

SEWER SERVICING STRATEGY

Medowie Rd Medowie

Prepared for **Catholic Schools Office Maitland Newcastle Diocese**

5 APRIL 2018



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Document Status

Version	Purpose of Document	Orig	Review	Review Date
Ver.1	Client Review	IM	MM	
Ver.2	Client Approval	IM	MM	5 April 2018

Approval for Issue

Name	Signature	Date

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Summary

Webber Architects has engaged RPS Australia East Pty Ltd (RPS) on behalf of the Catholic Schools Office to prepare a sewer servicing strategy for a development of a school, childcare centre and chapel at Lot 412 & 413 DP1063902 Medowie Rd, Medowie. There is potential for the future development of 5 large residential lots directly North of the development site fronting

Development Background

The development site is Lots 412 & 413 DP 1063902, Medowie Road, Medowie which lies to the South of Medowie town centre. The land is currently zoned Partially R2 Low Density residential and partially RU2 Rural Landscape. The site also includes SEPP14 Wetlands, all proposed development is clear of the SEPP14 area. A development application is currently being prepared for Port Stephens Council (PSC) for approval.

The total site area is approximately 26.83 hectares (ha) and currently contains two residential dwellings and associated structures.

The development is of a school childcare centre (population 2,129), and chapel, the construction of internal roads and drainage structures and basins. Vehicular access will be from Medowie Road. The development lot is bound to the East and North by land zoned R2 low density residential zoned land which is basically fully developed. Land to the South and West is zoned RU2 Rural Landscape which contains sensitive environment which is not likely to be further developed.

Recommended Servicing Option

The only sewer servicing option for the site is the extension of mains from an existing Hunter Water Corporation (HWC) wastewater pump station (WWPS) to the North of the site.

All internal servicing of the site will be via private housedrains.

The existing WWPS is at capacity and will need to be upgraded to cater for the proposed flows from the proposed development.

The option is outlined in the table below.

Option Description	Cost Effectiveness Analysis	Pros	Cons	Risks	Option Recommendation
Option 1 – Connection to Medowie 12 WWPS	\$65,000	Provides the development site with an adequate point of connection to the reticulated sewer system	Minimal	Minimal	Recommended option

Proposed Works

Reticulation sewer

65m x 150mm

MEDOWIE 12 WWPS (duty and standby pumps)

Existing

2.4m diameter x 5.1m deep
Pumps 26.1 l/s @ 35m (2 x 22KW pumps)
Control Volume – 2.94m³
Control Depth – 0.65m

Rising Main

Existing

850m x 150mm
Velocity – 1.48 m/s
Friction Losses – 15.4m
Static Head – 20m
Total Head – 35.4
Detention Time – 1.5 hrs

MEDOWIE 12 WWPS (duty and standby pumps)

Proposed

2.4m diameter x 5.1m deep
Pumps 34 l/s @ 43m (2 x 24KW pumps)
Control Volume – 3.06m³
Control Depth – 0.68m

Rising Main

Proposed

850m x 150mm
Velocity – 1.92 m/s
Friction Losses – 22.2m
Static Head – 20m
Total Head – 42.2
Detention Time – 1.2 hrs

Terms and Abbreviations

ADWF	Average Dry Weather Flow
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
DA	Development Application
DPE	Department of Planning & Environment
EIS	Environmental Impact Statement
ET	Equivalent Tenement
HWC	Hunter Water Corporation
NPV	Net Present Value
PDWF	Peak Dry Weather Flow
PSC	Port Stephens Council
PWWF	Peak Wet Weather Flow
PV	Present Value
RPS	RPS Australia East Pty Ltd
SA	Storm Allowance
SSD	State Significant Development
WWPS	Wastewater Pump Station
WWTW	Wastewater Treatment Works

I.0 Background

I.1 Development Description

The development site is Lots 412 & 413 DP 1063902, Medowie Road, Medowie which lies to the South of Medowie town centre. The land is currently zoned Partially R2 Low Density residential and partially RU2 Rural Landscape. The site also includes SEPP14 Wetlands, all proposed development is clear of the SEPP14 area. An Environmental Impact Statement (EIS) for a State Significant Development (SSD) is currently being prepared for submission to the Department of Planning & Environment (DPE) for approval.

The total site area is approximately 26.83 hectares (ha) and currently contains two residential dwellings and associated structures.

The development is of a school childcare centre (total population 2,129), and chapel, the construction of internal roads and drainage structures and basins. Vehicular access will be from Medowie Road. The development lot is bound to the East and North by land zoned R2 low density residential zoned land which is basically fully developed. Land to the South and West is zoned RU2 Rural Landscape which contains sensitive environment which is not likely to be further developed.

A regional plan highlighting the proposed subdivision site is included in **Appendix 2** as **Exhibit A**.

A plan showing the proposed development and possible future subdivision is included in **Appendix 2** as **Exhibit B**.

I.2 Planning Context

The current zoning for the site under the Port Stephens Council LEP is R2 Low Density Residential and RU2 Rural Landscape. There is no requirement for the site to be rezoned for the development to proceed.

Neighbouring land is either fully developed residential or environmentally sensitive so there should not be any other competing developments which would require consideration for this Sewer Servicing Strategy. The site is adjacent to current HWC infrastructure, HWC advice provided in the Notice of Formal Requirements dated 31 October 2017 indicates that connection should be made to Medowie 12 WWPS which is adjacent to the site. There is currently insufficient theoretical capacity available at Medowie 12 WWPS to service the total development. Upgrades of the WWPS are required to provide sufficient capacity to service the proposed development.

A plan showing the current zoning of the site is included in **Appendix 2** as **Exhibit C**.

I.3 Development Assumptions

Research by the developer indicates that there is a requirement for a new school in the Medowie area.

A Development Application (DA) is currently being prepared for submission to Port Stephens Council (PSC) for approval.

I.4 Study Area

The study area is limited to the subject site, as agreed with HWC at the inception meeting on 19th December 2017. The development lot is bound to the East and North by land zoned R2 low density residential zoned land which is basically fully developed. Land to the South and West is zoned RU2 Rural Landscape which contains sensitive environment which is not likely to be further developed. The development site falls generally to the West and an extension of sewer mains from Medowie 12 WWPS will provide the site with an adequate point of connection to the reticulated sewer system.

1.5 Projected Development in the Study Area

The study area is limited to the subject site. The proposed development is for a school, childcare centre and chapel at Lot 412 & 413 DP1063902 Medowie Rd, Medowie. Total ultimate population of the site is expected to be 2,129 persons.

The development lot is bound to the East and North by land zoned R2 low density residential zoned land which is basically fully developed. Land to the South and West is zoned RU2 Rural Landscape which contains sensitive environment which is not likely to be further developed.

No further development within the natural catchment of the proposed subdivision is anticipated.

1.6 Liaison with Hunter Water

An application for a Section 50 certificate for the proposed subdivision has been submitted to HWC and the Formal Notice of Requirements and additional emailed advice is attached at **Appendix 1**.

Information provided indicates that the proposed development can be provided with sewer services connecting to HWC's system at Medowie 12 WWPS.

