



LOWER HUNTER LAND DEVELOPMENT

Concept Plan Infrastructure Report

Catherine Hill Bay (Middle Camp)

Cardno (NSW) Pty Ltd

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LOWER HUNTER LAND DEVELOPMENT CONCEPT PLAN INFRASTRUCTURE REPORT - CATHERINE HILL BAY (MIDDLE CAMP)

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1. INTRODUCTION

This engineering report has been prepared to supplement the Concept Plan Application to the Department of Planning for the Coal & Allied Industries Limited (Coal & Allied) proposed Catherine Hill Bay (Middle Camp) development. This report addresses the existing and proposed infrastructure required to service the development and the strategic plans governing and guiding development. This report should be read in conjunction with the accompanying Concept Plan Application prepared by Urbis and the Drawings appended to this report.

The following infrastructure elements have been addressed within this report:

- Sewer
- Water
- Electricity
- Gas and
- Telecommunications.

In relation to the utility infrastructure addressed above, the report addresses the following key issues:

- Existing infrastructure
- Proposed infrastructure
- Consultation undertaken
- Contributions payable (water and sewer only)
- Infrastructure staging

Please note that traffic and transport, stormwater and hydrology and social infrastructure have been covered in separate reports by other consultants.

2. STRATEGIC PLANS

The over-arching strategic document for Catherine Hill Bay (Middle Camp) is the Lower Hunter Regional Strategy (LHRS). The LHRS sets out the objectives for the region and the key constraints and drivers to development. Appended to the report is a list of key infrastructure which is planned to support the anticipated development of the region.

Hunter Water is currently responsible for water and sewer infrastructure in the area. Until recently this area came within the responsibility of Gosford/Wyong Councils Water Authority. Hunter Water's 'Statement of Corporate Intent' sets out the Corporations objectives, strategic directions and capital works program.

Energy Australia lists upcoming major capital works projects on its website (www.energyaustralia.com.au). Detailed information on recent and upcoming capital works projects can be found in report 'Investing For Future Generations – Our Five Year Network Plan'. The current revision of this report is for the period 2009 to 2014.

No specific strategic plans were identified for Telstra or Jemena (formerly Alinta) in relation to gas and telecommunications infrastructure.

3. SEWER

3.1 Existing and Proposed Infrastructure

Hunter Water has no records of existing sewer infrastructure at Catherine Hill Bay (Middle Camp). The residents have advised that each lot is currently serviced either by septic tanks or pump out facilities.

A series of rising mains, gravity mains and sewer pump stations will need to be constructed to connect the proposed development to the Swansea South Pump Station located near the Wallarah interchange. The Swansea South Pump Station connects to the Belmont Sewer Treatment Plant (STP) via the Swansea 3A Pump Station.

Hunter Water has advised that upgrade works to the Swansea South Pump Station are developer funded works and are currently scheduled for completion in 2011. The upgrade to the Swansea 3A Pump Station are Hunter Water funded upgrade works currently scheduled in the 2014 forward capital program. Hunter Water has advised that the upgrade works will be brought forward if required to ensure that the proposed development is not inhibited. The Belmont STP has sufficient capacity to service the new development.

The sewer infrastructure will be designed to service the proposed Rose Group residential zoned land at Catherine Hill Bay, the Stockland development at Wallarah Peninsula as well as the proposed Coal & Allied development. Coal & Allied will negotiate with Rose Group and Stockland in relation to cost-sharing arrangements.

A Wastewater Servicing Strategy to service the Coal & Allied, Rose Group and Stockland developments has been prepared by ADW Johnson (Wastewater Servicing Strategy – Catherine Hill Bay, Wallarah Peninsula, Middle Camp and Nords Wharf, July 2010, Ref: 211688(51), Rev C). The strategy has been approved by Hunter Water.

The Wastewater Servicing Strategy outlines the proposed upgrades and augmentation to the existing network that will be required to service the proposed developments. A concept plan from the approved ADW Johnson Wastewater Servicing Strategy is included in Appendix B.

3.2 Consultation

An initial meeting was held with Hunter Water's Senior Account Executive Major Development Malcolm Withers on 16 January 2007.

A 'Preliminary Servicing Advice' application for the development site was lodged on 4 July 2007. Subsequently a meeting was held with Hunter Water's Brett Lewis and Malcolm Withers on 2 August 2007. Jacinta Holmick (Cardno) and Lisle Butler (Cardno) attended this meeting on behalf of Coal & Allied.

