



Proposed Cancer Care
Centre Site

South Coast Regional Cancer Care Network

Hydraulic and Fire Services Utility Supply Report (Water, Gas & Sewer)

SHOALHAVEN CANCER CENTRE

Prepared by:

**Acor Consultants Pty Limited
Level 1, 24 Falcon Street,
Crows Nest, NSW. 2065**

Tel: 02 94385098

Fax: 02 9438539

Date: 6th October 2011 (Revised Final)

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1.0 SHOALHAVEN CANCER FACILITY

1.1 Introduction

Acor Consultants Pty Ltd has been engaged to provide due diligence inspections and report on the Shoalhaven Hospital Cancer Care Facility.

The purpose of this document is to confirm the capacity and adequacy of the existing hospital infrastructure and or the existing Authority infrastructure to service the proposed development options for building hydraulic and fire protection services.

This report will consider:-

- Authority main availability and capacity
- Internal site infrastructure location, capacity and condition
- Augmentation of existing infrastructure to cater for new development

This report is based on:-

- Options masterplan prepared by Hassell Architects
- Review of existing available site services documentation
- Liaison with and applications to relevant site services authorities
- Liaison with design team consultants and project managers
- Review Health Infrastructure requirements

Communication and discussions with Authorities at the following times

1. Water mains information sent by Shoalhaven Council 27th of September 2010.
2. Acor letter dated 1st of October 2010 regarding water mains conflict.
3. Shoalhaven Council letter dated 4th of November 2010 regarding relocation of water main infrastructure during 2011 work capital budget.
4. Meeting with Shoalhaven Council on 8th of February 2011 regarding possible sewer connection within Nowra Park. Council suggest letter to be written for permission to excavate and survey on site.
5. Acor letter dated 8th of February seeking permission to survey existing sewer connection. No reply has been sent from council to date.

New Development at the South Western Corner of Lot 7300 DP 1132679

A proposed standalone development at the South Western end of the site at the intersection of Scenic Drive and North St.

This standalone option is recommended as disruption to existing hospital hydraulic and fire services infrastructure is negated and new services connections to existing Authority services will be required.

Interconnecting with the existing site fire hydrant system has not been considered a feasible option due to the issue of compliance with current codes and the costs involved with upgrading the site fire mains infrastructure and ancillary equipment.

Interconnection to the existing hospital hot water plant was not considered an option due to the energy losses through the recirculating system from the hot water plant to the proposed site as the length is excessive. A new natural gas powered plant is proposed for the proposed development.

Two existing 300NB DICL Shoalhaven Water Authority mains currently transgress North through Lot 7300 DP 1132679 which will have impact on the proposed works and are of significance in supply for the Bomaderry Paper Mill. Council have identified this issue and as part of the Shoalhaven Water Operations and Strategic Review Committee meeting held on the 12th of October (**Refer Appendix D**). It was recommended that a budget allocation of 250K be brought forward within the 2010/2011 works program to divert these services around this site due to the age of these mains and the risk factor of mains being damaged during construction. Council had advised that a the diversion works was completed late August 2011 by a Council accredited contractor.

Correspondence has been ongoing with Shoalhaven Water regarding a sewer side line extension along North St to service the proposed development. Full survey and design of the side line is

SHOALHAVEN CANCER CENTRE-HYDRAULIC & FIRE SERVICES UTILITY SERVICES REPORT

currently underway and the preferred route of this main is within the North St footpath on the North side of the road. There is no requirement for an easement to be created along the route of the proposed sewer as the main will not encroach on the existing Crown Land. Council will be performing potholing within the Crown Land adjacent to the existing amenities for survey to take place. A meeting at Council chambers had approved "In Principal" the North side of North St concept, which will be subject to Council providing CCTV footage of the sewer sideline across North St and Arborist advice for the route along North St. The sewer design is currently being prepared by Allen Price and Associates. **Refer Appendix E** for the preliminary concept design prepared in August by Allen Price & Associates.

