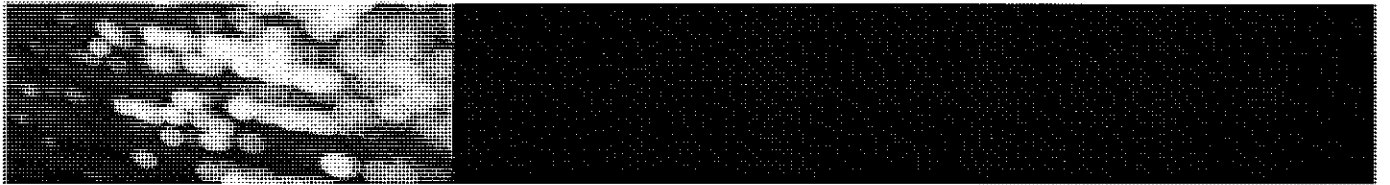




Cardno
Gilbert Rose



HAMILTON ROAD / MELL ROAD COOGEE

SERVICING REOPRT

DRAFT

10/12/2008
Job No. EO8017

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| 1 | 10/12/2008 | A.Khosravi | AK | | |

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**HAMILTON ROAD / MELL ROAD
SERVICING REPORT**

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EXECUTIVE SUMMARY

This report represents the findings of desk top investigation of servicing requirements of parcels of lands as highlighted and provided by Mr Victor Marcelino of SPM Project Marketing. This servicing report was commissioned in a letter dated 15 September 2008 by Mr Allen Blood of City of Cockburn. Other consultant involved in the project includes Stapleton and Associates. The purpose of the present desk top investigation was to assess the availability of various services with the close proximity of the subject land.

1. WATER SUPPLY

In the Water Corporation ultimate scheme the subject land will be serviced by upgrading of existing water mains at various locations :

- Extension of 300mm main from the intersection of Mell Rd & Hamilton Rd along Hamilton Rd and then along Ocean Rd.
- Upgrading of existing 150 mm main to 250 mm main from the intersection of Hamilton Rd & Ocean Rd along Hamilton Rd, Entrance Rd and along Cross Rd to the intersection of Ocean Rd.
- Installation of 200mm main along Mell Rd in a easterly direction and then in northerly direction along Garden Rd.
- Installation of 200mm main from the intersection Hamilton Rd & Ocean Rd in a easterly direction along Ocean Rd to the intersection of Garden Rd.

The subject land can be serviced by installation of new mains and upgrading of existing as shown on Cardno's drawing number E08017-001-W1. It should be noted the exact extent of upgrading of the mains will be determined at the detailed design stage.

2. WASTEWATER DISPOSAL

In the Water Corporation ultimate scheme wastewater from the subject land falls into three separate catchments.

All lots (2210, 4,16,17,18,14,50,6, 480,481,482 and 483) which are located on the eastern side of Mell Rd , bounded by Rockingham Road and the railway reservation could be serviced by extension of existing gravity sewer in Rockingham Road adjacent to lot 232. (IL 6.55 AHD) including extension of existing sewer main adjacent to lot 203 (IL 5.24) in Mell Rd.

All lots (1,2,3,4,5,6,8,9,10,P97,305,500,501,26 &132) which are bounded by Mell Rd, Hamilton Rd and the railway reservation fall into the future (Type 40) Spearwood (J-066) waste water pumping station.

All lots

(24,25,26,27,28,29,30,31,32,33,34,100,101,1,2,300,301,4,5,6,7,8,9,1,2,14,15,16,17,18,20,21,22, 40,500 & 41) which are located on the western side of Hamilton Rd and East side of Cross Rd fall into the future (Type 40) Spearwood (J-066) waste water pumping station

Lot 23 falls into the existing waste water Catchment No6118-066 and can be serviced by extension of existing gravity mains in Cedron Rise.

Cardno's drawing number E08017-011-S1 provides further clarification on the various Water Corporation's waste water catchment boundaries. It should be noted verification

and confirmation of various catchment boundaries are required at the detailed design stage.

3. POWER SUPPLY

All electrical power reticulation to the proposed development area will be underground in accordance with WAPC Policy.

Stapleton and Associates in consultation with Western Power have provided a brief report for the subject land (Appendix A).

It should be noted there is an existing overheads 132 KV transmission line within a portion of the subject land. In event of consideration being given by the developers to underground this infrastructure, it is recommended to have discussions with the appropriate department of Western Power whether this option is feasible or not.

4. TELECOMMUNICATION

The existing telecommunication infrastructure within Mell Rd is adequate to service the subject land. The subject land could be serviced from the extension of existing exchange in Mell Rd.

5. GAS SUPPLY

There are high pressure Gas Infrastructures available within Mell Rd, Hamilton Rd, and Ocean Rd.

Additionally there are existing high pressure gas main on the southern boundary of lots 2138 and 132. The exact location of high pressure gas mains within these lots should be surveyed so that appropriate consideration is given as apart of the over all planning of the subject land.

Normal pressure Gas Infrastructure is available along a portion of Hamilton Rd, Mell Rd and the entire length of Ocean Rd through to the intersection with Cross Rd (See Drawing No E08017-001-S01).

6. STORMWATER DRAINAGE

Disposal of stormwater drainage from the subject land should be in compliance with environmentally sensitive design via soakage.