At the servicing strategy inception meeting held with HWC on 19th December 2017 the study area was agreed and advice provided on the capacity at Medowie 12 WWPS.

1.7 Exhibits

The following exhibits are presented at **Appendix B**:

- **Exhibit A** – Regional Plan
- **Exhibit B** – Local Plan
- **Exhibit C** – Zoning Plan
- **Exhibit D** – Environmental Plan
- **Exhibit E** – Existing Sewer Infrastructure
- **Exhibit F** – Proposed Sewer

2.0 Options Development

2.1 Inception Meeting

HWC has provided a notice of formal requirements dated 19th December 2017 for the proposed development. The letter advised that the Medowie 12 WWPS has limited spare capacity space for the development flows. Medowie 12 WWPS will need to be upgraded to accept flows from the proposed development. It was agreed that the development should connect to Medowie 12 WWPS..

2.2 Points of Connection and Available Capacity

The site of the proposed development is located adjacent to the Medowie 12 (WWPS) catchment area, and is within the Raymond Terrace Waste Water Treatment Works (WWTW) catchment.

HWC have advised that there is currently insufficient capacity within the Medowie 12 WWPS for this development. Medowie 12 WWPS will need to be upgraded to cater for flows from this development.

It is proposed to connect the sewer system to the existing sewer network at Medowie 12 WWPS.

2.3 Existing and Planned Hunter Water Assets

There is no existing sewerage infrastructure within the development site. Sewage from the development will drain directly to the Medowie 12 WWPS.

Details of Medowie 12 WWPS are listed below.

Table 1 Existing HWC Assets

Hunter Water Asset Description	Asset Type	Asset Conditions and Restrictions
Medowie 10 WWPS	Pump Station	WWPS has spare limited capacity. A pump capacity upgrade is required to service the proposed development
Raymond Terrace WWTW	Wastewater Treatment Works	The capacity of Raymond Terrace WWTW is currently limited prior to the planned capacity upgrade of the inlet works for late 2022.

2.4 Design Sewerage Loading

Design flows for development in the study area have been estimated using values in the Water Services Association of Australia (WSAA) Sewerage Code of Australia Hunter Water Corporation Version 1.0 to determine theoretical loadings in equivalent tenements (ET). An ET is the theoretical sewage flow from an average residential lot.

ET's for this development have calculated using information from the current Water Services Association of Australia(WSAA) Gravity Sewerage Code of Australia.

Schools are calculated at 0.04ET/person

The criteria used to determine theoretical sewer design flows are summarised below:

- Average Dry Weather Flow (ADWF) = 0.011l/s per ET
- Peak Dry Weather Flow (PDWF) = ADWF x 'r'
- Storm Allowance = 0.058 l/s per ET (for gravity systems)
- Peak Wet Weather Flow (PWWF) = PDWF + SA

Note: 'r' factor is from an empirical relationship based on ET.

Table 2 Overall Sewer Loadings

Area	Loading	ADWF	r	PDWF	SA	PWWF
(Ha)	(ET)	(L/s)		(L/s)	(L/s)	(L/s)
26.83	85.2	0.94	3.35	3.14	4.94	8.08

2.5 Option Assumptions

Assumptions used in the preparation of this report have been determined from the HWC website and correspondence provided regarding the proposed development.

Maintenance & Operating Costs

Gravity Mains - \$2,872 – 1.13 x DN + 0.00024x DN² x L

Rising Mains - \$700 + 0.0005 x DN² x L

Wastewater Pump Stations - \$4,000 + \$2,000 x No. of pumps

L = Length of main

DN = Nominal pipe diameter

Construction Costs

HWC Estimating Guidelines

Connection Points

- To Medowie 12 WWPS

Table 3 Electricity Prices (HWC document QDS101 – Operating & Maintenance Cost Estimating Guidelines)

Financial Year	c/kWh < 160 MWh/yr
2017/18	35.0
2018/19	37.0
2019/20	37.1
2020/21	38.0
2021/22	38.8
2022/23	39.2
2023/24	39.6
2024/25	39.8
2025/26	40.9
2026/27	40.4
2027/28	41.0
2028/29	40.9
2029/30	40.4
2030/31	40.1
2031/32	40.3

If assessment of life-cycle costs beyond 2031/32 is relevant, a constant electricity price may be projected beyond 2031/32.

3.0 Servicing Options

3.1 Options Review

The only option investigated for the provision of sewer to the development site is the extension of a gravity sewermain from Medowie 12 WWPS.

HWC has advised that Medowie 12 WWPS is at capacity and an upgrade of pumps will be required to cater for the flows that will be generated by the proposed development.

The upgrade of the pumps may be achieved by either upsizing impellers or a complete replacement of the existing pumps. The most suitable method of achieving the required duty of Medowie 12 WWPS will be determined during the detail design phase of the project.

The existing 150mm rising main has capacity to handle the additional flows.

A plan showing proposed reticulation sewer is included in **Appendix 2** as **Exhibit F**.

3.2 Option Constraints

3.2.1 Technical Constraints

All the sewer proposed in this strategy can be constructed using standard materials and using standard construction techniques.

3.2.2 Community/Stakeholder Constraints

- The sewer system to service the proposed development is not expected to have a significant impact on the existing community.

3.2.3 Environmental Constraints

Desktop analysis of the route of the lead in sewermain has not identified any environmental matters that will impact on the design and construction of the sewer infrastructure. All sewer infrastructure will be constructed within HWC land or the development site..

The development discharges wastewater into the Medowie 12 WWPS catchment, which is within HWC drinking water catchment. The proposed development increases the probability of overflow within the drinking water catchment.

3.3 Sewerage Loading Assessment

Design flows for development in the study area have been estimated using values in the Water Services Association of Australia (WSAA) Sewerage Code of Australia Hunter Water Corporation Version 1.0 to determine theoretical loadings in equivalent tenements (ET).

Design loadings have been determined in Section 2.4

3.4 Infrastructure Description

Servicing of the proposed development will require the construction of a lead in sewer main and the upgrade of an existing WWPS.

As noted above there has only been one option investigated for the provision of sewer services to the development site.

The option involves the upgrade of the pumps in the existing WWPS from a duty of 26.1 l/s @ 35m to 34 l/s @ 43m.

The existing 150mm rising main is adequate to cope with the additional loading

Details of the proposed WWPS and rising main are listed below.

MEDOWIE 12 WWPS (duty and standby pumps)

Proposed

2.4m diameter x 5.1m deep
Pumps 34 l/s @ 43m (2 x 24KW pumps)
Control Volume – 3.06m³
Control Depth – 0.68m

Rising Main

Proposed

850m x 150mm
Velocity – 1.92 m/s
Friction Losses – 22.2m
Static Head – 20m
Total Head – 42.2
Detention Time – 1.2 hrs

A plan detailing the lead in sewermain is included in **Appendix 2** as **Exhibit F**.

3.5 Financial Criteria

3.5.1 Capital and Replacement Costs

Capital cost estimations for the required infrastructure have been prepared using Estimating Guidelines supplied by HWC.