1.2 Description of Authorities Services

Description	Sewer	Domestic Water	Natural Gas	Wet Fire Service
Site Infrastructure Capacity limits	Sufficient Capacity	Sufficient Capacity	Sufficient Capacity	Sufficient Capacity
Interface Issues	Nil	Nil	Nil	Nil
Authority Issues	Excavation and survey to be performed upon council approval.	Diversion of existing 300NB dual mains.	No issues expected	Diversion of existing 300NB dual mains.

1.3 Proposed Engineering Works

This includes the establishment of a new standalone Cancer Care Facility and subsequent patient accommodation at the intersection of North St and Scenic Drive.

Proposed Works Description

Item	Description
Proposed Services Connections	Domestic Cold Water System - A new 50NB connection to existing 300NB Shoalhaven Water main in North St. Sewer Drainage - A new 150NB Authority main is proposed along North St frontage to service the development. Natural Gas Service - A new 32NB 100Kpa Nylon 12 connection on the opposite side of North St. Fire Hydrant Services - Independent building fire hydrant system with new connection to Shoalhaven Water main in North St. NSW Fire Brigade booster assembly located adjacent to entry at North St frontage. Pumps to be included within scope to achieve flows and pressures to AS 2419.1 2005.

APPENDIX A-SHOALHAVEN WATER PRESSURE INQUIRY



City Administrative Centre
 Bridge Road, Nowra NSW Australia 2541
 Phone: (02) 4429 3111 • Fax: (02) 4422 1816 • DX 5323 Nowra
Address all correspondence to
 The General Manager, PO Box 42, Nowra NSW Australia 2541

COUNCIL REFERENCE: 2557E (D10/219185)
 CONTACT PERSON: Ljupco Lazarevski
 YOUR REF:

27 September 2010

Michael Alan Smith
 61 Fern St
 GERRINGONG NSW 2534

Dear Michael,

Water Pressure Inquiry - Shoalhaven Hospital, Scenic Drive, NOWRA

In response to your water main pressure inquiry on the above lot for fire fighting purposes, the following information is provided:-