Area 1

Discussion with D.o.W project officer has revealed that there are existing wet lands located within Lot 5, Lot 6 and Lot 1 Mell Rd. It was suggested that the exact location of this multi use wet land to be surveyed so that it could be incorporated into the overall structural planning of the area so that appropriate design measure are taken to preserve the multi use wet land.

Verbal advice was provided that the discharge of stormwater run-off from the subject land (West of Mell Rd & East of Hamilton Rd and West of Rockingham Rd & East of Mell Rd) to the multiuse wet land would be permissible provided appropriate

environmentally sensitive design criteria's are adopted to accommodate the various design storms.

Area 2

Discharge of storm water run-off from the subject land (West of Hamilton Rd & East of Gross Rd) to a future drainage basin being constructed within Lots 1 & 2 would be permissible and acceptable to the D.o.W provided appropriate environmentally sensitive design criteria's are adopted to accommodate the various design storms.

Referring to Drawing No E08-017-001-Do1, there are three existing drainage basins with various drainage pipe networks located in various locations within the subject land area. It is recommended that at the detailed design the existing drainage network to be rationalised and connected to the proposed new stormwater drainage pipe network.

The drainage strategy for the subject should be to maximise infiltration into the groundwater. Appropriately landscaped basins will be constructed in appropriate locations so that adequate storage is provided for the extreme storm events. Additional infiltration to the groundwater could be achieved by introduction of flush kerbed roads and grassed / vegetated swale drains in appropriate locations including incorporation of soakwells / slotted stormwater drainage pipe as apart of piped stormwater drainage network.

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APPENDIX A

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FEASIBILITY ENQUIRY

Project Name: SAA2008205 HAMILTON RD
Residential/ Commercial Development

Customer Name: Various Developers

Consultant Name: Stapleton and Associates Pty. Ltd.

Proposed Load: Minimum 10 MVA

Western Power has been requested to conduct a feasibility enquiry to supply approximately 77.5 hectares of land. Please refer to figure 1 and figure 2 for the location of this proposed development. The area currently is just slightly to the south east of Port Coogee development. The land will be developed predominantly into mostly residential areas with possibility of some commercial area. However, the type and the quantity of load required are unknown at present date.

Based on the vastness of proposed land area, load required will approximately exceed 10 MVA. The load take up timing is not confirmed at this stage as it depends on the economics and the decisions of the developers.