'Indicative requirements for proposed development' were received from Hunter Water, dated 15 August 2007. The information contained within this document has since been superseded by the ADW Johnson Wastewater Servicing Strategy as noted above.

A follow up meeting was held with Hunter Water's Malcolm Withers on 15 October 2009. Further advice as to timing of Hunter Water funded upgrades was received in March 2010. A copy of this advice is included in Appendix D.

3.3 Contributions

As of 17 December 2008 Developer Services Charges (DSPs) are no longer levied by Hunter Water for sewer and potable water. It should be noted that this may not be the case in the future.

3.4 Staging

The sewer pump stations, rising mains and trunk gravity mains would be provided for the first stage of development. Subsequent stages would be serviced by connections to these primary mains.

Subject to the development program for the Rose Group residential zoned land, the sewer infrastructure provided as part of the initial stages may need to be staged to meet capital and technical constraints.

4. WATER

4.1 Existing and Proposed Infrastructure

There is no existing Hunter Water infrastructure in Catherine Hill Bay (Middle Camp). Hunter Water has advised that a new reservoir at North Wallarah and a trunk water main from North Wallarah to Catherine Hill Bay will be required. A second reservoir may also need to be built in Catherine Hill Bay for security of supply. The main and reservoirs will be sized to cater for the Coal & Allied proposed development, the Rose Group residential zoned land and Stockland developments. Coal & Allied will negotiate with Rose Group and Stockland in relation to cost-sharing arrangements.

A Water Servicing Strategy to service the Coal & Allied, Rose Group and Stockland developments has been prepared by ADW Johnson (Water Servicing Strategy – Catherine Hill Bay, Wallarah Peninsula, Middle Camp and Nords Wharf, June 2009, Ref: 211688(52), Rev B). The strategy has been approved by Hunter Water.

The Water Servicing Strategy outlines the proposed upgrades and augmentation to the existing network that will be required to service the proposed developments. A concept plan from the approved ADW Johnson Water Servicing Strategy is included in Appendix C.

Based upon the Water Servicing Strategy, detailed design plans will be prepared and submitted to Hunter Water for approval. The RTA and Lake Macquarie Council will be consulted in relation to the construction of the water main and pressure reducing valve within the local and state road network. The location of both reservoirs is subject to negotiation with the relevant land owners.

4.2 Consultation

As above, refer section 3.2.

4.3 Contributions

As above, refer section 3.3.

4.4 Staging

The lead-in water main, reservoir(s) and pressure reduction valve would be staged to provide for the first stage of development. Subsequent stages would be serviced by connections to these primary mains.

5. ELECTRICITY

5.1 Existing and Proposed Infrastructure

Existing zone substations at Swansea and Lake Munmorah service the existing residents at Catherine Hill Bay. Energy Australia has indicated that these zone substations will not have the capacity to service the new development area.

Energy Australia is planning for a new zone substation in the Catherine Hill Bay area to be built in 2009-2012. Coal & Allied may be required to provide 11kv lead-in works from the new zone substation to the site. The zone substation will augment existing capacity and provide capacity for the proposed developments by Rose Group and Coal & Allied.

Energy Australia is responsible for the construction of the zone substation. They have advised that the zone substation will be operational to suit the development programme.

5.2 Consultation

Initial telephone conversations were held with Energy Australia's Craig Perry on 13 February 2007.

On 3 July 2007 a letter was issued to Energy Australia providing information on the development yield and timing and requesting a meeting. This meeting was held on 26 July 2007 in Energy Australia's Wallsend office. The attendees were Craig Perry (Energy Australia), Greg Skinner (Energy Australia), Frank van den Brink (Catylis), Jacinta Holmick (Cardno), Paul Malanchuk (Electrical Projects Australia) and Keith Dedden (Coal & Allied).

A follow up was conducted by Cardno to confirm whether the 2007 advice from Energy Australia regarding electrical servicing for the Middle Camp site was still current and valid. An email and telephone exchange was conducted between Energy Australia and Cardno on 21 September 2010. Following these discussions Energy Australia committed to reviewing their previous advice however at the time of writing a response had not been received.

5.3 Staging

The timing of connection to the zone substation will depend on Energy Australia's delivery of the zone substation. Trenching and cabling will be provided in each new road reserve as it is constructed. However a temporary connection may be maintained to the existing system if the first stage of development precedes the commissioning of the zone substation.

