **Green** noting a number of sessions are yet to be confirmed.

Session Date	Location	Project Name (if known)	Review	Proponent	Key Inter-Government
Wednesday, 26 May 2021	Molonglo	Molonglo Group Centre	First Review	ACT Government	EPSDD



Kind regards
Alyce

Alyce Fenwick | Design Services and Government Architect | National Capital Design Review Panel

Phone: 02 6207 3885 | Email: designreview@act.gov.au

Planning and Urban Policy | Environment, Planning and Sustainable Development Directorate | ACT Government

Level 2, Murrumbidgee | 480 Northbourne Avenue Dickson | GPO Box 158 Canberra ACT 2601 | www.planning.act.gov.au

From: Azzopardi, Adam
Sent: Monday, 12 April 2021 9:45 AM
To: Thorman, Rob
Cc: Wood-Bradley, Ian; Tennent, Simon; EPSDD Design Review; Leaver, Panama
Subject: Re: DRP

Thanks Rob. Not a problem.

The session for the Molonglo Group Centre has been postponed to May.

Alyce and Amy, can you please extend the invitation to Ian and Simon as observers for the session.

Regards

Adam

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From: Thorman, Rob <Rob.Thorman@act.gov.au>
Sent: Friday, April 9, 2021 9:34:08 AM
To: Azzopardi, Adam <Adam.Azzopardi@act.gov.au>
Cc: Wood-Bradley, Ian <Ian.Wood-Bradley@act.gov.au>; Tennent, Simon <Simon.Tennent@act.gov.au>
Subject: DRP

Adam

Sorry I meant to get back to you earlier. Just to confirm that in addition to Simon Tennant and Ian Wood-Bradley presenting on the Coombs sites, we discussed having them attend the presentation on the Molonglo Commercial Centre. Ideally once the site comes over to the SLA we will also continue to engage with the DRP, so it will be good to have some continuity of advice as part of the hand over process.

Regards Rob

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From: Burghardt, Greg
Sent: Thursday, 15 July 2021 9:46 AM
To: Riches, Dominic
Subject: RE: Kenny and Molonglo TC

Follow Up Flag: Follow up
Flag Status: Flagged

UNOFFICIAL

Thanks Dominic

Regards

Grehg

From: Riches, Dominic <Dominic.Riches@act.gov.au>
Sent: Wednesday, 14 July 2021 5:15 PM
To: Burghardt, Greg <Greg.Burghardt@act.gov.au>
Cc: Thorman, Rob <Rob.Thorman@act.gov.au>; Jacomb, Frances <Frances.Jacomb@act.gov.au>
Subject: RE: Kenny and Molonglo TC

UNOFFICIAL

Hi Greg

The plans and summary of the assessment of the s211s can be found at:

- **Gungahlin:** https://www.planning.act.gov.au/_data/assets/pdf_file/0006/896469/Gungahlin-Strategic-Assessment-Area-request-for-s211-exemption-consideration-report-November-2013.pdf
- **Molonglo:** https://www.planning.act.gov.au/_data/assets/pdf_file/0006/896037/Molonglo-Valley-Stage-2-Urban-Development-Infrastructure-and-Link-Bridge-application-for-s211-exemption-consideration-report.pdf

Let me know if you require anything further.

Regards

Dominic Riches | A/g Senior Director, Impact Assessment

Phone 02 6205 1834 | email dominic.riches@act.gov.au

Statutory Planning Division | Environment, Planning and Sustainable Development | ACT Government

Level 1, 480 Northbourne Avenue, Dickson | GPO Box 1908 Canberra ACT 2601 | www.planning.act.gov.au

From: Burghardt, Greg <Greg.Burghardt@act.gov.au>
Sent: Wednesday, 14 July 2021 9:12 AM
To: Riches, Dominic <Dominic.Riches@act.gov.au>; Jacomb, Frances <Frances.Jacomb@act.gov.au>
Cc: Thorman, Rob <Rob.Thorman@act.gov.au>
Subject: Kenny and Molonglo TC

UNOFFICIAL

Hi Dominic, Frances

Thanks for taking the time to meet yesterday. It was good to get an understanding of the offsets and S211's etc.

In relation to the documents you were referring to, can you forward the URL's as I can't seem to locate the documents on your web site.

Regards

Greg Burghardt

P: 0412 939 319

Sustainability and Release Coordination | Suburban Land Agency | ACT Government

480 Northbourne Avenue Dickson ACT 2602 | GPO Box 158 Canberra ACT 2601

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From: [Thorman, Rob](#)
To: [EPSDD Design Review](#)
Subject: RE: NCDRP - Fortnightly Schedule Report - SLA
Date: Wednesday, 28 April 2021 4:26:00 PM

OFFICIAL

Thanks for the info – as disused previously SLA is interested in attending the Molonglo Group Centre review
Regards Rob

From: EPSDD Design Review <designreview@act.gov.au>
Sent: Wednesday, 28 April 2021 2:48 PM
To: Sharp, Irena <Irena.Sharp@act.gov.au>; Thorman, Rob <Rob.Thorman@act.gov.au>
Cc: EPSDD Design Review <designreview@act.gov.au>
Subject: NCDRP - Fortnightly Schedule Report - SLA

OFFICIAL

Hi Irena and Rob,

FOR YOUR INFORMATION

Please see the below NCDRP fortnightly report for upcoming design review sessions for your use. Proposals known by us to have a SLA component are highlighted in **Green** noting a number of sessions are yet to be confirmed.

Session Date	Location	Project Name (if known)	Review	Proponent	Key Inter-Government
[Redacted]					
Wednesday, 26 May 2021	Molonglo	Molonglo Group Centre	First Review	ACT Government	EPSDD
[Redacted]					

Kind regards
Alyce

Alyce Fenwick | Design Services and Government Architect | National Capital Design Review Panel
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Planning and Urban Policy | Environment, Planning and Sustainable Development Directorate | ACT Government
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