Figure 1: Photo Overview of Site Location

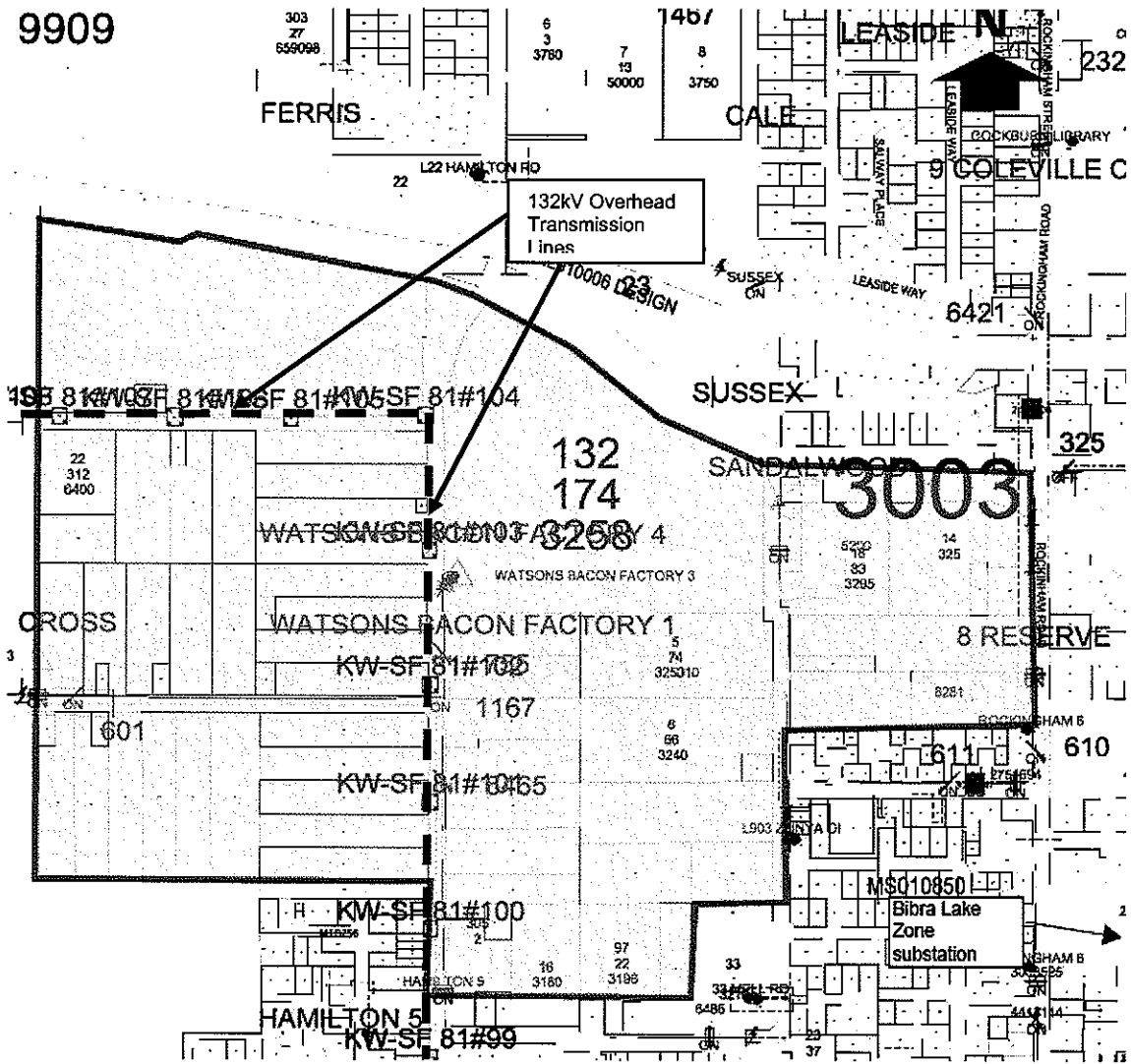


Figure 2: DFIS Overview of Lot Location

The network configuration at present time does not have enough capacity to supply this new load. The nearest zone substation to this development is Bibra Lake. As the details of the lots allocation as well as the type of load requirements (e.g. residential/ residential and commercial) and staging timing are not known, the size of the load could not be confirmed.

Depending on the quantity of load with assumed minimum requirement of 10 MVA, one or more feeders from Bibra Lake Substation may be required. Given the close proximity of Bibra Lake Substation to the structure plan area, a cost effective solution would be able to be developed in a timely manner.

However, there is an existing overhead 132kV transmission line within most part of the proposed development. The developers may wish to underground them in order for this development to take place. It is recommended to have discussions with relevant departments in Western Power whether this option is feasible. If the undergrounding of the transmission lines is adopted, the developers are required to take this work and associated costs into consideration.

Current processes require landowners who wish to subdivide, or establish a development on a particular lot is to make an appropriate application to Western Power. As part of the application process, Western Power will outline connection requirements and whether one of the existing feeders or new feeders can support this load at load timing period.

Due to the dynamic nature of the distribution network, further in-depth study and analysis will be required to determine the exact requirement of the reinforcement works once formal application to Western Power has been lodged. This analysis is only an indicative appraisal at this stage and the selection will change in the future.

Note that feasibility enquiry request is not a formal connection application. Developers are required to follow normal processes and make an application to Western Power for firm connection proposals when the initial development is to commence. Western Power can neither reserve capacity nor guarantee supply to this development without formal request being lodged. It would be appreciated that at the time of the application, a staging plan with expected takeoff dates be provided to Western Power.

-----End-----



Your Ref: SAA2008205
Our Ref: MF010013
Enquiries: Customer Contact Centre
Telephone 13 10 87
Fax: 9225 2073

Western Power
Connections Manager
Locked Bag 2520
PERTH, WA 6001
Electricity Networks Corporation
ABN 18 540 492 861

08 October 2008

Stapleton and Associates Pty Ltd
L4 524 Hay Street
PERTH WA 6000

Attention: Mr Damian Twyman

Dear Sir/Madam,

**HAMILTON ROAD, SPEARWOOD
WESTERN POWER REF: MF010013, WAPC No: N/A**

In response to your request for a Feasibility Enquiry, 01 October 2008, I am pleased to provide you with the attached report.

Our Tax Invoice will be sent to you in due course. The amount due includes the standard fee of \$315.00.

DISCLAIMER

- o This information is based on information available today.
- o Western Power cannot reserve any capacity to accommodate the proposed development unless a quotation is offered and accepted.
- o Western Power accepts no responsibility for any consequences resulting from decisions made on the basis of information provided in this response.

ANY QUESTIONS?

If you have any questions, please telephone our Customer Contact Centre on 13 10 87 during business hours.

Yours faithfully,

Lauren Jenks
for
**Connections Manager
Customer Assist**

enc: Terms and Conditions

FEASIBILITY ENQUIRY TERMS AND CONDITIONS

1. Terms and Conditions

These terms and conditions shall form part of the contract unless specifically excluded in writing by an authorized representative of Western Power.

2. Credit Check

Western Power retains the right to inquire as to the credit worthiness of a customer and retains the right to decline to perform or further perform the works whenever Western Power does not receive an acceptable credit reference, which shall be at the sole discretion of Western Power. The customer acknowledges and agrees that it shall have no claim or right or cause of action against Western Power by reason of Western Power declining to perform or further perform the works in the circumstances described in this clause.

3. Consequential Loss

Damages shall be limited to damages for direct and foreseeable loss attributable to breach or default under this Agreement. The rights of either party to damages for indirect or consequential loss are hereby excluded. Neither party shall be liable to the other for any loss of profit suffered by a party to this Agreement or any other person.

4. Modification

A purported modification, variation or amendment of this Agreement including the scope of works or any waiver of any rights of any party or any approval or consent shall have no effect unless in writing and signed by the party to be charged, and may attract a subsequent fee.

