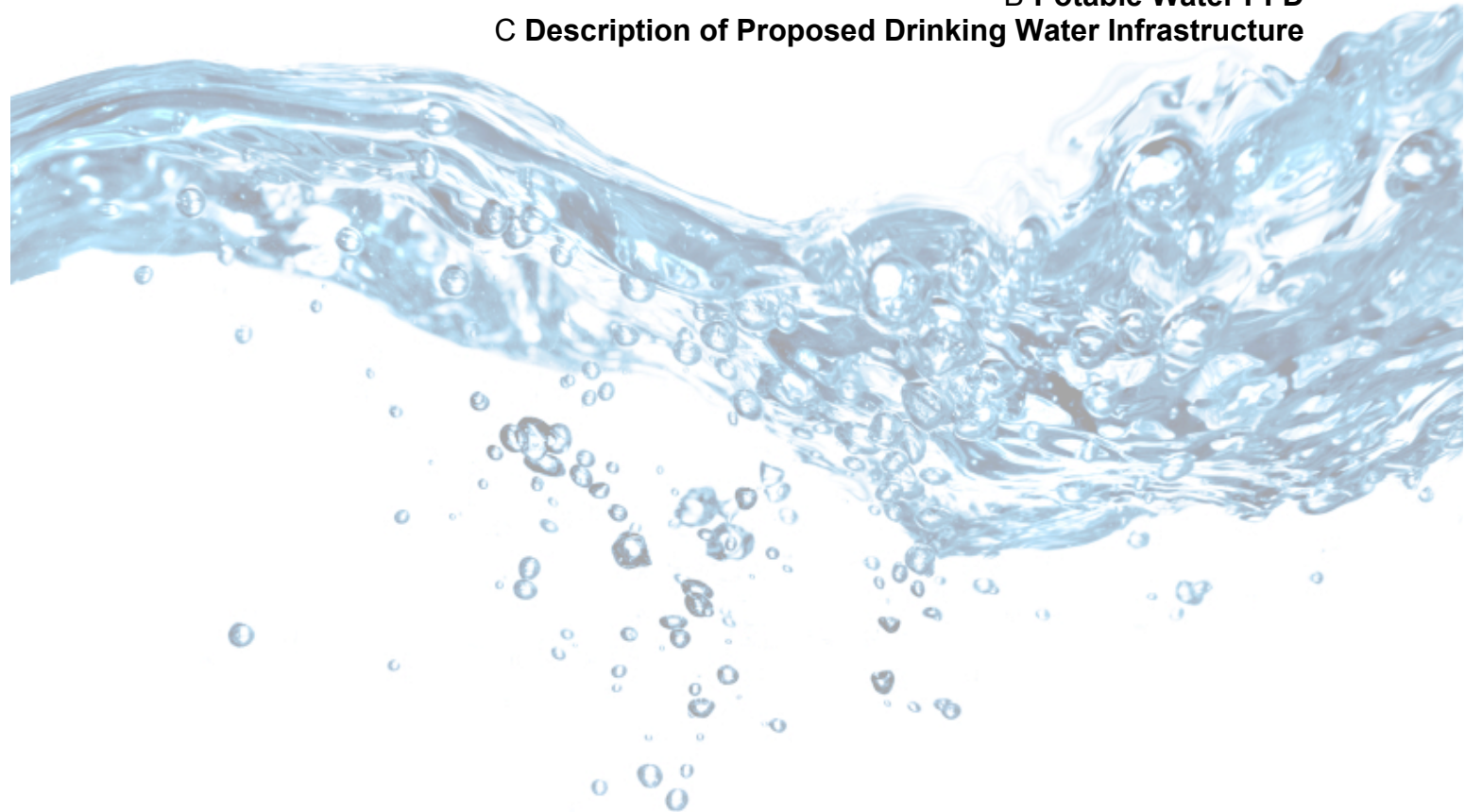


Appendix 4.1.1 **Drinking Water**

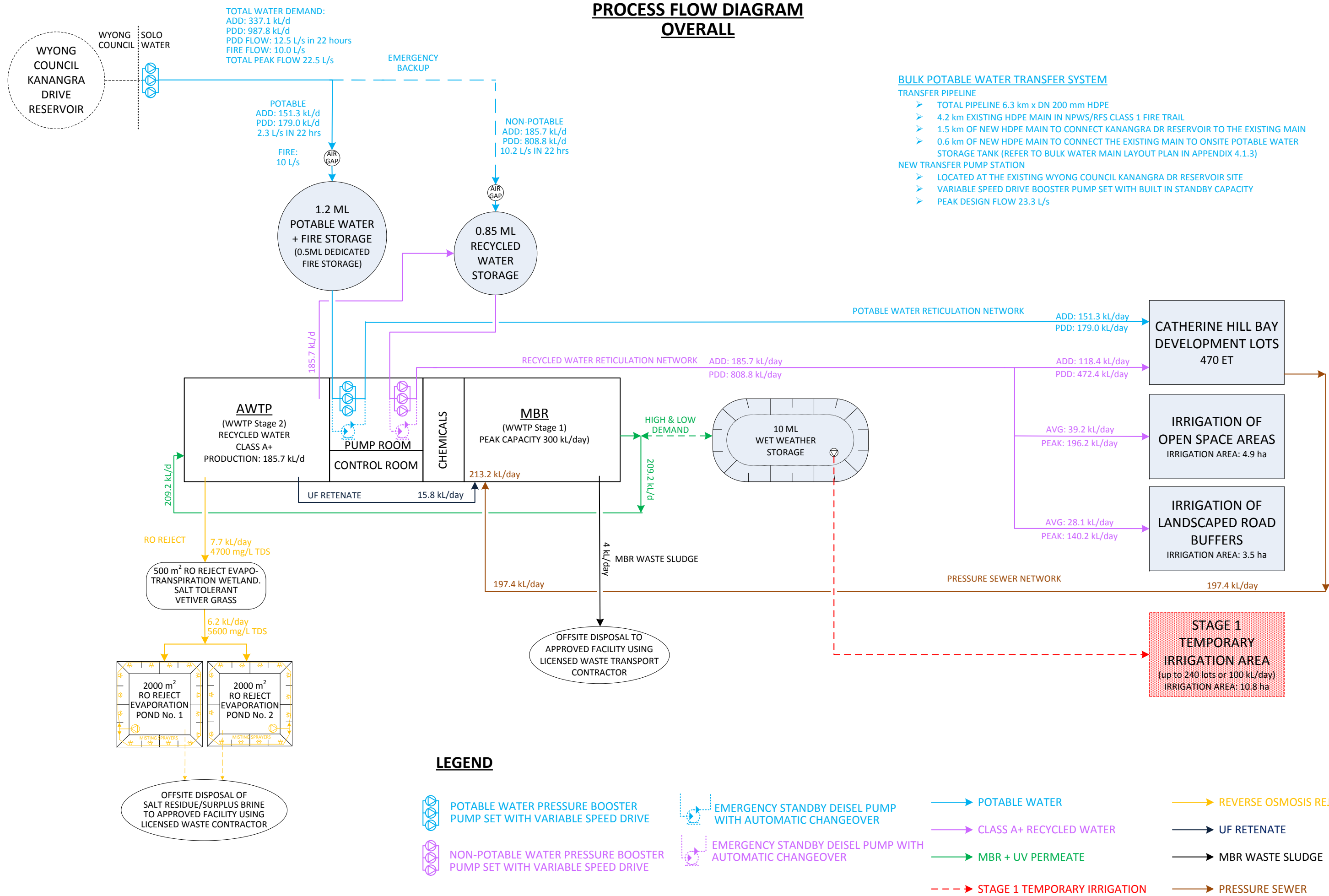
**A Overall PDF of the Scheme**

**B Potable Water PFD**

**C Description of Proposed Drinking Water Infrastructure**



PROCESS FLOW DIAGRAM  
OVERALL



BULK POTABLE WATER TRANSFER SYSTEM

TRANSFER PIPELINE

- TOTAL PIPELINE 6.3 km x DN 200 mm HDPE
- 4.2 km EXISTING HDPE MAIN IN NPWS/RFS CLASS 1 FIRE TRAIL
- 1.5 km OF NEW HDPE MAIN TO CONNECT KANANGRA DR RESERVOIR TO THE EXISTING MAIN
- 0.6 km OF NEW HDPE MAIN TO CONNECT THE EXISTING MAIN TO ONSITE POTABLE WATER STORAGE TANK (REFER TO BULK WATER MAIN LAYOUT PLAN IN APPENDIX 4.1.3)