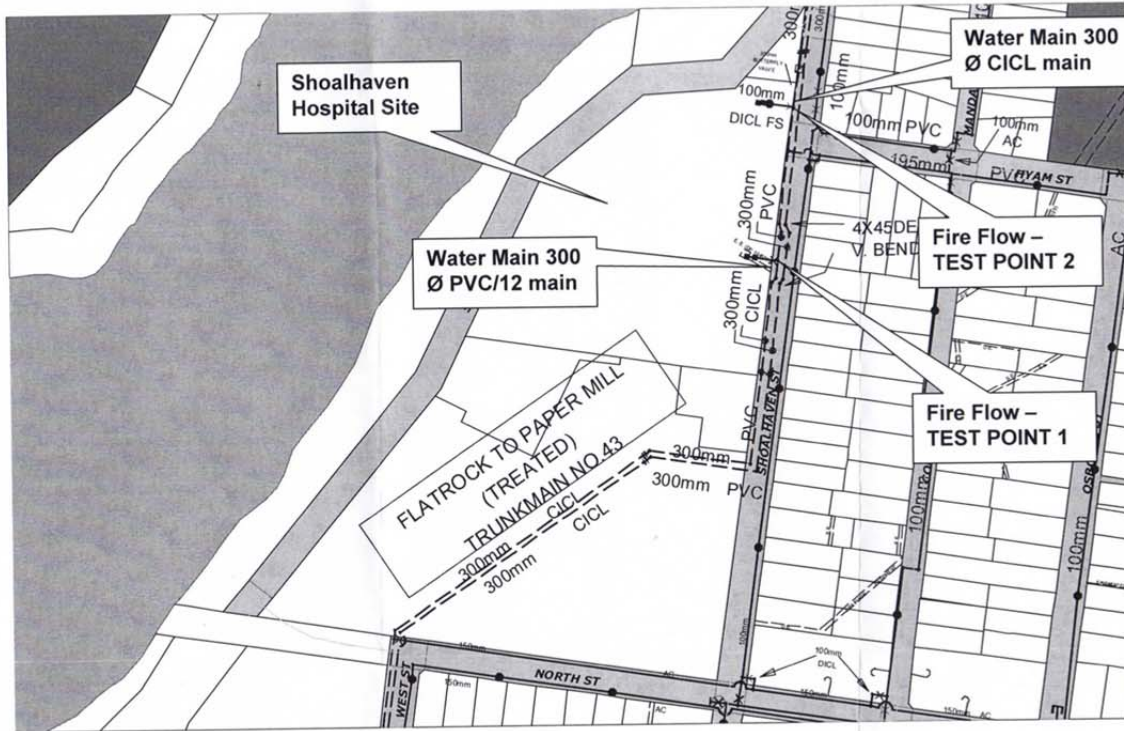
Fire Flow – TEST POINT 1

Watermain under normal conditions			Watermain under normal conditions (Hose Reel Flow)		Watermain pressure under normal conditions & provision of AS2419.1 (Hydrant Flows)				
Pressure (kPa)			Pressure (kPa)		Minimum Residual Pressure (kPa)				
Static		Minimum	0.50	1.0	5	10	20	30	40
Max	Min	Pressure	l/sec	l/sec	l/s	l/s	l/s	l/s	l/s
482	448	353	352	352	348	343	332	322	310
Minimum Pressure Based on			Watsys Hydraulic model: nll-ult-fire-amend-april2010.WDT						
Approximate Ground Level (AHD)			16m						
Watermain serving property (NS)			300 Ø PVC/12 main						