5. Application of Acts and By-Law

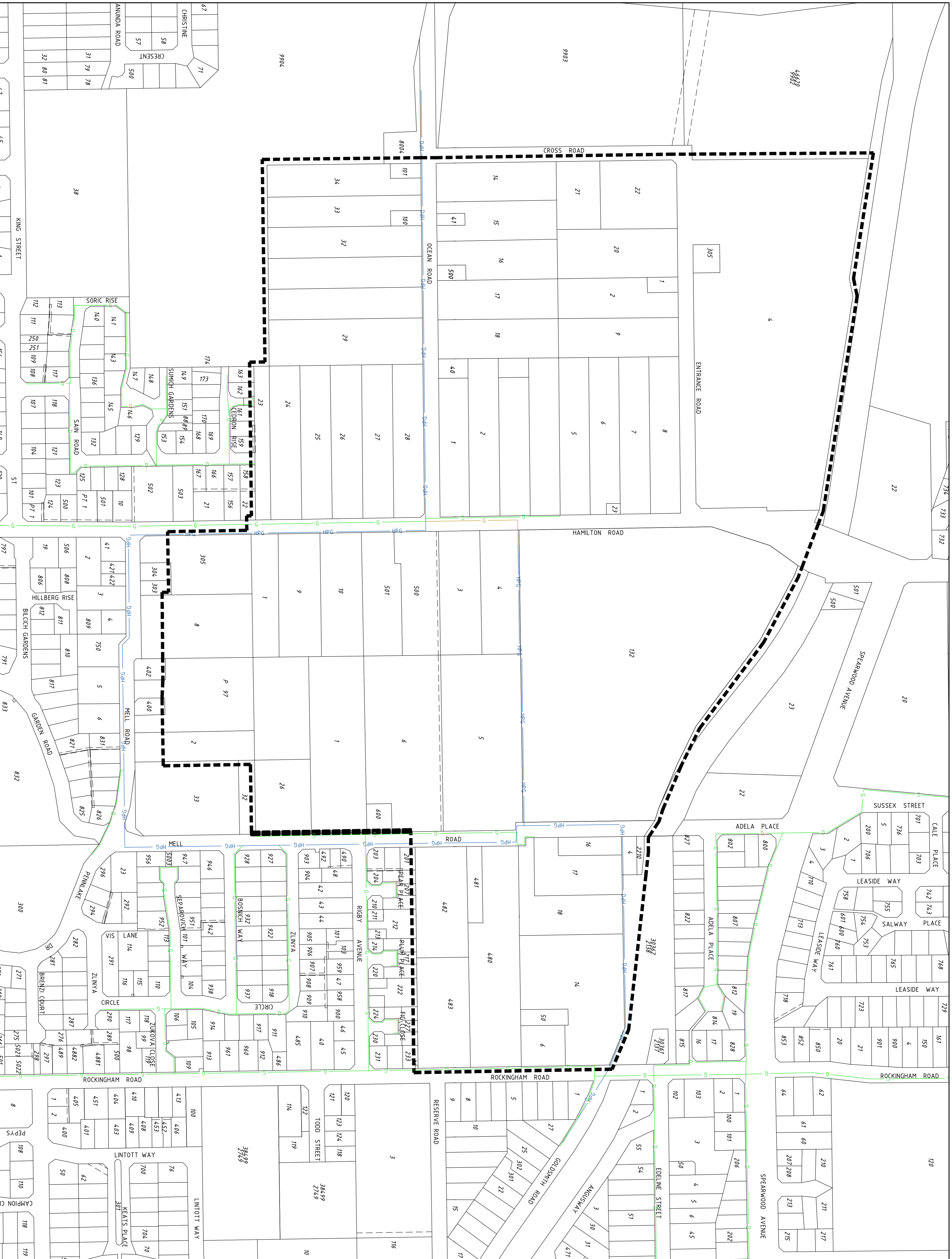
Nothing contained in these Terms and Conditions shall in any way limit the operation or effect of the Electricity Corporation Act 1994, Energy Corporations (Powers) Act 1994, Energy Corporations (Transitional and Consequential Provisions) Act 1994, or any Regulations, By-Laws or Orders made pursuant thereto.

6. Ownership of Works

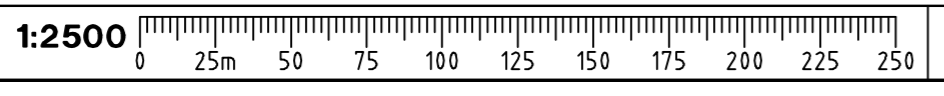
The whole of the electricity extension that forms the works carried out in accordance with the proposal is the property of Western Power and Western Power has the right to connect additional customers to any part of the extension.

7. Liability

Western Power has calculated the indicative estimate in good faith however Western Power, to the extent permitted by law, accepts no liability for any errors or omissions or for any discrepancy between the indicative estimate and the final quoted cost, if any.



- LEGEND**
- EXISTING HIGH PRESSURE GAS
 - EXISTING MEDIUM PRESSURE GAS
 - ABANDONED GAS PIPELINE
 - PROPOSED DEVELOPMENT BOUNDARY



| | | | | |
|------|--------------|---------------------------------|----------|--------------|
| DATE | No. 04/12/08 | ACTIVITY - REVISION DESCRIPTION | DES. DNM | CHK'D. APP'D |
| | A | INITIAL SUBMISSION | CLG | CLG |