NEW TRANSFER PUMP STATION

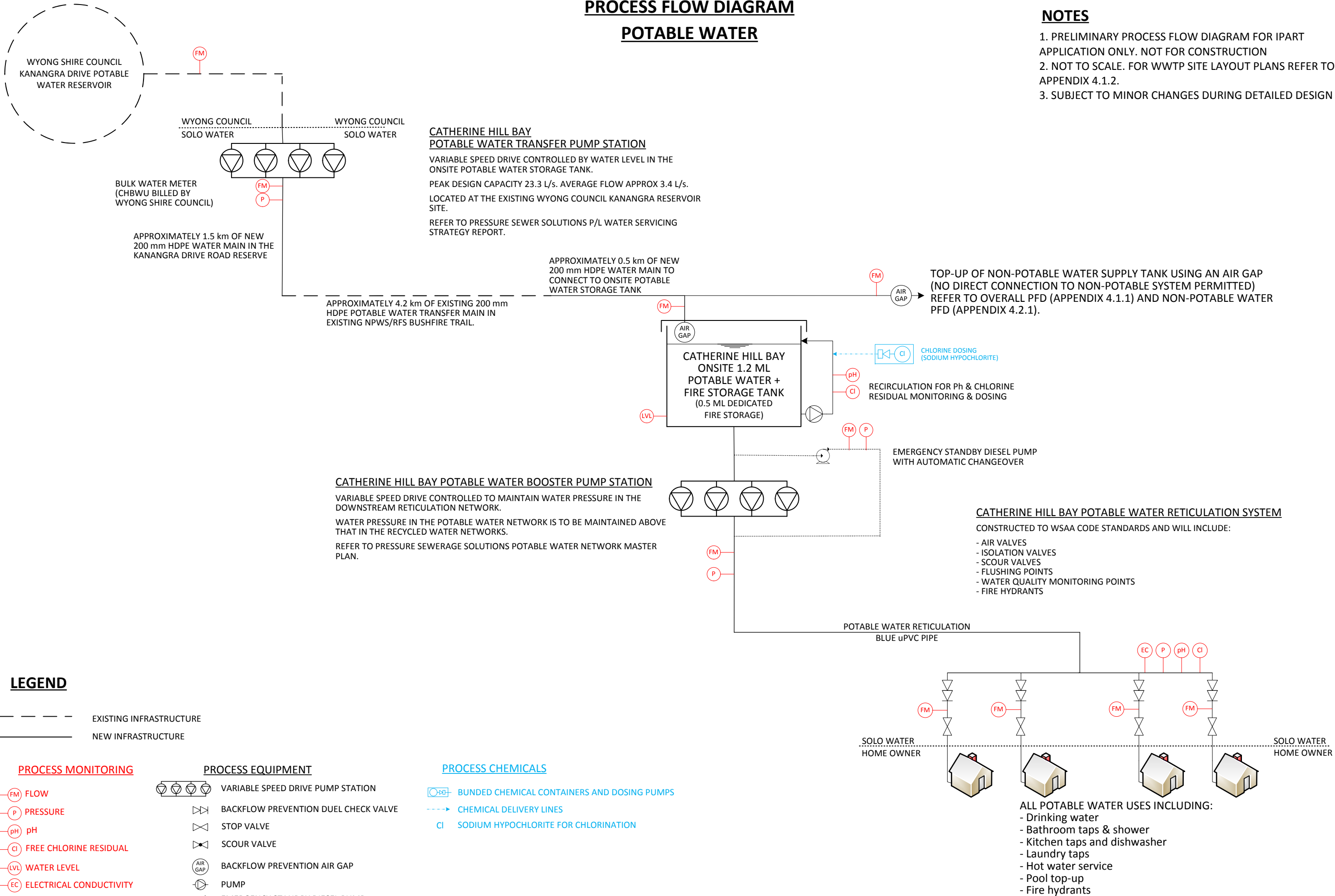
- LOCATED AT THE EXISTING WYONG COUNCIL KANANGRA DR RESERVOIR SITE
- VARIABLE SPEED DRIVE BOOSTER PUMP SET WITH BUILT IN STANDBY CAPACITY
- PEAK DESIGN FLOW 23.3 L/s

|  |   |                                     |  |   |   |                                    |
|--|---|-------------------------------------|--|---|---|------------------------------------|
| CLIENT:<br>ROSE PROPERTY GROUP PTY LTD | PROJECT:<br>CATHERINE HILL BAY RESIDENTIAL SUBDIVISION<br>MONTEFIORE STREET, CATHERINE HILL BAY | PHASE:<br>IPART LICENSE APPLICATION | PRIVATE WATER UTILITY:<br>CATHERINE HILL BAY WATER UTILITY PTY LTD | DRAWING TITLE:<br>PROCESS FLOW DIAGRAM<br>OVERALL | DRAWING NUMBER:<br>H10052_P01C<br>DATE:<br>05/07/2013 | IPART REFERENCE:<br>APPENDIX 4.1.1 |
|--|---|-------------------------------------|--|---|---|------------------------------------|

PROCESS FLOW DIAGRAM  
POTABLE WATER

NOTES

1. PRELIMINARY PROCESS FLOW DIAGRAM FOR IPART APPLICATION ONLY. NOT FOR CONSTRUCTION
2. NOT TO SCALE. FOR WWTP SITE LAYOUT PLANS REFER TO APPENDIX 4.1.2.
3. SUBJECT TO MINOR CHANGES DURING DETAILED DESIGN