6. GAS

6.1 Existing and Proposed Infrastructure

Jemena (formerly Alinta) has advised that the closest gas main is at Swansea approximately 8kms north of the site. The existing gas main services Murray's Beach and Pinney's Beach. Catherine Hill Bay is not currently serviced by gas. A map showing the location of existing gas infrastructure is contained in Appendix A.

Jemena has undertaken a preliminary economic assessment and identified that natural gas reticulation is not economically feasible without significant developer contributions. Therefore it is not proposed to provide natural gas reticulation to the proposed development.

6.2 Consultation

A telephone conversation with Jemena's Greg Knight was held on 15th January 2007. Subsequently a meeting was held in Cardno's office with Greg Knight and Jacinta Holmick (Cardno) on 31 July 2007.

7. TELECOMMUNICATIONS

7.1 Existing and Proposed Infrastructure

Consultation with Telstra was undertaken with in 2007 (refer Section 7.2 below). At this time Telstra advised that Catherine Hill Bay (Middle Camp) development site would be serviced by extending existing cabling in Flowers Drive and that Telstra cabling would be provided in a shared trench arrangement along with electrical cabling.

There is local LAN line traversing the site (exact location unknown) which would need to be relocated by Coal & Allied during the construction works.

Since the 2007 consultation with Telstra, the National Broadband Network (NBN) has been announced by the Federal Government.

The NBN is committed to the provision of fibre optic telecommunications to 90% of existing Australian dwellings over the next 8 years.

It is understood that the installation of this network is provided at no cost to existing residential areas however in new developments the telecommunications pit and pipe network is developer funded.

Connection to the existing telecommunication network is understood to be funded by the NBN however timing for connection of the Middle Camp site is currently unconfirmed.

7.2 Consultation

A number of telephone conversations were held with Telstra in January 2007 and a meeting held in Telstra's Newcastle office on 19th January 2007. Five staff from Telstra (including Chris Ross) and three staff and sub-consultants of Cardno (including Jacinta Holmick) were in attendance.

7.3 Staging

Telecommunications cabling will be provided in conjunction with the electrical cabling, with servicing extending from the existing cabling in Flowers Drive. Each stage of the works will be serviced in turn, with minor lead-in works from Flowers Drive.

8. CONCLUSIONS

Extensive lead-in works are required to provide water and sewer infrastructure to Catherine Hill Bay (Middle Camp). There is a Hunter Water approved Water Servicing Strategy and Wastewater Servicing Strategy for the area to service the proposed developments by Coal & Allied, Rose Group and Stockland Developments in the area.