PROJECT
HAMILTON ROAD / MELL ROAD - COOGEE
GAS SERVICES PLAN
CITY OF COCKBURN

DRAWING TITLE
PRINCIPAL

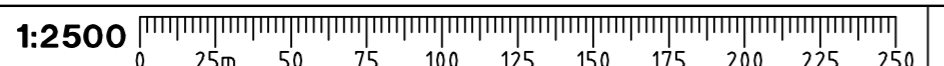
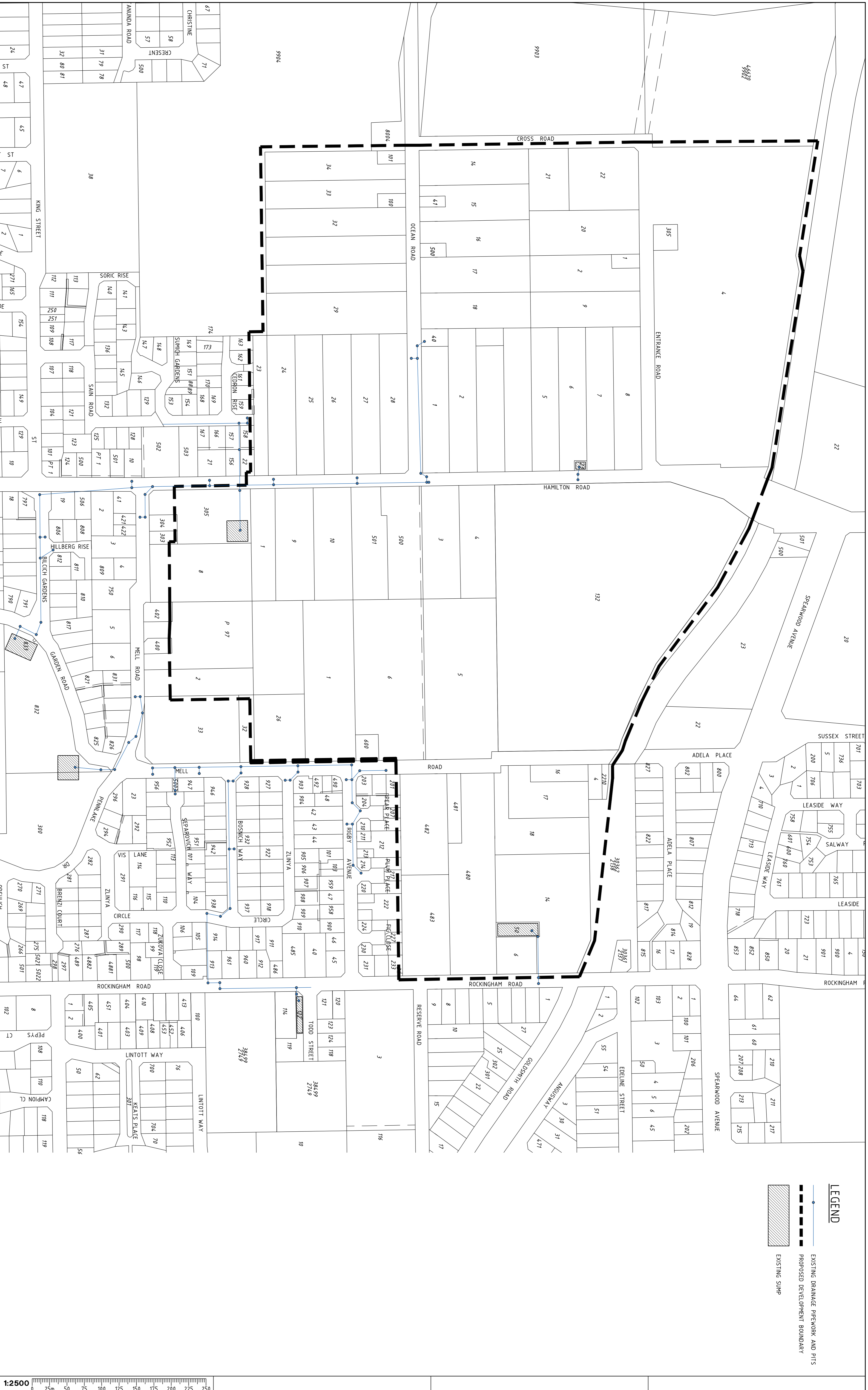
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 ENVIRONMENTAL CONSULTANTS
 BUILDING DESIGN

Date 04/12/2008 Scale 1:2500
 Designed GARNER Checked
 Drawn GARNER Approved
 Local Authority City of Cockburn Sheet 1 of 2
 Project - Phase - Draw Number E08017-001-G01 Revision A