LEGEND

--- EXISTING INFRASTRUCTURE

— NEW INFRASTRUCTURE

PROCESS MONITORING

- FM FLOW
- P PRESSURE
- pH pH
- Cl FREE CHLORINE RESIDUAL
- LVL WATER LEVEL
- EC ELECTRICAL CONDUCTIVITY

PROCESS EQUIPMENT

- VARIABLE SPEED DRIVE PUMP STATION
- BACKFLOW PREVENTION DUEL CHECK VALVE
- STOP VALVE
- SCOUR VALVE
- BACKFLOW PREVENTION AIR GAP
- PUMP
- EMERGENCY STANDBY DIESEL PUMP WITH AUTOMATIC CHANGEOVER

PROCESS CHEMICALS

- BUNDED CHEMICAL CONTAINERS AND DOSING PUMPS
- CHEMICAL DELIVERY LINES
- SODIUM HYPOCHLORITE FOR CHLORINATION

|                             |  |                           |  |                                    |                 |                  |
|-----------------------------|--|---------------------------|--|------------------------------------|-----------------|------------------|
| CLIENT:                     | PROJECT:   | PHASE:                    | PRIVATE WATER UTILITY:                   | DRAWING TITLE:                     | DRAWING NUMBER: | IPART REFERENCE: |
| ROSE PROPERTY GROUP PTY LTD | CATHERINE HILL BAY RESIDENTIAL SUBDIVISION MONTEFIORE STREET, CATHERINE HILL BAY | IPART LICENSE APPLICATION | CATHERINE HILL BAY WATER UTILITY PTY LTD | PROCESS FLOW DIAGRAM POTABLE WATER | H10052_P02C     | APPENDIX 4.1.1   |
|                             |  |                           |  |                                    | DATE:           |                  |
|                             |  |                           |  |                                    | 05/07/2013      |                  |

## Description of proposed drinking water infrastructure

| Drinking Water Infrastructure         | Description   |
|---------------------------------------|---|
| Bulk Water Source Connection Point    | <p>The bulk water source for the CHBWU scheme is verified potable water sourced from Wyong Shire Council under a bulk supply agreement.</p> <p>A bulk water connection point will be provided by Wyong Council at the existing Kanangra Drive Reservoir site for connection of the CHBWU bulk water transfer pump station.</p> <p>Wyong Shire Council are responsible for all aspects of asset management and drinking water quality management upstream of this connection point.</p> <p>Communication protocols will be put in place with the Wyong Shire Council to ensure any water quality issues are communicated to CHBWU in a timely manner.</p>  |
| Potable Water Transfer Pump Station   | <p>The potable water transfer pump station will be located at the Wyong Shire Council Kanangra Drive Reservoir site.</p> <p>The transfer pump station will use variable speed drive pumps and controllers to maintain water levels in the Catherine Hill Bay onsite potable water storage.</p> <p>The transfer pump station will have a peak design capacity of 23.3 L/s based on standard potable water design flows. Average flow through the station will be in the order of 5 L/s (refer to PS Solutions report: "Water Supply Summary Servicing Strategy Catherine Hill Bay" also contained in this Appendix 4.1.1)</p>  |
| Potable Water Transfer Pipeline       | <p>There is an existing 200 mm HDPE drinking water transfer main that runs approximately 6 km from the Kanangra Drive reservoir to the Catherine Hill Bay site that had previously been used to supply drinking water to the former coal loading facility at the site.</p> <p>The existing main runs along a National Parks and Wildlife Service (NPWS) category 1 essential fire trail corridor and terminates at the proposed subdivision site. A water main maintenance and access easement is being sort along the length of this water main corridor with the NPWS/RFS. A new connection from Kanangra Drive Reservoir running along Kanangra Drive Road Reserve will be connected into the existing main as shown on the plan.</p> <p>A plan showing the bulk water transfer system is provided in Appendix 4.1.3.</p> <p>The existing water main will be extended from its current termination point within the site and connected to the onsite potable water storage tank located on Montefiore Street WWTP site.</p> <p>Condition assessment, pressure testing, detailed survey, cleaning and disinfection of this main will be undertaken during detailed design and any faulty sections of pipe replaced.</p> |
| Onsite Potable Water Storage Tank     | <p>A 1.2 ML potable water storage tank will be provided on site.</p> <p>The 1.2 ML tank provides approximately 1-day storage at peak day potable water demands and includes 0.5ML dedicate emergency fire storage and backup of the non-potable water system.</p> <p>The tank will be a steel panel tank with internal polymer lining suitable for contact with potable water.</p>  |
| Chlorine Monitoring and Dosing System | <p>The potable water storage tank will include a recirculation loop with continuous online monitoring and dosing system for maintenance of chlorine residual.</p> <p>The chlorine monitoring and dosing system will be controlled through the direct digital control system. Alarms will be activated for high and low free chlorine concentrations.</p>  |