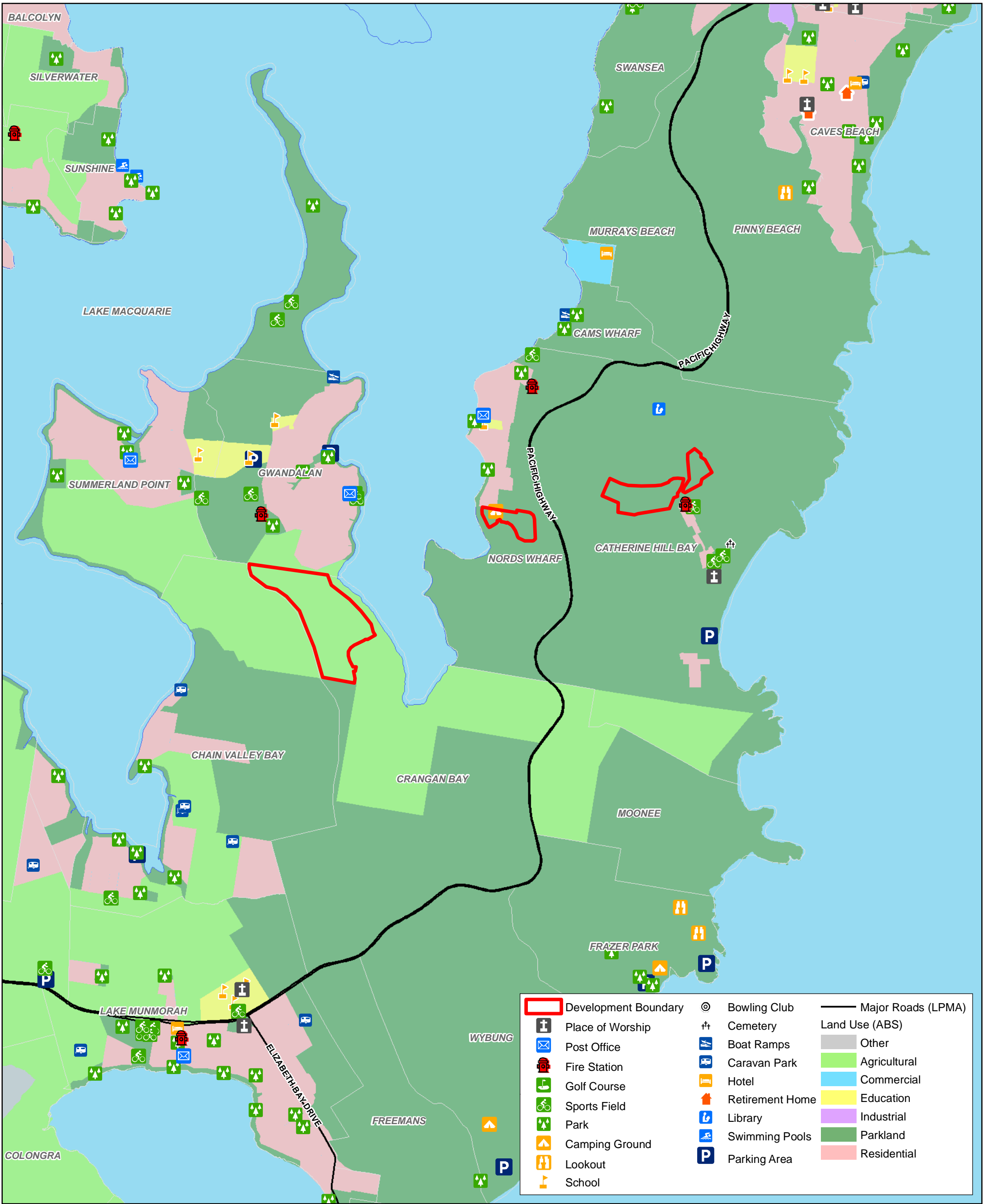
Energy Australia has advised that the Catherine Hill Bay zone substation will be provided to suit the development timetable and will augment existing capacity, in addition to providing capacity for the proposed Rose Group and Coal & Allied developments. Lead-in electrical infrastructure from the proposed zone substation may be delivered in conjunction with Rose Group, depending on the location of the zone substation. Energy Australia is in the process of confirming their previous advice.

Gas mains are not feasible for this area given the long distance to existing supplies.

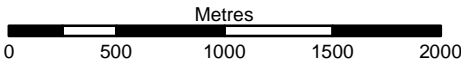
Telecommunications to the site are likely to be provided under the Nation Broadband Network (NBN) however timing for connection to the network has not yet been confirmed.

APPENDIX A

EXISTING INFRASTRUCTURE MAP



Scale 1:35,000 (at A3)