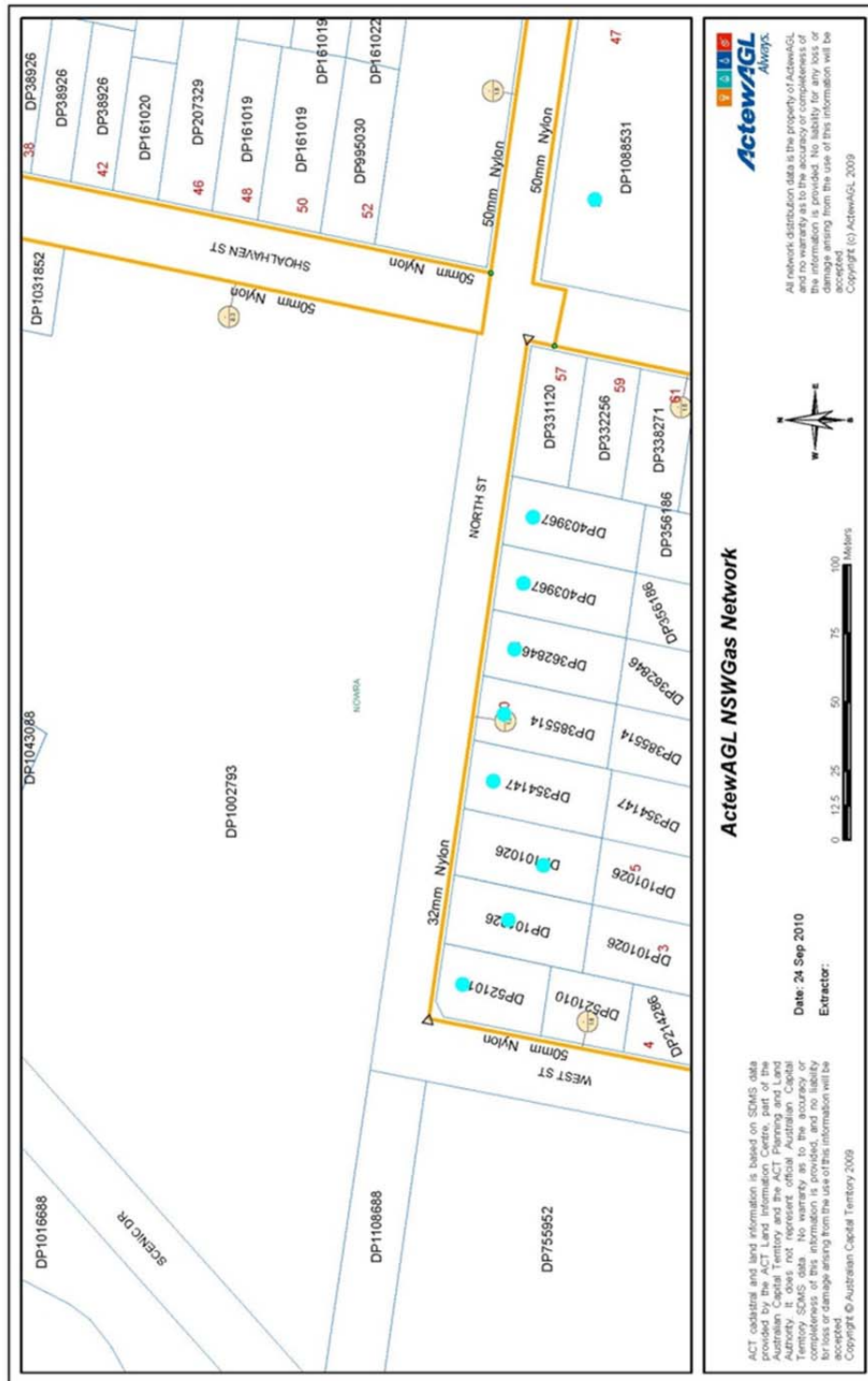
Fire Flow – TEST POINT 2

Watermain under normal conditions			Watermain under normal conditions (Hose Reel Flow)		Watermain pressure under normal conditions & provision of AS2419.1 (Hydrant Flows)				
Pressure (kPa)			Pressure (kPa)		Minimum Residual Pressure (kPa)				
Static		Minimum	0.50	1.0	5	10	20	30	40
Max	Min	Pressure	l/sec	l/sec	l/s	l/s	l/s	l/s	l/s
482	448	350	349	349	345	340	329	318	307
Minimum Pressure Based on			Watsys Hydraulic model: nll-ult-fire-amend-april2010.WDT						
Approximate Ground Level (AHD)			16m						
Watermain serving property (NS)			300 Ø CICL main						

APPENDIX B-SHOALHAVEN WATER MAIN LOCATION & TEST POINTS



APPENDIX C-ACTEW AGL GAS NETWORK MAP



APPENDIX D-AUTHORITY GENERAL CORRESPONDENCE



Our Reference: SY100456

1 October 2010

Shoalhaven City Council
PO BOX 42
Nowra
NSW, 2541

Attn: Ljupco Lazerevski

Dear Ljupco

Re:
Illawarra Health Project Shoalhaven Cancer Centre @ Lot 373 DP
755952 Shoalhaven St -Feasibility Request

Thank you for the existing water mains information sent by you dated 27th September 2010. Upon receipt of the water service plot and preliminary review, we had noticed the existence of both mains from West Street traversing across Crown Land Portion 7302-DP1002793. Preliminary site plans of the Shoalhaven Cancer Centre have been made available and we believe the mains and proposed building envelope are in conflict.

Please find attached sketch plan indicating the proposed works and the abovementioned conflict. From our recent discussion at your office these two C.I.C.L mains are the trunk mains supplying the Manildra Plant and Shoalhaven Paper Mill and are significant mains with respect to uninterrupted supply and flow.

Earlier this morning I had spoken with Ivan from your office and it was suggested that a feasibility letter outlining our requirements be sent to you as a way forward during the planning phase. We have a number of options available including moving the proposed building further North to avoid the mains or, diverting the mains around the site subject to Shoalhaven Water approval and direction.

As you are aware there are significant risks to the project's cost plan and would like advice on what policies are in place regarding building adjacent to water supply mains or what procedures are to be followed should you approve "in principle", the mains to be diverted around the site.

Another consideration during our design of the buildings is what redundancy is available from the mains should sprinkler protection be required. Does this network form a ring main looping back adjacent to the Manildra plant?

Should you require any further information please do not hesitate to contact the undersigned on mobile 0423 528459.

Yours sincerely,
ACOR Consultants Pty Ltd

A handwritten signature in black ink, appearing to read 'Mike Smith'.