| Drinking Water Infrastructure                          | Description   |
|--|---|
| Potable Water Supply Pressure Booster Pump Station     | <p>Customer water pressure and flow in the Catherine Hill Bay Water Utility scheme will be controlled by a pressure booster VSD pump station set.</p> <p>The pump set will use multiple pumps controlled by variable speed drive to maintain the pressure set point in the downstream reticulation system across a wide range of flows.</p> <p>Pressure set point of the potable water pumps will be maintained a minimum of 50 kPa above that in the recycled water supply networks.</p>   |
| Potable Water Reticulation Network                     | <p>The potable water reticulation network will be designed and constructed in accordance with Water Services Association Australia (WSAA) standards.</p> <p>The reticulation system will be constructed in line with staging of the residential development.</p> <p>The potable water reticulation mains will use different pipe material and colour to that in the recycled water network to reduce the potential for cross connection. The potable water mains will use blue PVC pipe and the non-potable water network will use lilac striped HDPE pipe.</p>   |
| Customer connection points                             | <p>Customer connection points will be provided to each allotment.</p> <p>Each customer connection point will include a dual check valve for backflow prevention, isolation valving and a smart water meter.</p>   |
| Potable water uses                                     | <p>The drinking water system will be used to supply all potable water demands within the Catherine Hill Bay Water Utility Scheme area.</p> <p>Approved potable water uses include:</p> <ul style="list-style-type: none"> <li>• Drinking;</li> <li>• All bathroom taps including the shower, bath tub, basins and vanity units;</li> <li>• All kitchen taps including the kitchen sink and dishwasher;</li> <li>• The hot water service supplied to all areas of the house;</li> <li>• The laundry sink;</li> <li>• Pool and spa top-up;</li> <li>• Fire hydrants and fire fighting;</li> <li>• All other potable uses not specifically mentioned above.</li> </ul> |
| Integrated online monitoring, control and alarm system | <p>Continuous online monitoring, control and alarms for the potable water infrastructure is centrally managed using the direct digital control system. The control system allows the infrastructure to operate unattended and automatically reports issues requiring operator attention.</p> <p>Online monitoring probes are manually calibrated and checked by operations staff on a routine basis to ensure all probes are recording accurate readings. All critical alarm systems have a battery backup to ensure faults are reported during power outages. The control system is designed to automatically recover following power outage.</p>                  |





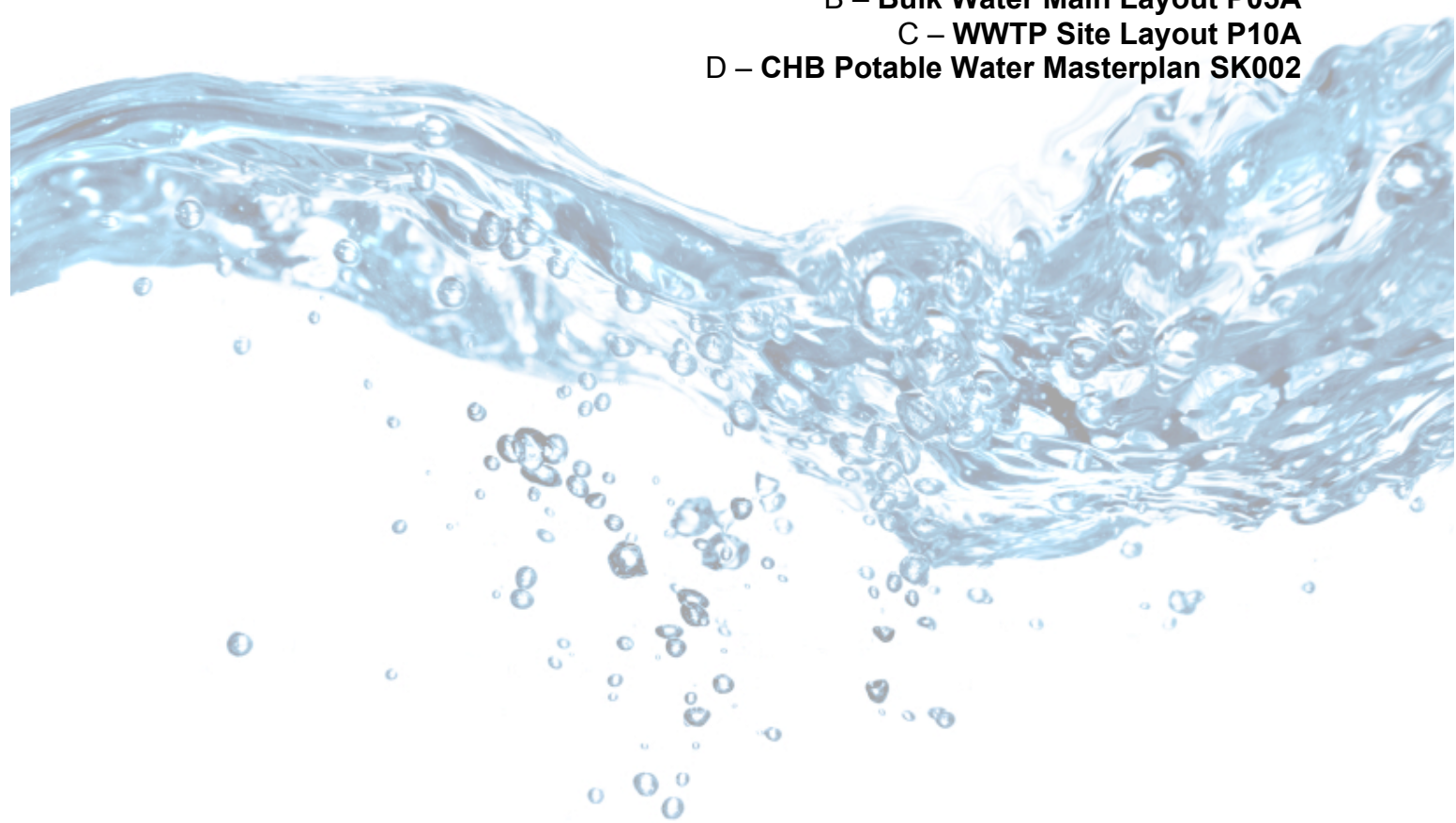
### Appendix 4.1.3 **Water Infrastructure**