Details are listed below

Lead in sewermain - \$28,100
WWPS Pump Upgrade - \$73,000

Total Capital Cost - \$101,100

3.5.2 Operating Cost

As there is only one viable option for the provision of sewer services to the development site operating costs have not been determined.

3.5.3 Maintenance Cost

As there is only one viable option for the provision of sewer services to the development site maintenance costs have not been determined.

3.5.4 Cost Effectiveness Analysis

As there is only one viable option for the provision of sewer services to the development site a cost effectiveness analysis has not been completed.

All new assets to service the proposed development will be 100% developer funded.

3.6 Social Impact

- Construction of the sewer system as described in this strategy will provide the proposed development with a point of connection that meet HWC criteria.
- Provision of a reticulation sewer system will remove the risks associated with onsite sewer treatment systems.
- The visual impact of the proposed system will be minimal. The majority of the above ground infrastructure is low profile and highly visible aspects of the system can be treated to minimise visual impact.
- Sewer works will be undertaken in conjunction with construction of the overall development. Any disruption will only be short term.
- The sewer system will be constructed and operated using standard procedures. It is not anticipated that there will be any WHS issues that will affect the workforce or the community during the construction and operation of the sewer system.
- No infrastructure is located within HWC "Special Areas".

3.7 Environmental Impact

Desktop analysis of environmental matters has not identified any issues that will be impacted by the construction or operation of the proposed sewer system. The proposed lead in sewermain will be constructed within the footprint of the proposed development.

The construction of the proposed sewer system does not present any long term negative impact on the environment.

3.8 Technical Assessment

- Performance – The proposed sewer system will be designed and constructed with sufficient capacity to service the proposed development in accordance with HWC requirements. Further development of the catchment is not expected.
- System Reliability – The proposed sewer system will be designed and constructed using standard materials and techniques. It is expected that the system will operate with a high level of reliability.
- Flexibility and Adaptability – It is not anticipated that there will be any further development within the sewer catchment. The catchment is bounded on 2 sides by Environmentally constrained land and the other two by existing development.
- Maintainability – The proposed sewer system will be designed and constructed using standard materials and techniques. The system will be able to be maintained by HWC using existing plant and equipment.

4.0 Recommended Option

As there is only one viable option for the provision of sewer services to the development site it is recommended that this report be adopted as the sewer servicing strategy for the site.

Appendix I

Correspondence with Hunter Water Corporation



Hunter Water Corporation
ABN 46 228 513 446

PO Box 5171
HRMC NSW 2310
36 Honeysuckle Drive
NEWCASTLE NSW 2300
1300 657 657 (T)
(02) 4979 9625 (F)
hunterwater.com.au

31 October 2017

The Trustees of the Roman Catholic
Church for the Diocese of Maitland
C/- McCallum Plumbing & Fire Consultants
P O Box 96
Charlestown NSW 2290

Ref:2017-899

Attention: Dearne Jupp

Dear Ms Jupp

RE NOTICE OF FORMAL REQUIREMENTS FOR PROPOSED DEVELOPMENT

Hunter Water implemented a new asset creation process for developer works on 1 July 2017. All developer works from the implementation date are required to be delivered in accordance with the new process. Details are available on Hunter Water's website: www.hunterwater.com.au ([Building and Development/New Model for Developer Works](#))

The Developer is required to download the relevant version of the Developer Works Deed (the Deed), noted below, by visiting Hunter Water's website. Ensure that you have a full appreciation of the content of the Deed and obligations of all parties. The Developer will need to sign and return the Deed to developer.deed@hunterwater.com.au.

The Developer is able to engage Accredited Suppliers only after Hunter Water has returned the signed Deed.

Hunter Water's requirements for the provision of water and sewerage facilities to the development of a School (1,820 pupils, (160 staff), Childcare Centre (100 children, 25 staff) and Place of Worship (16,320m²) at Lot 412 DP 1063902, 507 Medowie Road, Medowie are as follows:

1. Water Quality

The proposed development falls within Hunter Water's Grahamstown Dam Drinking Water Special Area as gazetted in the *Hunter Water Regulation 2015*. Grahamstown Dam supplies approximately 40% of drinking water to the Lower Hunter.

Hunter Water's Operating Licence requires compliance with the Framework for Management of Drinking Water Quality that is part of the Australian Drinking Water Guidelines (ADWG). The Framework requires adoption of a multiple barrier approach to water quality, and states that "the most effective barrier is protection of source water to the maximum degree practical". Protection of land within the Special Area is key to ensuring that this barrier is effective. In accordance with the *Hunter Water Regulation 2015*, prevention of pollution or contamination of water in the Special Area is of paramount importance to the Corporation.

Hunter Water expects that all development in drinking water catchments will demonstrate Neutral or Beneficial Effect on Water Quality (NorBE). A development is considered to demonstrate NorBE if the development:

- (a) has no identifiable potential impact on water quality, or
- (b) will contain any water quality impact on the development site and prevent it from reaching any watercourse, waterbody or drainage depression on the site, or
- (c) will transfer any water quality impact outside the site where it is treated and disposed of to standards approved by the consent authority.

In terms of stormwater runoff, Hunter Water will consider NorBE to be met for this development if it meets the Deemed to Comply provisions of the Port Stephens Development Control Plan 2014.

You Are Required To:

- 2 Submit the Development Consent Conditions determined by Council or the Complying Development Certificate for this specific development. Hunter Water will confirm that the final development description is consistent with the details supplied by you for this application. If there are any subsequent amendments to this development consent, Hunter Water will require you to submit a revision application.

- 3 Wastewater Transportation

A developer funded local servicing strategy will be required for sewer services. Engage the services of an Accredited Design Consultant to prepare local strategies with reference to the WSAA Hunter Water Design Guidelines.

It is suggested that the servicing strategy investigate the upgrades required at Medowie 12 WWPS, future surrounding developments that may benefit from any upgrades and new infrastructure, and the downstream effects of upgrades at Medowie 12 WWPS and any subsequent upgrades required.

Servicing strategies should be submitted to Hunter Water for review and approval and services should be designed and constructed in accordance with these approved strategies. Please contact Hunter Water to discuss the scope of work prior to commencement.

A separate strategy review fee is required to be paid for each servicing strategy that is submitted.

- 4 Water Supply

The site of the proposed development is located in the Port Stephens Water Supply System, and is supplied from the Williamstown 1A WPS.

The property has frontage to a DN150 CICL watermain along Medowie Road.

Network Infrastructure and Delivery

- 5 Design and construct developer works under a **Complex Works** Deed with Hunter Water to connect the development to the existing water and sewer system(s).

The works must be designed and certified by an Accredited Design Consultant and constructed by an Accredited Construction Contractor.

Construct sewer infrastructure in accordance with the approved Sewer Servicing Strategy.

Deed No. 2017-899

Please note the nominal water and sewer connection points listed in this Notice Letter. Please contact Hunter Water if the proposed connection points are unable to be utilised.

The works design must be compliant with Hunter Water's Deed, Technical Specifications and Standard Drawings.