Mike Smith
Senior Hydraulic Services Designer

ACOR Consultants Pty Ltd
Created on 1/10/2010 12:25:00 PM
C:\Users\mssmith\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.I550\3C1628FA.doc

ACOR CONSULTANTS PTY LTD

ENGINEERS

MANAGERS

INFRASTRUCTURE PLANNERS

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Our Reference: SY100456

8 February 2011

Shoalhaven City Council
PO Box 42
NOWRA
NSW, 2541

Attn: The General Manager

Dear Sir

Re:

**Illawarra Health Project Shoalhaven Cancer Centre @ Lot 373 DP
755952 Shoalhaven St – Request to Investigate Existing Sewer
Connection.**

Acor Consulting is currently engaged by Health Infrastructure NSW as the Hydraulic and Fire Services consultants for the proposed Shoalhaven Cancer Centre at the abovementioned location.

As part of our due diligence and concept design, we require your permission to investigate and survey the existing sewer connection on the site. We plan to excavate at the position shown on the attached sketch and verify the depth, size and material as a possible future connection for the proposed development.

With your acceptance, we would like the name of a contact within Council that we can arrange for a suitable time to perform the survey. This work will be approximately 4 hours in duration and upon completion, the excavated surface will be restored to original condition.

All Work Cover requirements will be adhered to in performing the works and contractor work method statements can be forwarded to Council prior to the works.

Should you require any further information please do not hesitate to contact the undersigned on mobile 0423 528459.

Yours sincerely,

ACOR Consultants Pty Ltd

A handwritten signature in black ink, appearing to read 'Mike Smith'.

Mike Smith
Senior Hydraulic Services Designer

ACOR Consultants Pty Ltd
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ACOR CONSULTANTS PTY LTD

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MANAGERS

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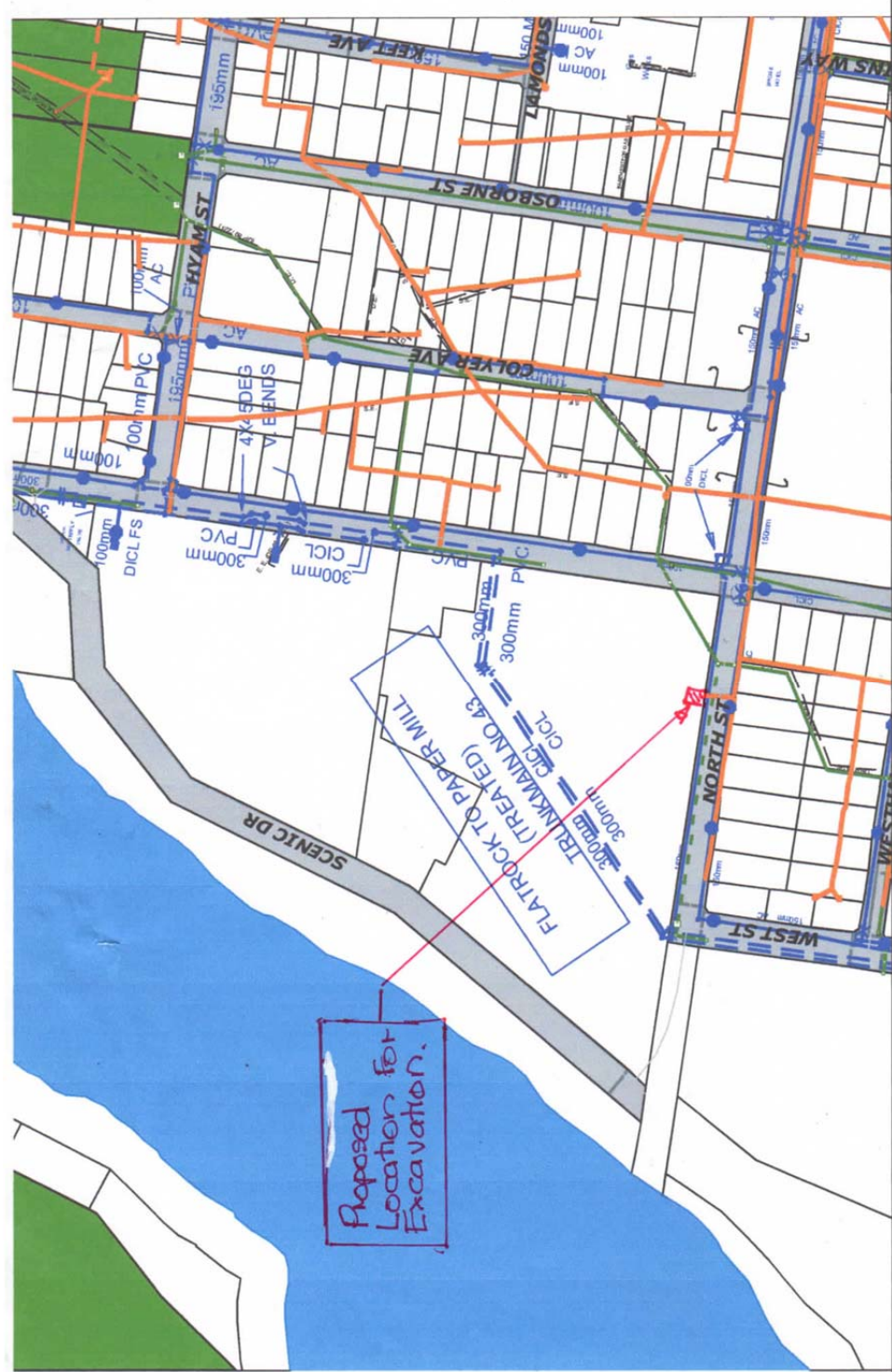
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This water and wastewater asset information is issued free-of-charge by Shoalhaven City Council and is taken from "works-as-executed" plans. The information shown is indicative only and does not necessarily show the exact position of water and wastewater assets. Shoalhaven City Council does not accept responsibility for the information contained on this plan. If required, the assets should be located by survey.