Existing Community Services Plan

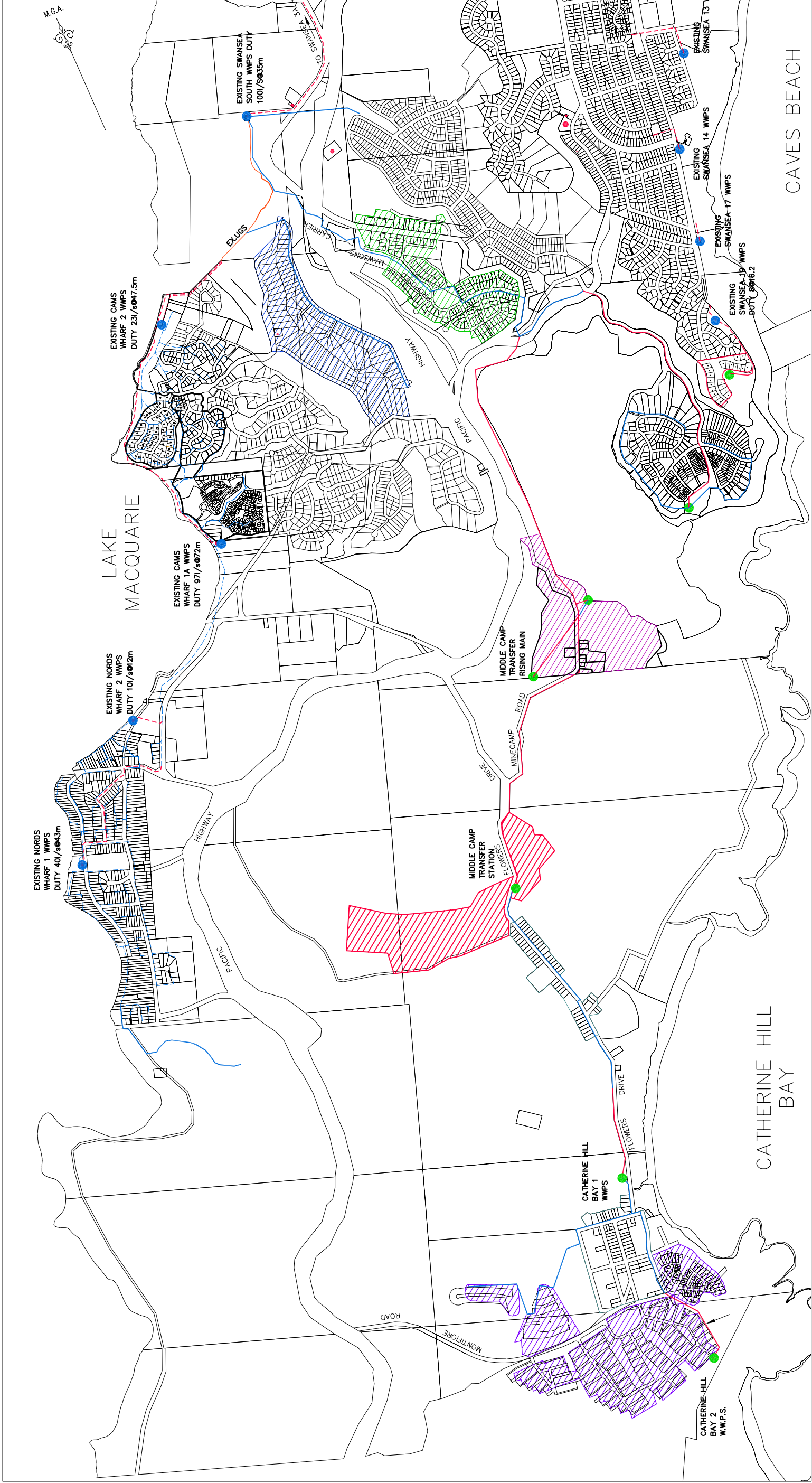
LOWER HUNTER LAND DEVELOPMENT



Map Produced by Cardno Wollongong
Date: 13 April 2010
Coordinate System: Zone 56 MGA/GDA 94
GIS MAP REF: 210002_03_18012_Services.mxd 01

APPENDIX B

CONCEPT PLAN FROM APPROVED SEWER SERVICING STRATEGY



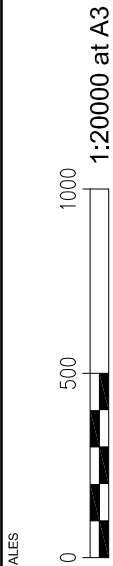
- PROPOSED GRAVITY MAIN
- PROPOSED RISING MAIN
- EXISTING RISING MAIN
- EXISTING GRAVITY MAINS
- PROPOSED WASTEWATER PUMPING STATION (WWPS)

- PROPOSED ROSE GROUP DEVELOPMENT – CATHERINE HILL BAY
- PROPOSED COAL AND ALLIED DEVELOPMENT – MIDDLE CAMP

REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY	SCALES
A	24/08/2008	Issued for Review	W.M.	N.D.	N.D.	H.W.	

ALL DIMENSIONS ARE IN METRES. DO NOT SCALE.

Plotted By: hugtw Plot Date: 26/08/09 – 15:49 Cad File: S:\211688\211688(51)\Drawings\211688(51)S04.dwg



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CLIENT
ROSE PROPERTY GROUP,
STOCKLAND &
COAL & ALLIED

PROPERTY DESCRIPTION
WALLARAH PENINSULAR, CATHERINE
HILL BAY AND NORDS WHARF
WASTEWATER SERVICING STRATEGY

PROJECT WASTEWATER SERVICING STRATEGY			
PLAN TITLE FIGURE 4:OVERALL CATHERINE HILL BAY WASTEWATER TRANSPORT			
PROJECT No.	DISCIPLINE	NUMBER	REV.
211688(51)	- REP -	S04	A

APPENDIX C

CONCEPT PLAN FROM APPROVED WATER SERVICING STRATEGY

211688(52)R09[B]