HAMILTON ROAD / MELL ROAD - COOGEE

DRAINAGE SERVICES PLAN

CITY OF COCKBURN

PROJECT

DRAWING TITLE

PRINCIPAL

DATE: 11/12/08
 No. A INITIAL SUBMISSION
 ACTIVITY - REVISION DESCRIPTION
 DES. DNM CHK'D. APP'D
 CLG. TAM

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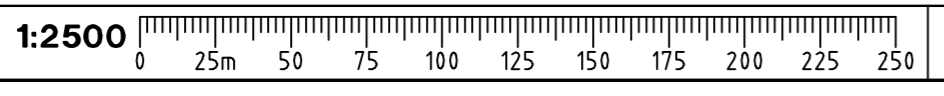
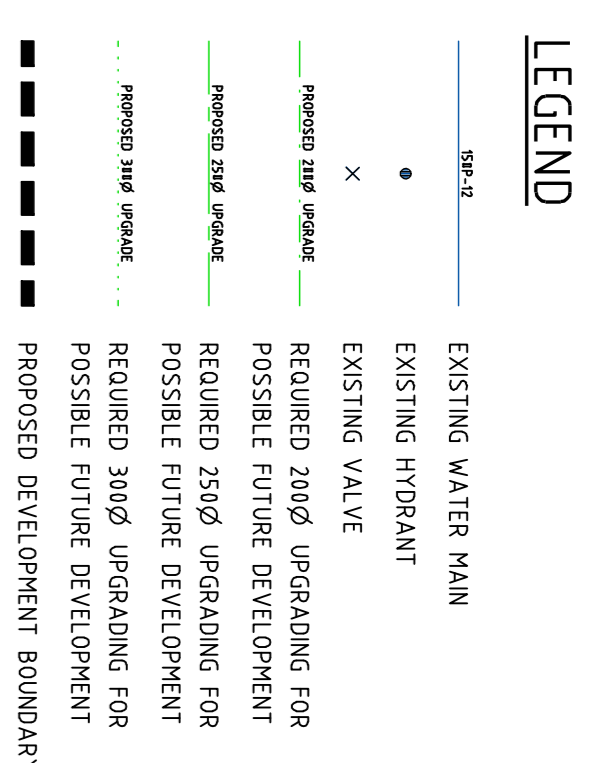
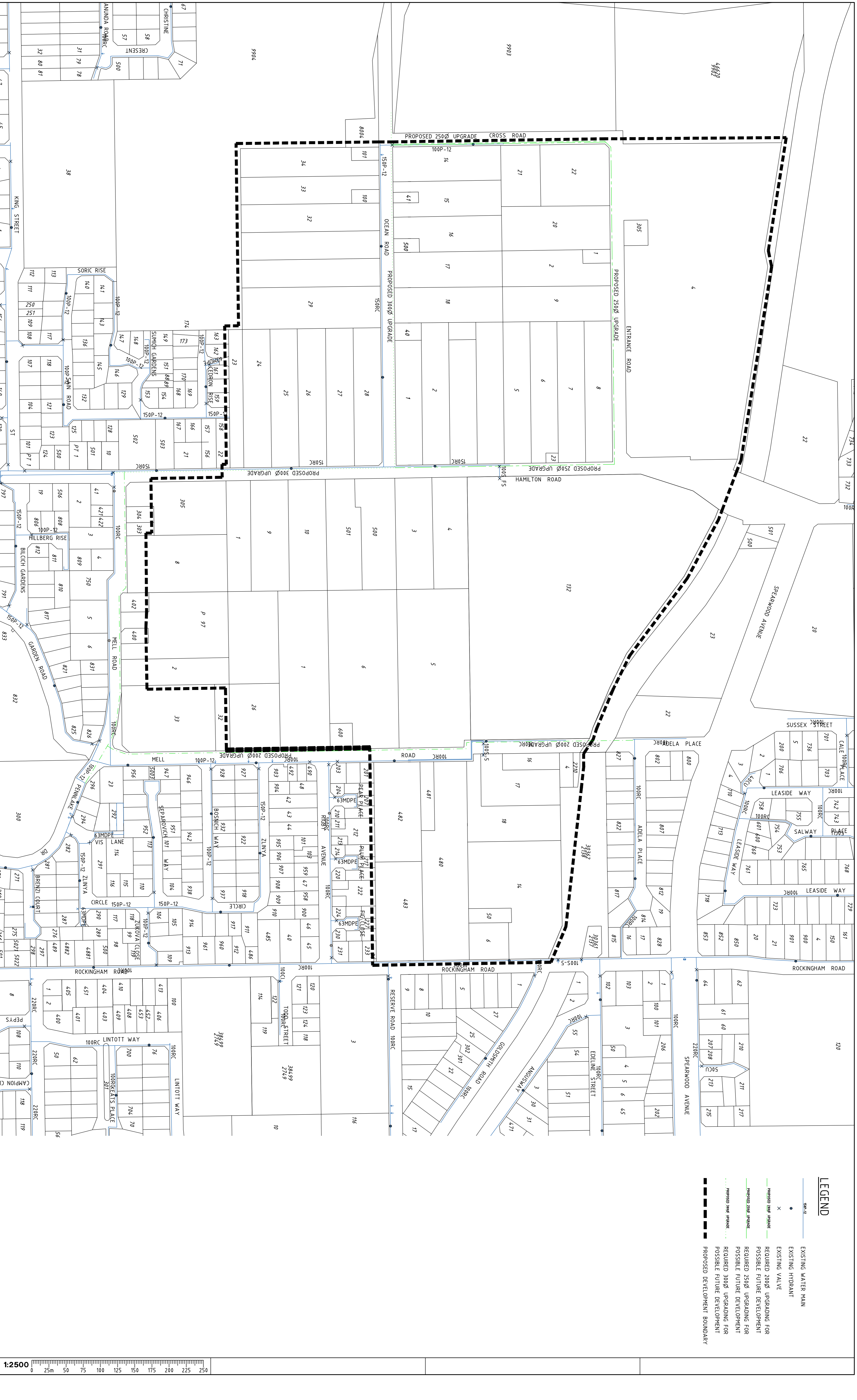


CONSULTING ENGINEERS
 TOWN PLANNERS
 ENVIRONMENTAL CONSULTANTS
 BUILDING DESIGN

Date: 11/12/2008 Scale: 1:2500
 Designed: G. GARNER Checked: []
 Drawn: T. MOFARLANE Approved: []
 Local Authority: CITY OF COCKBURN
 Project - Phase - Draw Number: E08017-001-D01
 Revision: A

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| | | | INITIAL SUBMISSION | CLG | CLG |