If the works involve a system shutdown or impact on existing customers you will be required to submit a request to Shutdownrequests@hunterwater.com.au prior to submitting the final design.

It is the responsibility of the Accredited Design Consultant to lodge the finished design Documentation and Design Compliance Certificate to Hunter Water at design.submission@hunterwater.com.au prior to construction starting.

All suppliers engaged by the developer must have insurances in place in accordance with the Deed.

If necessary, you will be required to pay \$622 compensation for each maintenance structure constructed on a third party property.

- 6 Submit a Review of Environmental Factors (REF) (refer Appendix HW 1 of Water Supply Code of Australia – Hunter Water Edition) to Hunter Water for the construction and operation of the proposed works. The REF will need to be approved by Hunter Water prior to the design process being finalised.

An REF considers the likely impacts a development may have on the environment. At all times, methods for preventing or reducing adverse environmental impacts should be considered and where appropriate, incorporated into the project design.

Hunter Water will make a determination in accordance with Environmental Planning and Assessment Act 1979. An environmental report assessment fee should be paid when the REF is submitted.

In addition, please refer to the Hunter Water Review of Environmental Factors Guidance Notes, located in the Building & Development section of the Hunter Water website. The Guidance Notes provide the minimum requirements and an example template for the preparation of a REF.

Please note that a Controlled Activity Approval will be required from the NSW Office of Water for any excavation within 40 metres of a water body or should groundwater be present.

Specific Connection Details

- 7 Ensure that all due care is taken by all contractors in the course of construction activities including construction of the driveway and accessing the construction site as there is a watermain located in the footpath adjacent to the proposed development site.

The developer should confirm the depth of the watermain by site survey prior to construction to ensure Hunter Water's minimum cover requirements will be complied with in relation to the driveway. If this minimum cover requirement cannot be met,

please contact Hunter Water to discuss options for protection of the watermain. An option may be lowering the watermain under a Major Works contract with Hunter Water.

Please note that it is Hunter Water's practice to seek the full costs of repairs should any damage occur to Hunter Water assets.

Other Services Required

- 8 Your proposed development has been identified as having the potential to discharge trade waste into Hunter Water's sewerage system. You are required to contact Hunter Water's Technical Services Team on (02) 4979 9712 or via email plumbing@hunterwater.com.au in order to confirm if an application for a Trade Wastewater Agreement is required or if an existing agreement will need to be amended. The discharge of trade waste to the sewer will not be permitted without a valid agreement authorising that discharge. (Refer to the Trade Wastewater [factsheet](#) on Hunter Water's website for more information).
- 9 You will be required to submit an application for a hydraulic design assessment of internal water and sewerage services for this development, including rainwater tanks and any alternative water supply systems. Please contact Hunter Water's Technical Services Team on (02) 4979 9712 or via email plumbing@hunterwater.com.au to confirm the specific requirements. (Refer to the Hydraulic Plan Assessment [factsheet](#) on Hunter Water's website for more information).

Please note, the information shown on the plan provided with this letter may not be up to date and Hunter Water accepts no responsibility for its accuracy. Any contractor(s) or consultant(s) engaged by the developer should confirm all levels by field survey.

These requirements are valid for 12 months from the date of this letter and are specific to this development. All fees and charges are subject to adjustment using the Consumer Price Index (CPI) adjustment on 1 July each year.

Please refer to the attached Supplementary Information and Guidance which details the conditions under which water and sewer facilities are available to new customers. Hunter Water reserves its right to amend the requirements set out above prior to issuing a Section 50 Compliance Certificate.

Yours faithfully



MALCOLM WITHERS
Senior Developer Services Engineer

Unless specified in the above requirements, please direct all correspondence regarding this application to:

Enquiries:	Michael Breedon
Tel:	02 4979 9784
Email:	michael.breedon@hunterwater.com.au



Appendix 2

Exhibits



Exhibit A – Regional Plan





Exhibit B – Local Plan



TITLE : FIGURE 2: LOCAL PLAN

LOCATION : LOT 412,413 DP1063902
MEDOWIE

DATUM: GDA 1994

PROJECTION: GDA 1994 MGA Zone 56

DATE : 6/4/2018

PURPOSE: WATER AND SEWERAGE

VERSION (PLAN BY): B A3 (james.hugo)

PATH: J:\JOBS\138k\138592 Medowie\10 - Drafting\Arcgis Map Documents\Water_Sewer\138592 Figure 2 Local Plan B A3 20180406.mxd

CLIENT: CATHOLIC SCHOOLS OFFICE MAITLAND NEWCASTLE
DIOCESE C/O WEBBER ARCHITECTS
JOB REF: PR138592

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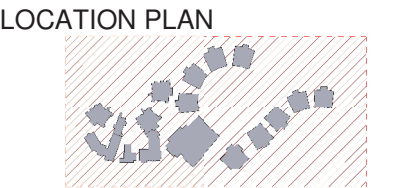
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1 SITE ANALYSIS PLAN
02_0401 SCALE 1:1000

NOTE:
ALL TREES INSIDE THE BOUNDARY LINE HAVE BEEN SURVEYED.
REFER TO SURVEY B1662DET - 1 - B
ALL THE TREES OUTSIDE THE BOUNDARY LINE HAVE BEEN TAKEN FROM A
GOOGLE EARTH PHOTO.

- SITE LEGEND
- POOL, WETLAND, POND
 - EXISTING ROAD
 - EXISTING STRUCTURE
 - XPP POWER POLE
 - POWER LINES
 - EXISTING TREE
 - DEMOLISH TREE
 - DEMOLISH HOLLOW BEARING TREE
 - HOLLOW BEARING TREE
 - 1:100 YEAR FLOOD LINE
 - SEPP 14 WETLANDS
 - CREEK FLOOD LINE
 - CREEK TOP OF BANK
 - VEGETATION TRUNK LINE
 - VEGETATION CANOPY LINE
 - 50M ASSET PROTECTION ZONE
 - EXISTING BUS STOP
 - MASS PLANTING
 - BREEZES



REV	DATE	DESCRIPTION	BY	CHK
E	12.09.2017	FOR PIC MEETING	PS	
F	02.11.2017	FOR CONSULTANT COORDINATION	PS	
G	20.11.2017	FOR PRE-DA MEETING	PS	
H	25.12.2017	FOR PIC MEETING	PS	
I	15.01.2018	FOR STAKEHOLDER MEETING	CH	
J	16.02.2018	DEVELOPED DESIGN - 30%	DF	
K	09.03.2018	FOR IGA	LK	
L	29.03.2018	FOR CLIENT APPROVAL	LK	TH
M	04.04.2018	FOR CLIENT APPROVAL	LK	

BUILDER TO CONFIRM ALL DETAILS, SETOUTS, TITLE, ETC., FALLS & CONNECTIONS ON SITE BEFORE CONSTRUCTION

PRINT DATE: 4/04/2018 11:23:53 AM FILE PATH: C:\Users\Candice\Documents\2544_Medowie Catholic School_Candice.rvt