100mm AT FULL SIZE

PROPOSED CATHERINE HILL BAY RESERVOIR
BASE RL88m
TWL RL95m

PROPOSED CATHERINE HILL BAY DEMAND AREA

EXISTING CATHERINE HILL BAY DEMAND AREA

PROPOSED NORDS WHARF DEMAND AREA

PROPOSED MIDDLE CAMP DEMAND AREA

EXISTING MIDDLE CAMP DEMAND AREA

FLOWERS DRIVE

PACIFIC OCEAN

DN150 DUPLICATION

CAMS WHARF ROAD

MINE CAMP ROAD

PROPOSED RADAR HILL DEMAND AREA

CATHERINE HILL BAY REMOTE AIV

PROPOSED LAKESIDE DEMAND AREA

PROPOSED LAKESIDE DEMAND AREA

PROPOSED WALLARAH RESERVOIR
BASE RL98.5m
TWL RL108.6m

EXISTING CAVES BEACH HIGH LEVEL RESERVOIR

SCENIC DRIVE

EXISTING CAVES BEACH HIGH LEVEL DEMAND AREA

PROPOSED MASONS RIDGE DEMAND AREA

EXISTING SWANSEA 1 RESERVOIR

EXISTING SWANSEA WPS

EXISTING SWANSEA 2 RESERVOIR

PROPOSED WALLARAH WPS
EXISTING CAVES BEACH WPS

LEGEND

- EXISTING RESERVOIR
- PROPOSED RESERVOIR
- 80m CONTOUR
- 50m CONTOUR
- 10m CONTOUR
- PROPOSED WPS
- EXISTING WPS

- PROPOSED Ø375 WATER MAIN
- PROPOSED Ø300 WATER MAIN
- PROPOSED Ø250 WATER MAIN
- PROPOSED Ø200 WATER MAIN
- PROPOSED Ø150 WATER MAIN

- PROPOSED ROSE GROUP DEVELOPMENT
- PROPOSED COAL AND ALLIED DEVELOPMENT
- PROPOSED RADAR HILL DEVELOPMENT (STOCKLAND)
- PROPOSED MAWSON'S DEVELOPMENT (STOCKLAND)
- PROPOSED LAKESIDE DEVELOPMENT (STOCKLAND)
- PROPOSED COASTAL DEVELOPMENT (STOCKLAND)

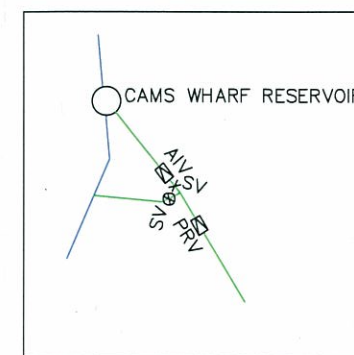


DIAGRAM A
BACKUP AIV ARRANGEMENT

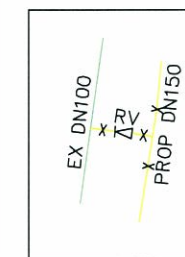


DIAGRAM B
BACKUP AIV ARRANGEMENT

REV.	DATE	AMENDMENT	DRAWN	CHECK	DESIGN	VERIFY	SCALES
A	26/01/2009	Issued for Review	W.M.	N.D.	N.D.	N.D.	
B	30/06/2009	HWC Comments	H.W.	N.D.	N.D.	H.W.	

ALL DIMENSIONS ARE IN METRES. DO NOT SCALE

Plotted By: hughw Plot Date: 13/07/09 - 16:35 Cad File: S:\211688\211688(52)\Drawings\211688(52)R09[B].dwg



1:20000 at A3



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CLIENT
ROSE PROPERTY GROUP
PTY LTD

PROPERTY DESCRIPTION
WALLARAH PENINSULAR AND
CATHERINE HILL BAY WATER
SERVICING STRATEGY

SURVEYED
ADWJ

DATUM
A.H.D.

PROJECT
WATER SERVICING STRATEGY

PLAN TITLE
FIGURE 09
PREFERRED WATER SYSTEM
OPERATION SCHEMATIC

PROJECT No. 211688(52) - REP - 09
DISCIPLINE
NUMBER
REV. B

APPENDIX D

HUNTER WATER ADVICE

Scott Brisbin (Sydney)

From: Withers Malcolm [malcolm.withers@hunterwater.com.au]
Sent: Friday, 5 March 2010 4:54 PM
To: Scott Brisbin (Sydney)
Cc: McClymont Tony
Subject: Hunter Water response to Lower Hunter Land Development request for information

Follow Up Flag: Follow up
Flag Status: Completed

Good afternoon Scott,

Please accept my sincere apologies for the delay in responding to your enquiry. The following response is provided regarding the Lower Hunter Land Development Sites of Minmi/Link Rd, Black Hill, Catherine Hill Bay and Nords Wharf.