City Administrative Centre

Bridge Road, Nowra NSW Australia 2541

Phone: (02) 4429 3111 • Fax: (02) 4422 1816 • DX 5323 Nowra

Address all correspondence to

The General Manager, PO Box 42, Nowra NSW Australia 2541

COUNCIL REFERENCE: 39730E (D10/252610)
CONTACT PERSON: Ljupco Lazarevski
YOUR REF:

4 November 2010

Acor Consultants Pty Ltd
PO Box 822
CROWS NEST NSW 2065



Attention: Mr Mike Smith

Dear Mike,

39730E - Proposed Shoalhaven Cancer Centre Development - Shoalhaven Street, Nowra

I refer to your letter dated 1st October 2010 in relation to the proposed Shoalhaven Cancer Centre. The matter relating to the impact by the existing twin 300mm Ø CICL trunk mains on the proposed cancer centre has been reported to Council in October 2010.

The report outlined two options (Plan attached) for the proposed relocation of the twin 300mm Ø CICL trunk mains from the proposed centre's site.

Council resolved at the 19th October 2010 meeting that:

- a) Council brings forward replacement of the 2 x 300mm watermain located in Lot 7300 DP 1132679 Scenic Drive into the 2010/11 works program;
- b) A budget allocation of \$250,000 be provided;
- c) This project be funded from water fund reserves;
- d) A further report be provided to Council should the final design require any easement acquisition in the existing reserve.

In relation to connections to the reticulation network, the twin 300mm Ø CICL trunk mains are interconnected to the Nowra reticulation system and to each other at the southern end of the Shoalhaven Bridge (refer to attached plan).

Please note that Shoalhaven Water has planned water supply works in the local area which on occasion will see the twin 300mm Ø CICL trunk mains NOT connected to each other at the southern end of the Shoalhaven Bridge. However, the 300mm Ø CICL trunk mains will still remain interconnect with the Nowra reticulation system.

In relation to water pressures for fire fighting, the minimum residual pressure along Shoalhaven Street would be approximately 35m (343kPa).