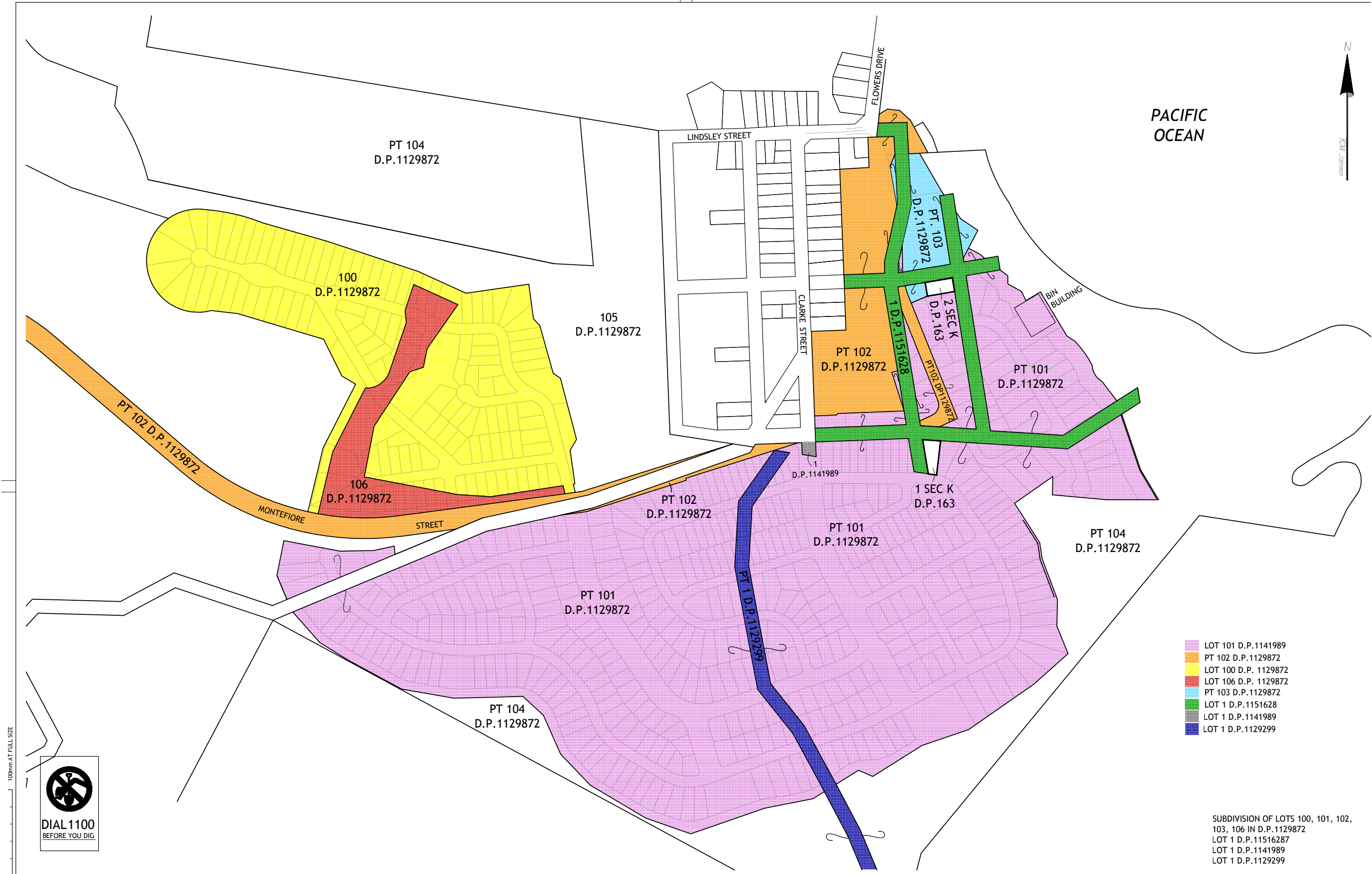
**A – ADW Johnson Plan of Subdivision**

**B – Bulk Water Main Layout P05A**

**C – WWTP Site Layout P10A**

**D – CHB Potable Water Masterplan SK002**





PACIFIC OCEAN

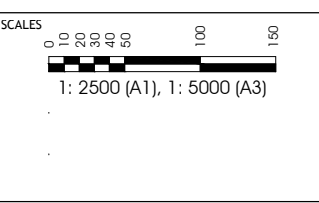
- LOT 101 D.P.1141989
- PT 102 D.P.1129872
- LOT 100 D.P. 1129872
- LOT 106 D.P. 1129872
- PT 103 D.P.1129872
- LOT 1 D.P.1151628
- LOT 1 D.P.1141989
- LOT 1 D.P.1129299

SUBDIVISION OF LOTS 100, 101, 102, 103, 106 IN D.P.1129872  
LOT 1 D.P.11516287  
LOT 1 D.P.1141989  
LOT 1 D.P.1129299



100mm AT FULL SIZE

| REV. | DATE     | AMENDMENT                       | DRAWN  | CHECK | DESIGN | VERIFY |
|------|----------|---------------------------------|--------|-------|--------|--------|
| A    | OCT 2010 | DRAFT ISSUE FOR LANDSCAPING     | AW/MJH | SD    | IB     | SD     |
| B    | NOV 2010 | DRAFT ISSUE FOR CLIENT APPROVAL | AW     | SD    | IB     | SD     |
| C    | NOV 2010 | ISSUE FOR SUBMISSION            | AW     | SD    | IB     | SD     |
|      |          |                                 |        |       |        |        |
|      |          |                                 |        |       |        |        |