Minmi / Link Rd

Previous advice indicated that there was spare capacity for less than 400 ET in the existing wastewater transportation system. The following information provides more detail to assist in the preparation of servicing strategy.

The proposed Stage 1 development will have potential for wastewater to drain to a number of connection points within Hunter Water's existing system.

A portion of Stage 1 may be able to drain (or a WWPS may be required) south west to existing infrastructure at access chamber H4218, shown on diagram below. This manhole drains into the Minmi No.1 WWPS catchment. There is 240ET spare capacity available at this station.

The far east section of Stage 1 will drain to the existing system (access chambers H1934 and H5218 as shown in the figure below). Preliminary information indicates that Manhole H1934 currently has capacity for a further 200 ET while manhole H5218 has capacity for 65ET. The majority of Stage 1 will need to drain to a new pump station that may need to cater for other adjacent development. The pump station will require the construction of a new rising main. A feasible option would be for the rising main to discharge into access chamber H1992, but other options may be identified in the strategy. The current capacity at this access chamber is between 500 and 550ET depending on the number of ET connecting at H1934. Note that there are numerous other identified areas for growth that may also use some of the spare capacity in the wastewater network. It is likely that further upgrade work (downstream sections which receive flows from H1992, H1934 and H5218) will be required to service all identified growth.



The water supply system for the development will require a watermain to be constructed along Minmi Road connecting to the existing infrastructure at both ends. A DN200 watermain will provide sufficient capacity for the additional 600ET proposed, however the strategy will need to assess whether this watermain should be larger to provide capacity for further growth. The eastern-most portion of the development will reach be at elevations as high as 90m AHD. The existing system only achieves 82m HGL and therefore cannot be serviced from the current water supply system. This will need to be addressed, if this part of the site is to be developed.

Black Hill

The interim servicing option would involve discharging to the existing wastewater infrastructure on the north side of John Renshaw Dr. This infrastructure drains to the Beresfield 21 WWPS. This station has a duty capacity of 38L/s and currently receives approximately 13L/s of PWWF. The interim option of utilising some of this capacity initially will be dependant on consideration of the impacts on capacity available for other growth in the Beresfield 21 WWPS catchment.

In regard to on-site treatment, Hunter Water is not involved with the approval of on-site treatment systems, this would happen through council or DECC. Hunter Water may be available to assist you with this approval process and there may also be opportunities for Hunter Water to be involved in the design, construction and operation of the on-site treatment facilities. Please contact me if you wish to discuss these opportunities further.

Middle Camp (Catherine Hill Bay) and Nords Wharf

Swansea 3A is proposed to be upgraded at Hunter Water's expense. The timing of this upgrade is nominally indicated as 2013/14 in the forward capital program, however the timing of works beyond 2012/13 are generally less certain as they are in the next Price Path which is subject to IPaRT approval. However, Hunter Water will have time to monitor the growth in the total catchment to ensure that the upgrade is delivered at the right to allow development in the catchment not to be inhibited.

If you have any questions, please do not hesitate to contact me.

Regards

Malcolm Withers | Senior Account Executive Major Development | Hunter Water Corporation
T 02 4979 9545 | F 02 4979 9111 | M 0423 526 360 | malcolm.withers@hunterwater.com.au

From: Scott Brisbin (Sydney) [mailto:Scott.Brisbin@cardno.com.au]

Sent: Wednesday, 18 November 2009 5:54 PM

To: Withers Malcolm

Subject: Lower Hunter Land Development



Cardno (NSW) Pty Ltd | ABN 95 001 145 035
Level 3, Cardno Building
910 Pacific Highway Gordon NSW 2072
Tel:02 9496 7700 Fax:02 9499 3902

Malcolm,

Thank you for meeting with Geoff Rock and myself a few weeks ago.

Further to our meeting, please find attached a letter requesting additional information on the water and wastewater to the developments. The original has been sent in today's post.

Please give me a call should you wish to discuss.