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Directors: Jon Webber, Peter Macdonald Architects Ltd, 95/97 AFB RD, 95/97
Associate Directors: Sandra Mackay, Karen Brooks, The Hub
Associates: Luke Keating

SITE ANALYSIS PLAN
CATHERINE MCAULEY CATHOLIC COLLEGE
507 MEDOWIE ROAD, MEDOWIE

ISSUED:
NOT FOR CONSTRUCTION
NOT FOR CONSTRUCTION

PROJECT COMMENCEMENT DATE: 01.05.2017

SCALE:
0 10 20 30 40 50 m
SCALE 1:1000 @ A1

SHEET NUMBER: 2544_01_0004_M



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Exhibit C – LEP Zoning Plan

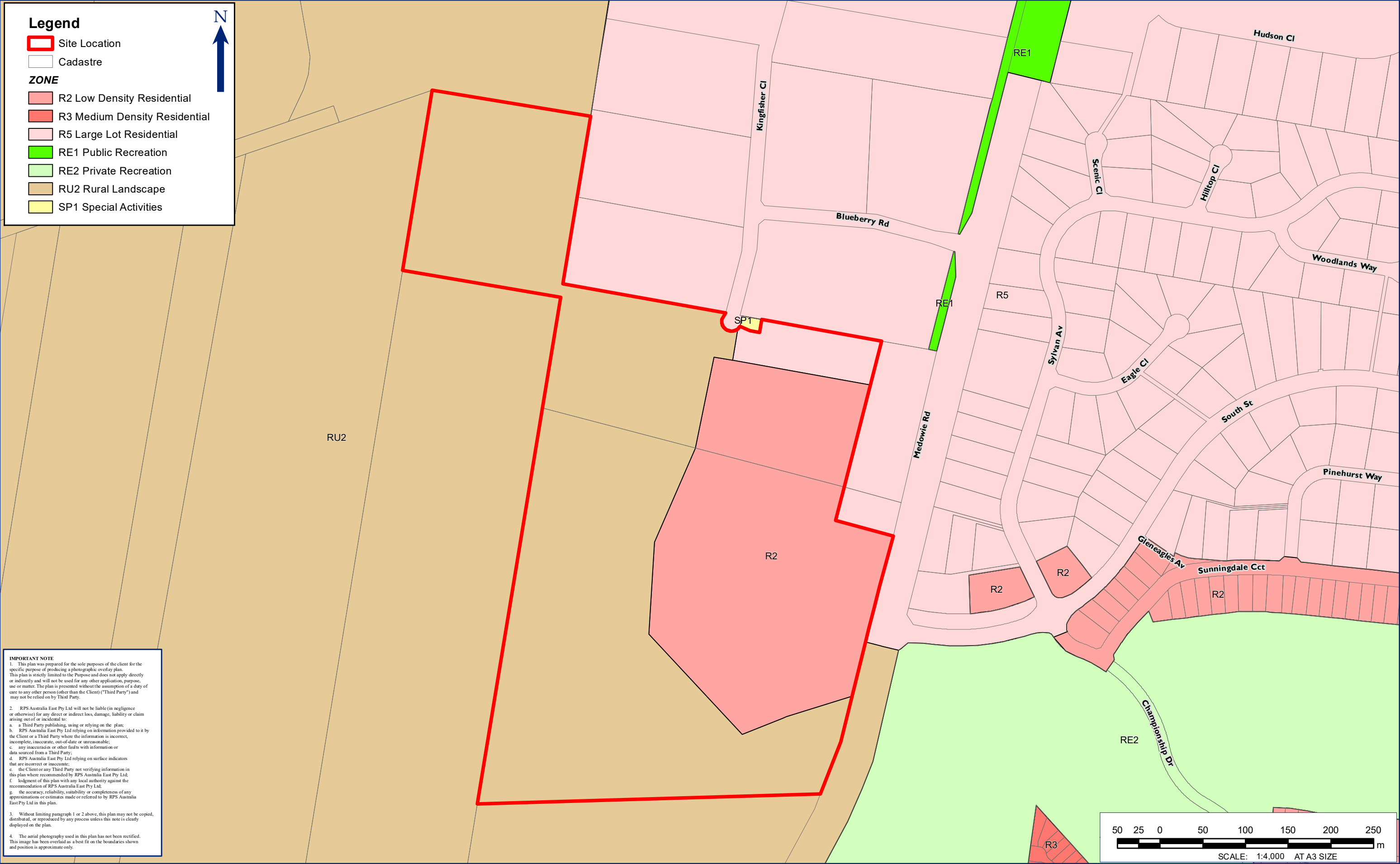
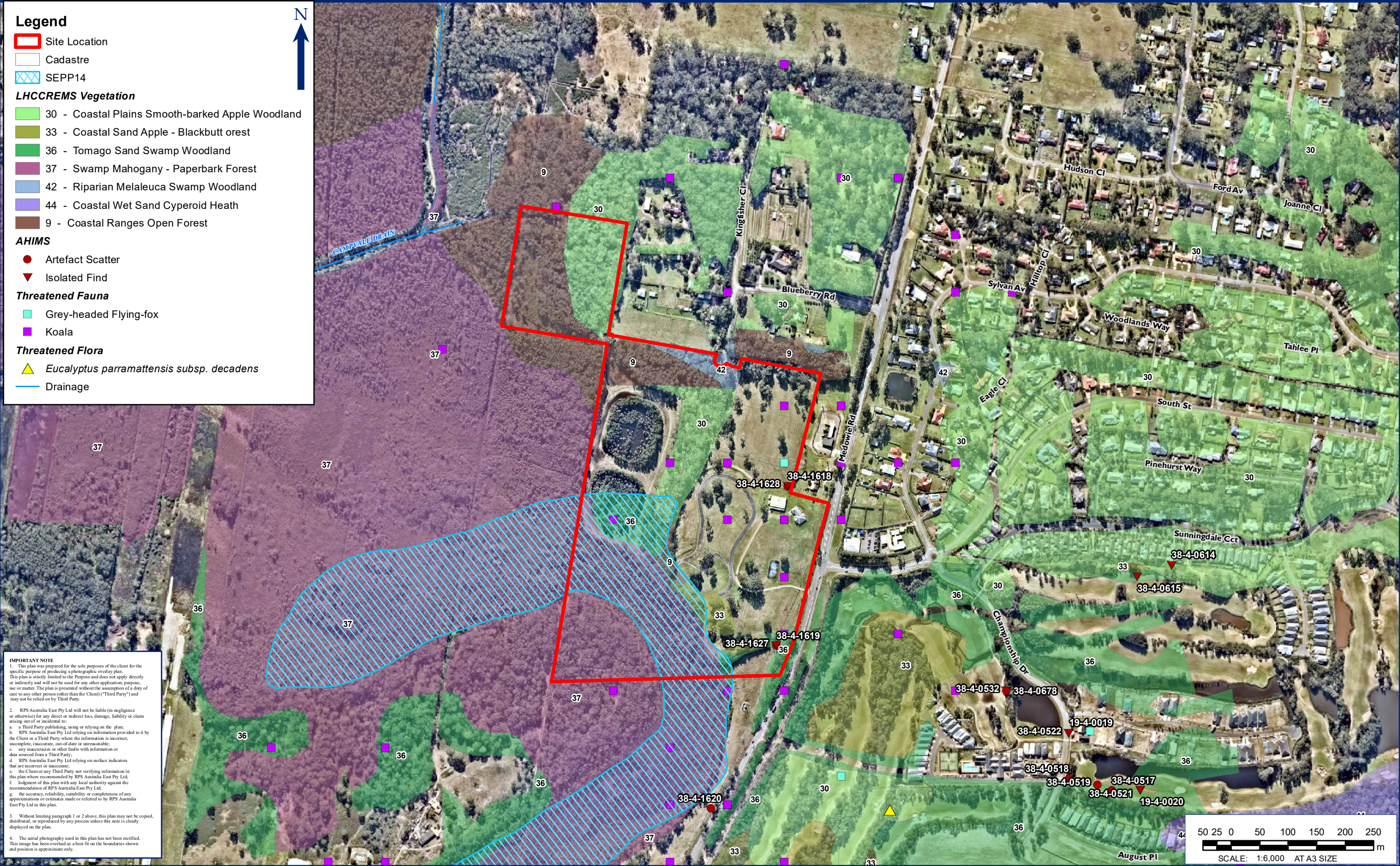