PROJECT
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WATER SERVICES PLAN
CITY OF COCKBURN

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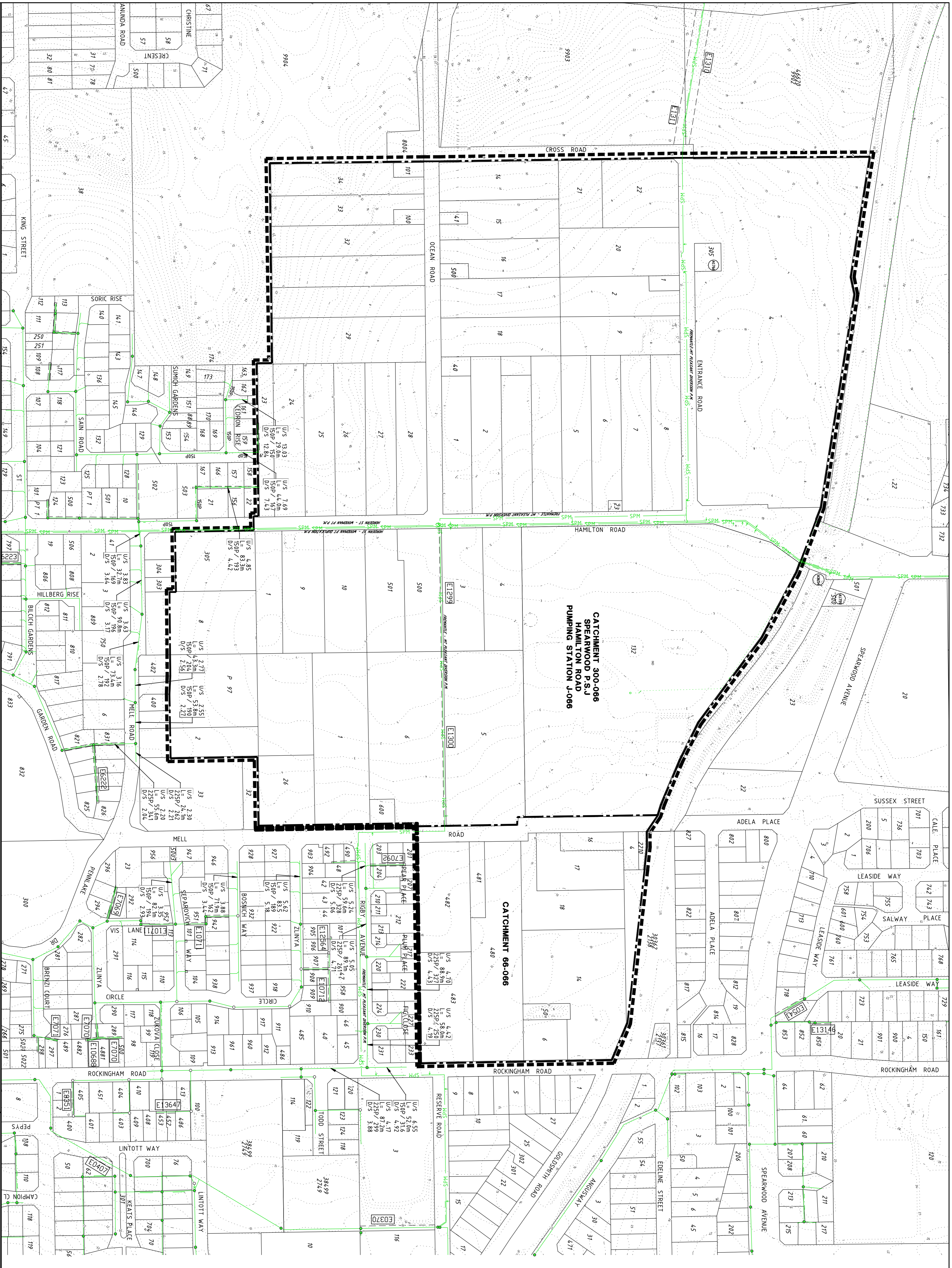
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ENVIRONMENTAL CONSULTANTS
BUILDING DESIGN

Local Authority
CITY OF COCKBURN

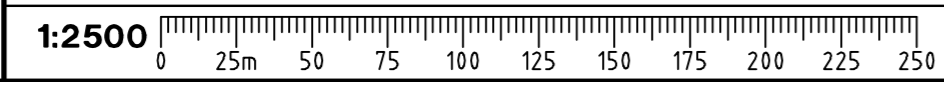
Project - Phase - Draw Number
E08017-001-W01

Date: 04/12/2008
 Designed: CGARNER
 Drawn: CGARNER
 Scale: 1:2500
 Checked: Approved
 Sheet: 1 of 1
 Revision: A



LEGEND

- 500 Existing Sewer
- SPM Existing Sewer Pressure Main
- RPM Roundabout Sewer Pressure Main
- Existing Contours
- Indicative Water Corporation Sewer Catchment Boundaries
- Proposed Development Boundary
- U/S 4.17 Pipe Invert / Pipe Grade
- D/S 3.88 Pipe Downstream Invert Level