Regards,

Scott Brisbin
Design Engineer

Phone:02 9496 7700

Fax:02 9499 3902

Mobile:0413 437 367

Email:scott.brisbin@cardno.com.au

Web:www.cardno.com.au

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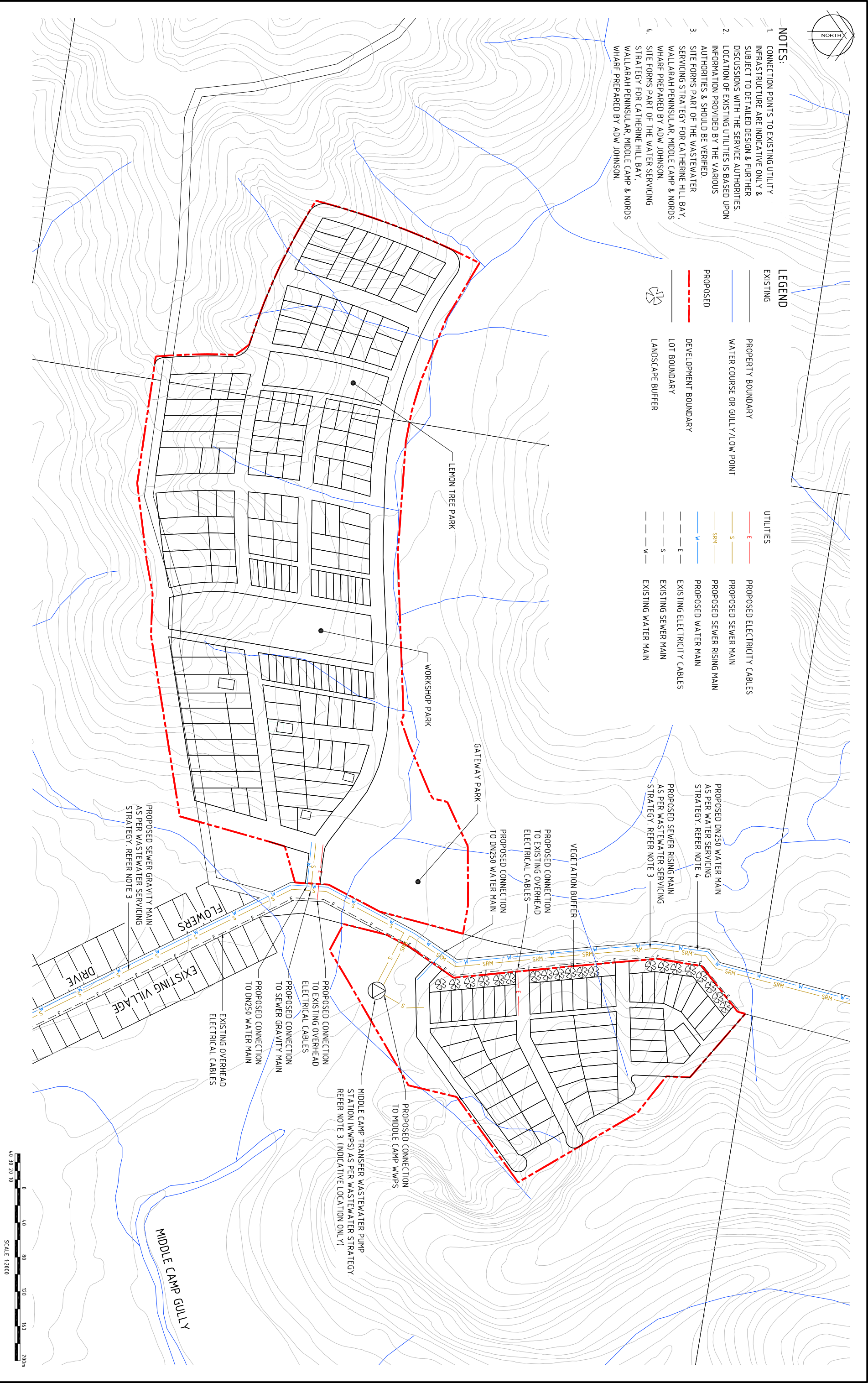
APPENDIX E

INDICATIVE LOT LAYOUT



APPENDIX F

INDICATIVE UTILITY LEAD-IN PLAN



Rev

Date

Description

Drawn

App'd

1	13/10/2010	FOR APPROVAL	ICM	SGB
2	13/10/2010	REVISED LOT LAYOUT	ICM	SGB

COAL & ALLIED

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Quality System
AS ISO 9001:2008
Certified to ISO 9001:2008

Drawn	Client	Status
CM	COAL & ALLIED	NOT FOR CONSTRUCTION
SGB	LOWER HUNTER LAND DEVELOPMENT	Date: 01/10/2010
SGB	SOUTHERN ESTATES	Drawn: AHD
SGB	CATHERINE HILL BAY (MIDDLE CAMP) ESTATE	Scale: AS SHOWN
SGB		Size: A1
SGB		Revision: 2

CONCEPT LEAD-IN UTILITIES PLAN

YN274002-003