Exhibit D – Environmental Plan



TITLE : FIGURE 4: ENVIRONMENTAL PLAN

LOCATION : LOT 412,413 DP1063902
MEDOWIE

DATUM:GDA 1994

DATE : 7/12/2017

VERSION (PLAN BY): AA3 (Natalie.Wood)

PROJECTION: GDA 1994 MGA Zone 56

PURPOSE: WATER AND SEWERAGE

J:\JOBS\138\138592 Medowie\10 - Drafting\Arcgis Map Documents\Water_Sewer\138592 Figure 4 Environmental Plan
PATH: AA3 20171207.mxd

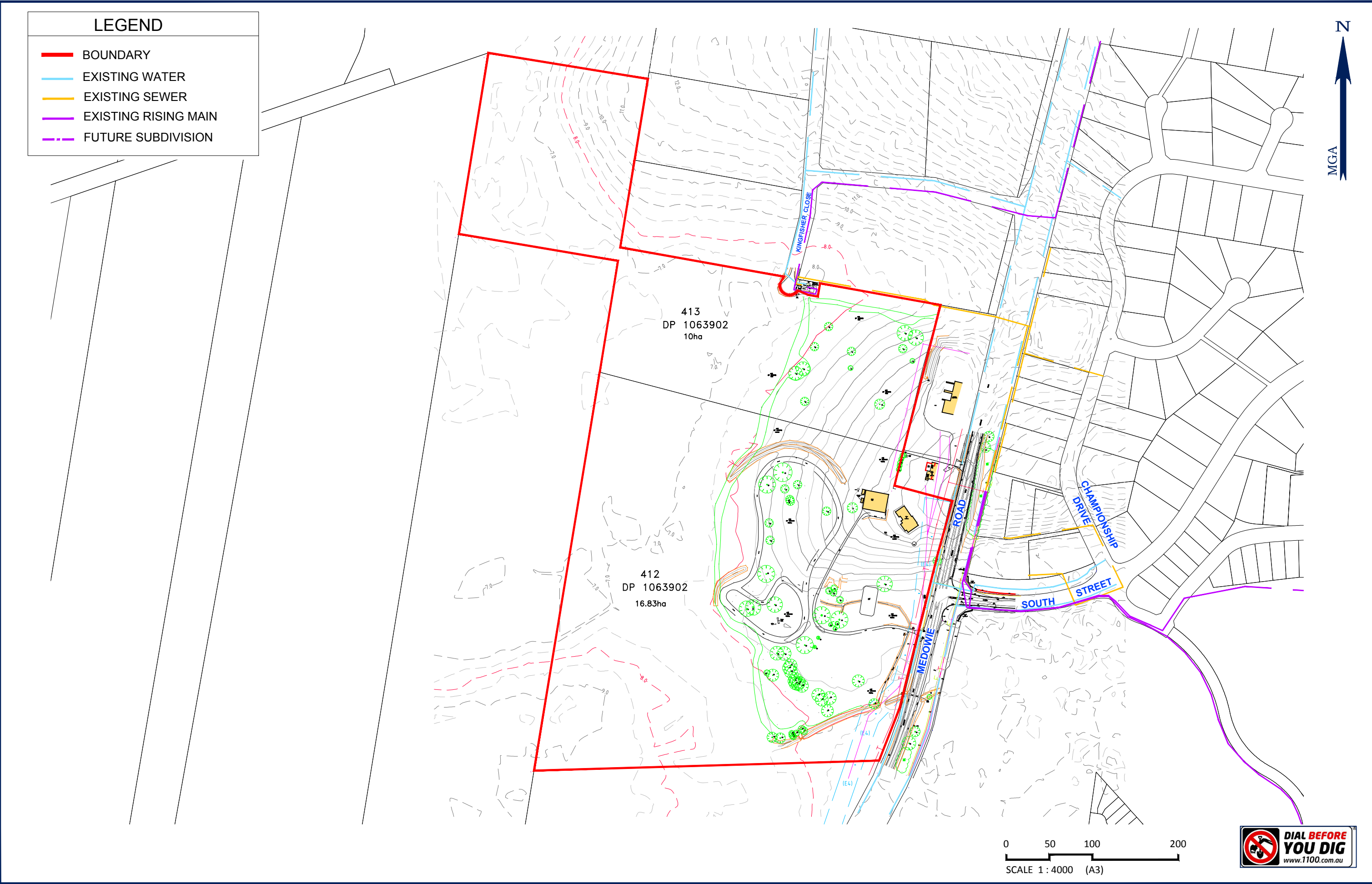
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Exhibit E – Existing Sewer Infrastructure



TITLE: FIGURE 5: EXISTING SERVICES

LOCATION: LOT 412, 413 DP1063902
MEADOWIE

DATUM: GDA 1994
PROJECTION: GDA 1994 MGA Zone 56

DATE: 06/04/2018
PURPOSE: WATER AND SEWERAGE

AUTOCAD REF: FIGURE 5 SERVICES PLAN C A3 JH 20180406
VERSION: C A3 (JH)