DATE: 04/12/08
 No. ACTIVITY: A INITIAL SUBMISSION
 DES. DMN: CKD
 APP'D: CLG
 CLG

**HAMILTON ROAD / MELL ROAD - COOGEE
 SEWER SERVICES PLAN
 CITY OF COCKBURN**

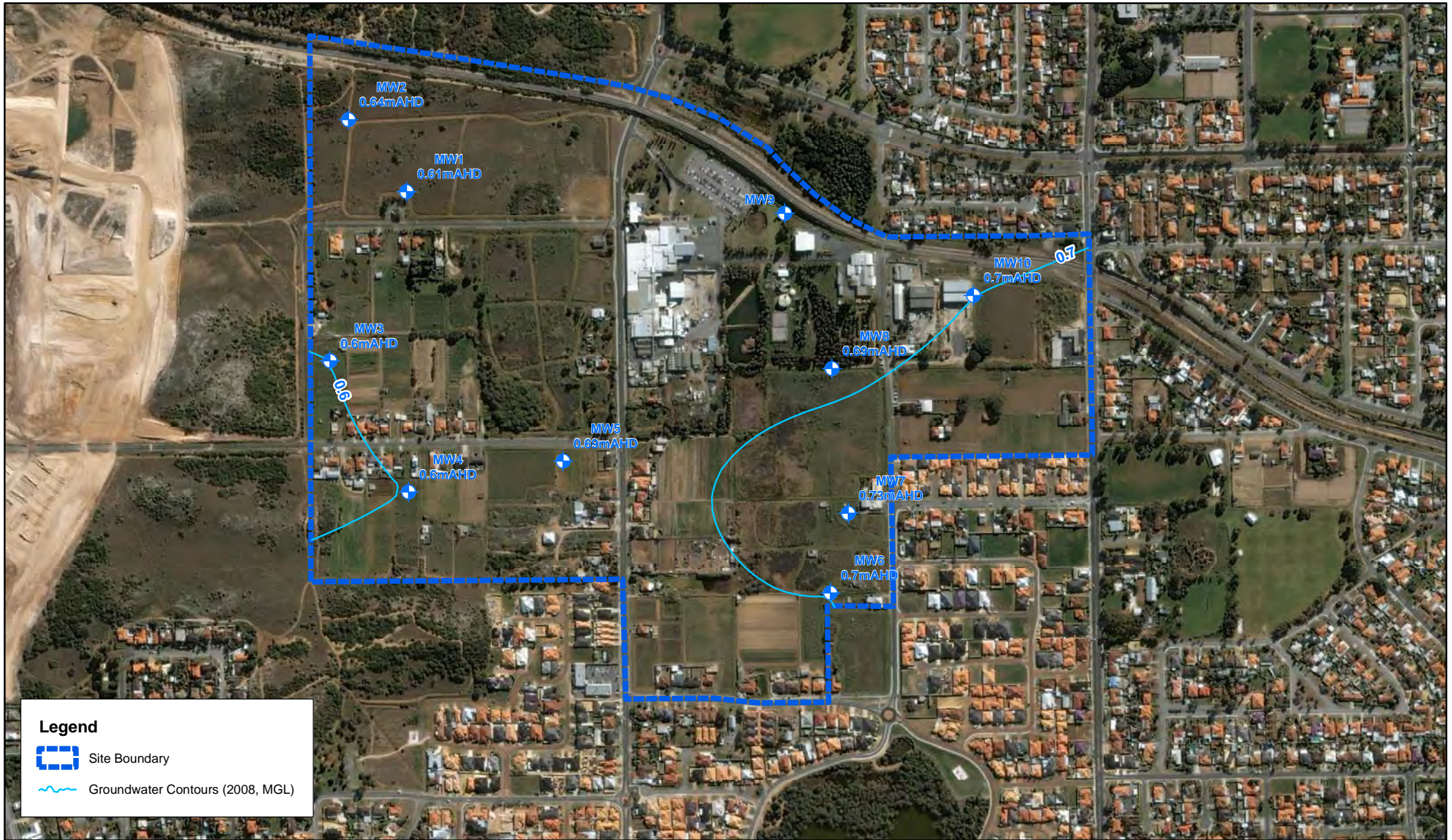
PROJECT: HAMILTON ROAD / MELL ROAD - COOGEE
 DRAWING TITLE: SEWER SERVICES PLAN
 PRINCIPAL: CITY OF COCKBURN

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 Scale: 1:2500
 Checked: Approved
 Sheet: 1 of 1
 Revision: A

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Version: 1, Version Date: 24/01/2017



Legend

- Site Boundary
- Groundwater Contours (2008, MGL)

| DATE | No. | ACTIVITY - REVISION DESCRIPTION | DES | DRN | CHK'D | APP'D | DATE | No. | ACTIVITY - REVISION DESCRIPTION | DES | DRN | CHK'D | APP'D | DATE | No. | ACTIVITY - REVISION DESCRIPTION | DES | DRN | CHK'D | APP'D | |
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| | | | | | | | | | | | | | | | | | | | | | |

PROJECT **Hamilton Road Groundwater Monitoring**

DRAWING TITLE **FIGURE 2 : Study Site , Bore Locations and Groundwater Contours (2008, MGL)**

PRINCIPAL **City of Cockburn**

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Scale: **1:8,000**

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|--------------------------------|-------------------------------|-----------------------|-----------------------|
| Project Number V8070 | Drawing Number SK15 | Revision 00 | Original A4 |
| Designed JN | Checked MGW | Date 6/05/10 | |
| Drawn MGW | Approved | Sheet 1 of 1 | |
| Local Authority | City of Cockburn | | |