|      |          |                                 |        |       |        |        |



Hunter Region  
7/335 Hillsborough Road  
Warners Bay N.S.W. 2282

Phone: (02) 4978 5100  
Fax: (02) 4978 5199  
email:hunter@adwjohnson.com.au  
www.adwjohnson.com.au

|                           |
|---------------------------|
| CLIENT                    |
| COASTAL HAMLETS PTY. LTD. |

|  |        |
|--|--------|
| PROPERTY DESCRIPTION                                   |        |
| PROPOSED RESIDENTIAL SUBDIVISION<br>CATHERINE HILL BAY |        |
| SURVEYED   | DATUM  |
| AAM/ADW.JOHNSON  | A.H.D. |

|   |            |        |      |  |
|---|------------|--------|------|--|
| PLAN TITLE                              |            |        |      |  |
| EXISTING BOUNDARIES WITH FUTURE OVERLAY |            |        |      |  |
| PROJECT No.                             | DISCIPLINE | NUMBER | REV. |  |
| 11688                                   | PENG       | 0002   | C    |  |







Save: 04.04.2013, By: kgao  
J:\700-Projects\800-Preliminary-Tender\Catherine Hill Bay\Drawings\Street Mains\Catherine Hill Bay\_SK002 Potable Water Masterplan.dwg