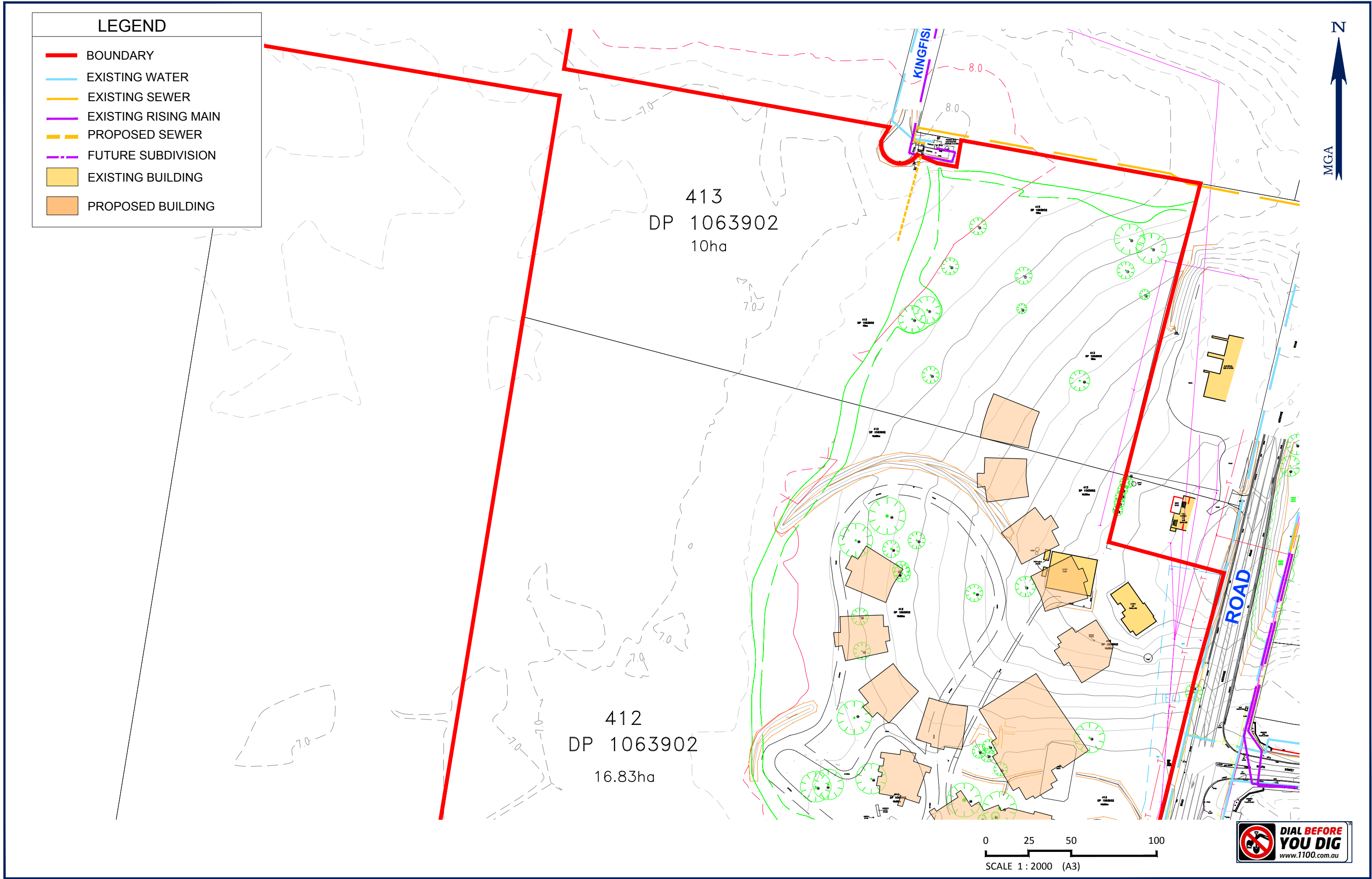
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Exhibit F – Proposed Sewer



TITLE: FIGURE 6: PROPOSED SERVICES

LOCATION: LOT 412, 413 DP1063902
MEDOWIE

DATUM: GDA 1994
PROJECTION: GDA 1994 MGA Zone 56

DATE: 06/04/2018
PURPOSE: WATER AND SEWERAGE

AUTOCAD REF: FIGURE 5 SERVICES PLAN C A3 JH 20180406
VERSION: C A3 (JH)

CLIENT: Catholic Schools Office Maitland Newcastle Diocese C/o Webber Architects
JOB REF: PR138592

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Appendix 3

Output from Pipeline and Pump Station Estimating Guidelines

PRELIMINARY ESTIMATING SHEET
SEWAGE PUMPING STATION UPGRADES

PROJECT DESCRIPTION:

UPGRADE MEDOWIE 12 WWPS

				Preliminary/Detailed Estimate	
Item No.	Item Description	Qty	Unit	Rate \$/unit	Amount \$
1	Preliminary Items				
	(a) Site Establishment and Disestablishment (Refer Table 8)	Item	Lump Sum		3000
	(b) Preparation and implementation of the Construction EMP, undertake environmental induction of all employees and proposed sub-contractors.	Item	Lump Sum		1500
	(c) Preparation and implementation of the Safety Management Plan.	Item	Lump Sum		1500
	(d) Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum		NA
2	Pumps for Sewage Pumping Station Upgrades - Supply and install pumps and associated fittings, connection to power supply, connection to pipework, testing and commissioning. (Refer Table 2)	Item	Lump Sum		39375
3	Electrical Switchboards for Sewage Pumping station Upgrades - Supply, fabrication and complete installation of electrical switchboard kiosk for total pump station power up to 500kw. Includes consumer main up to 25m in length from point of attachment. (Refer Table 2)	Item	Lump Sum		NA
4	Telemetry for Sewage Pump Station Upgrades - Supply and install separate cabinet and controls in switchboard at pump station and connect, test and commission to enable control of the pump station operation as part of the HWC telemetry network. (Table 2)	Item	Lump Sum		NA
5	Restoration of Surfaces (refer Table 3):				NA
6	Area Allowances - Sewage pump station upgrade area classification - Sum the total civil works and pipework costs and multiply by percentage in Table 4. (Refer Table 4):	Item	Lump Sum		NA
7	Terrain Allowances - Sewer pump station upgrade area terrain allowance - sum the total civil works cost and pipework costs and multiply by percentage for the relevant category to obtain the terrain allowance (Refer Table 5):	Item	Lump Sum		NA
8	Excavation below design depth including disposal of excavated material in the relevant area classification (Refer Table 6):		m3		NA
9	Excavation in rock (Refer Table 6)		m3		NA
10	Cut and fill earthworks including compaction (Refer Table 6):		m3		NA
11	Supply & place ballast (Refer Table 6)		m3		NA
12	Importing and placement of select fill including compaction (Refer Table 6):		m3		NA
13	Supply all material and labour to undertake the following Roadworks (Refer table 6):				NA
14	Dewatering for (Table 6):				NA
15	Supply all plant, material and labour to undertake the following Piling works (Refer table 6):				NA
16	Supply all plant, material and labour to undertake the following Retaining Wall works (Refer table 6):				NA
17	Acid Sulphate soil and contaminated soil (Refer Table 6)				NA
18	Supply and Install valve pit complete with aluminium tread plate covers and including excavation and backfill (Refer Table 6)				NA
19	Supply and installation of typical pipework based on Typical pipework limits on layout in Figure 1 - Section (Refer Table 7)				NA
	Inlet Pipework (from collection manhole to wet well)				NA
20	Extra over Item 22 for Supply and Install additional pipe Items inside or outside pump station (Refer Table 7)	Item	Lump Sum		NA
21	Extra over Item 22 for Supply and Install additional pipe Items required for series pumping (Refer Table 7)	Item	Lump Sum		NA
22	Supply and install Type 2 or 4 flow relief structures in accordance with Drgs SCp-502 and SCP-505 (Refer Table 6)				NA

23	Excavation and backfill and Supply and install emergency storage structure (Typical 1.5m or 2.1m dia precast concrete pipe structure. To include cost for manholes, vents and connection pipework (Refer Table 6)		L/m		NA
24	Supply and Install typical series pump pit structure complete with aluminium tread plate covers and including excavation and backfill (Refer Table 6)		L/m		NA
25	Supply and install fan forced ventilation (Refer Table 7)	Item	Lump Sum		NA
26	Typical Bypass pumping equipment hire rates for the following(Refer Table 7):				NA
27	Supply and installation of valve pit covers including supporting beams and safety screen for sliding covers (Refer Table 7):				NA
28	Supply and installation of ladders and platforms (Refer Table 7):				NA
29	Supply and Installation of crane beam(Refer Table 7):				NA
30	Supply all labour, material and equipment for concrete cutting and repair (Refer Table 7);	Item	Lump Sum		NA
31	Supply and installation of concrete benching (Table 7):				NA
32	Supply all labour, material and equipment for demolition of existing building & extending brick pumping station building (Refer Table 7);				NA
33	Miscellaneous equipment hire rates (Table 7):				NA
34	Supply and install soft starters for pump station for the following pump sizes. (Refer Table 7):				NA
35	Supply and install a generator connection cubicle (Refer Table 7):				NA
36	Arrange through Energy Australia Supply and install power supply including any need for transformers up to the point of connection for the sewer pump station(Refer Table 7):	Item	Lump Sum		NA
38	Supply and install Soil Bed Filter (Refer Table 7)	Item	Lump Sum		NA
39	Supply and install Odour Control - Iron Salts Dosing (Refer Table 7)	Item	Lump Sum		NA
40	Pre commissioning and commissioning (Refer Table 7)	Item	Lump Sum		NA
41	Work as Executed Drawings (Refer Table 7)	Item	Lump Sum		NA
42	Preparation and submission of Operation and Maintenance Manuals (Refer Table 7)	Item	Lump Sum		NA
43	Land Matters (Refer Table 12)	Item	Lump Sum		NA
	TOTAL PRELIMINARY ESTIMATED COST - SEWAGE PUMP STATION				45375
A. TOTAL ESTIMATED CONTRACT AWARD SUM					45375

B. PRE-CONSTRUCTION COST (Table 10)

Design	5445
Project management of Design	653.4
Sub Total(B1)	6098.4
Pre-Construction Contingency (30% of B1)	1829.52

TOTAL PRE-CONSTRUCTION COST (B)	7927.92
--	----------------

C. CONSTRUCTION COST

Total Estimated Contract Award Sum (A)	45375
Construction Management (Table 11)	4537.5
Sub Total (C1)	49912.5
Construction contingency (Table 12) (30% of C1)	14973.75

TOTAL CONSTRUCTION COST (C)	64886.25
------------------------------------	-----------------

TOTAL PRELIMINARY PROJECT ESTIMATE (B+C)	72814.17
---	-----------------

SAY \$73,000

SEWER GRAVITY – PRELIMINARY

PROJECT DESCRIPTION:

MEDOWIE RD, MEDOWIE

CONNECTION TO MEDOWIE 12 WWPS

Preliminary Estimate

Item No.	Item Description	Qty	Unit	Rate \$/unit	Amount \$
1	Site Establishment (Refer Table 9)	Item	Lump Sum		3000
2	Site Disestablishment (Refer Table 9)	Item	Lump Sum		3000
3	Preparation and implementation of the Construction EMP, undertake environmental induction of all employees and proposed sub-contractors.	Item	Lump Sum		500
4	OHS&R Management				
4.1	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum		1500
4.2	Extra over item 4.1 above for preparation and implementation of the Traffic Control Plan.	Item	Lump Sum		NA
5	Construction of Sewer Gravity Mains (Refer Table 1)				
5.1	Field Investigation and verification of depth and location of services along pipeline route including liaison with relevant authorities and arranging relocation and adjustment where required	Item	Lump Sum		
5.2	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes (Refer Table 1):				
	PVC Sewer Gravity Main Class SN8:				
	a) Nominal DN 100 mm		m		0
	b) Nominal DN 150 mm	65	m	11	715
	c) Nominal DN 225 mm		m		0
	e) Nominal DN 300 mm		m		0
	f) Nominal DN 375 mm		m		0
5.3	Supply all pipe fittings including gaskets and ss bolts (Refer table 1):	Item	Lump Sum		0
5.4	Clear, excavate and backfill in OTR conditions at nominal depth up to 1.5m depth to invert for sewer gravity pipelines with pipe support Type 1 or 3 & Drawing SCP-200, trench support and disposal of excess excavated material including environmental erosion and sediment control. Includes lay, bed, compact, joint and test. Includes initial cleanup of disturbed areas of disturbed areas. Supply of materials, including construction of bulkheads and trenchstops for following pipe sizes:				
	PVC Sewer Gravity Main Class SN8:				
	a) Nominal DN 100 mm		m		0
	b) Nominal DN 150 mm		m		0
	c) Nominal DN 225 mm	65	m	124	8060
	f) Nominal DN 375 mm		m		0
5.10	Restoration of Surfaces (refer Table 5):				NA
5.22	Road crossing (refer Table 7)				NA
5.23	Extra over item 5.21(a) for thrust boring/directional drifting under existing rail line (refer table 7, note 7)		m		NA
5.24	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes: (Refer Table 7)				NA
5.25	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes: (Refer Table 7)				NA
5.26	Preconstruction record (Refer Table 8)				
	(a) Photographic	65	m	0.6	39
	(b) Video		m		0
	(c) CCTV		m		0
5.27	Work as Executed Drawings - sewermain (Refer Table 8)	65	m	8	520
5.28	Preparation of line sheets (Refer Table 8)	1	each	92	92
5.29	Acceptance testing - gravity main (Refer Table 8)	65	m	1.3	84.5
5.30	Land Matters (Refer Table 13)	Item	Lump Sum		NA
	Sub Total Sewer Gravity Mains				17510.5

A. TOTAL ESTIMATED CONTRACT AWARD SUM		17510.5
B. PRE-CONSTRUCTION COST (Table 10)		
Design		2101.26
Project management of Design		252.1512
	Sub Total(B1)	2353.4112
Pre-Construction Contingency (30% of B1)		706.02336
TOTAL PRE-CONSTRUCTION COST (B)		3059.43456
C. CONSTRUCTION COST		
Total Estimated Contract Award Sum (A)		17510.5
Construction Management (Table 11)		1751.05
	Sub Total (C1)	19261.55
Construction contingency (Table 12) (30% of C1)		5778.465
TOTAL CONSTRUCTION COST (C)		25040.015
TOTAL PRELIMINARY PROJECT ESTIMATE (B+C)		28099.44956

SAY \$ 28,100