Date: 04/04/2013

Drawing No: SK002

Rev: A

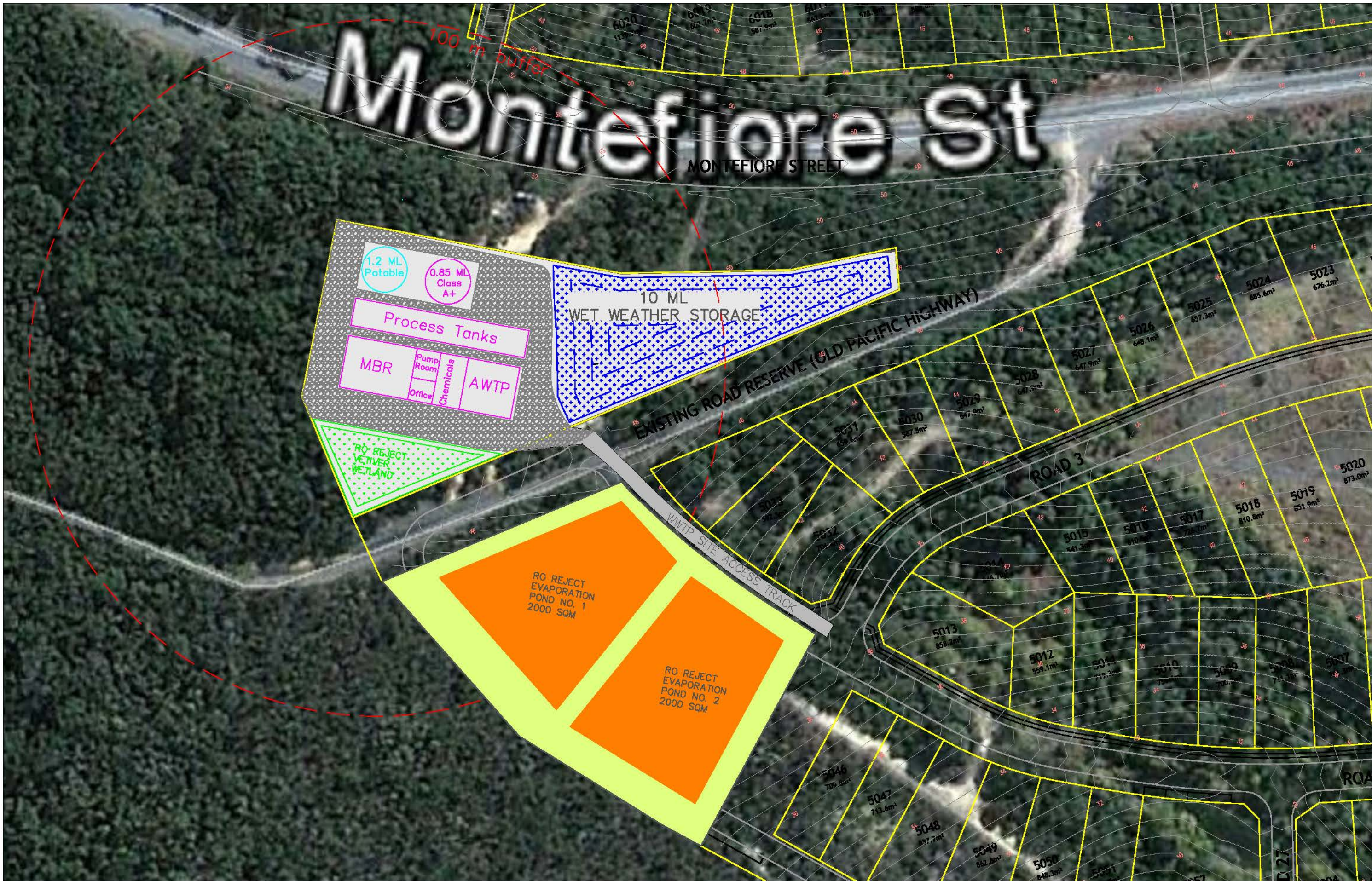
Scale: 0 20 40 60 80 100m  
SCALE 1:2000 AT A1

## CATHERINE HILL BAY POTABLE WATER SCHEME MASTER PLAN

**Solo**  
Water

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F: +61 2 9584 1477





|       |         |  |
|-------|---------|--|
| C     | 10/7/13 | ADJUSTED RO REJECT POND & ADDED WWTP SITE ACCESS TRACK |
| B     | 15/8/13 | ADJUSTED RO REJECT POND                                |
| A     | 30/3/13 | WWTP LAYOUT FOR IPART APPLICATION                      |
| ISSUE | DATE    | ISSUE DETAILS  |

**harvest**  
water management consultants pty ltd

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Burpengary, Qld 4505  
0488 427 878  
office@harvestwmc.com.au  
www.harvestwmc.com.au  
ABN: 54140 844 047

CLIENT  
**SOLO WATER – CATHERINE HILL BAY WATER UTILITY**

PROJECT  
**CATHERINE HILL BAY  
RESIDENTIAL SUBDIVISION  
ROSE GROUP**



LOCATION  
**MONTEFIORE ROAD  
CATHERINE HILL BAY  
NSW**

DESIGN  
BY  
BRADLEY IRWIN NPES (10837) OPEN NPES  
Environmental Engineer

DATE  
2013

PROJECT TITLE  
**WASTEWATER TREATMENT PLANT SITE LAYOUT**

SCALE  
1:1000 at A3

DATE TYPE  
CONCEPT ONLY NOT  
FOR CONSTRUCTION

PROJECT NO.  
**H10052**

DWG NO.  
**P10**

SCALE  
**C**