I trust your questions have been answered. If you need further information about this matter, please contact me on (02) 4429 3255. Please quote Council's reference DA10/1122SW.

Yours faithfully



Ljupco Lazarevski
Systems Development Engineer
Shoalhaven Water



Our Reference: SY100456

31 March 2011

Shoalhaven City Council
PO Box 42
NOWRA
NSW, 2541

Attn: Mr Ljupco Lazarevski

Dear Sir

Re:

**Illawarra Health Project Shoalhaven Cancer Centre @ Lot 373 DP
755952 Shoalhaven St – Proposed Sewer Connection**

Acor Consulting is currently engaged by Health Infrastructure NSW as the Hydraulic and Fire Services consultants for the proposed Shoalhaven Cancer Centre at the abovementioned location.

A compulsory land acquisition is currently in process by Health Infrastructure to acquire a portion of land at the corner of Scenic Drive & North St for the construction of the Cancer facility. We had previously considered a sewer connection within Nowra Park adjacent to the existing amenities to drain the facility, however as this portion of acquired land will be given a separate title we are considering an alternative option of a sewer connection to the Council sewer main in North St. This new option would require a Shoalhaven Council side line across North St from the South side of the road. The conservative preliminary AS/NZ 3500 Fixture Unit Loading for the proposed development and future accommodation units is 500 fixture units and would require a 150NB connection. We have attached a sketch indicating the proposed connection for your comment and or consideration and approval.

If this option is considered feasible by Council officers, the project surveyor will then be engaged by our client to prepare a design for the sideline to Shoalhaven Council and the WSA-02 Sewerage Code guidelines.

Should you require any further information please do not hesitate to contact the undersigned during business hours or on mobile 0423 528459.

Yours sincerely,
ACOR Consultants Pty Ltd

A handwritten signature in black ink, appearing to read 'Mike Smith'.

Mike Smith
Senior Hydraulic Services Designer

ACOR Consultants Pty Ltd
Shoalhaven Council Let_M5-11.03.31.doc

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Phone: (02) 4429 3111 • Fax: (02) 4422 1816 • DX 5323 Nowra
Address all correspondence to
The General Manager, PO Box 42, Nowra NSW Australia 2541

COUNCIL REFERENCE: 14315E (D11/103832)
CONTACT PERSON: Ljupco Lazarevski
YOUR REF: SY100456

10 May 2011

Acor Consultants Pty Ltd
PO Box 822
CROWS NEST NSW 2065



Attention: Mr Mike Smith

Dear Mike,

**Proposed Sewer Connection for Proposed Shoalhaven Cancer Centre -
North Street, Nowra**

I refer to your letter dated 31st March 2011 requesting a sewer connection for the proposed Shoalhaven Cancer Centre site/lot from North Street

Shoalhaven Water advises that in principal it does not have any objection to the proposed connection point subject to:

1. The development receiving operational approval and an application for a Certificate of Compliance being lodged under Section 305 of the Water Management Act 2000, and
2. Detailed survey being undertaken confirming that a gravity sewer main extension off the existing 150mm concrete main can serve the proposed new lot. A sewer drainage diagram will need to be prepared and submitted to Shoalhaven Water for review. Should the whole new lot not be able to drain fully then you will need to consider an alternative solution to serving the whole lot to be created, and
3. A design being prepared and submitted for assessment and determination in accordance with Shoalhaven Water's Sewerage Design Standards. The connection to the existing 150mm concrete main shall be via a new manhole. The road crossing shall be perpendicular to the existing sewer main. The main extension shall finish within the new lot with a manhole or lamphole and a new junction provided to serve the lot.

You should be aware that Shoalhaven Water is proposing to divert the 2x300mm CICL mains which currently traverse the site with a new single 375mm NS DICL main along North Street. This proposed main may interfere with you proposal sewer main extension, and

council@shoalhaven.nsw.gov.au • www.shoalhaven.nsw.gov.au

4. All sewer construction of works (where approved for construction) shall at the developer's expense, and
5. A sewer Work-As-Executed plan shall be submitted once the works have been completed, tested and commissioned, and
6. All costs being at the developer's expense.

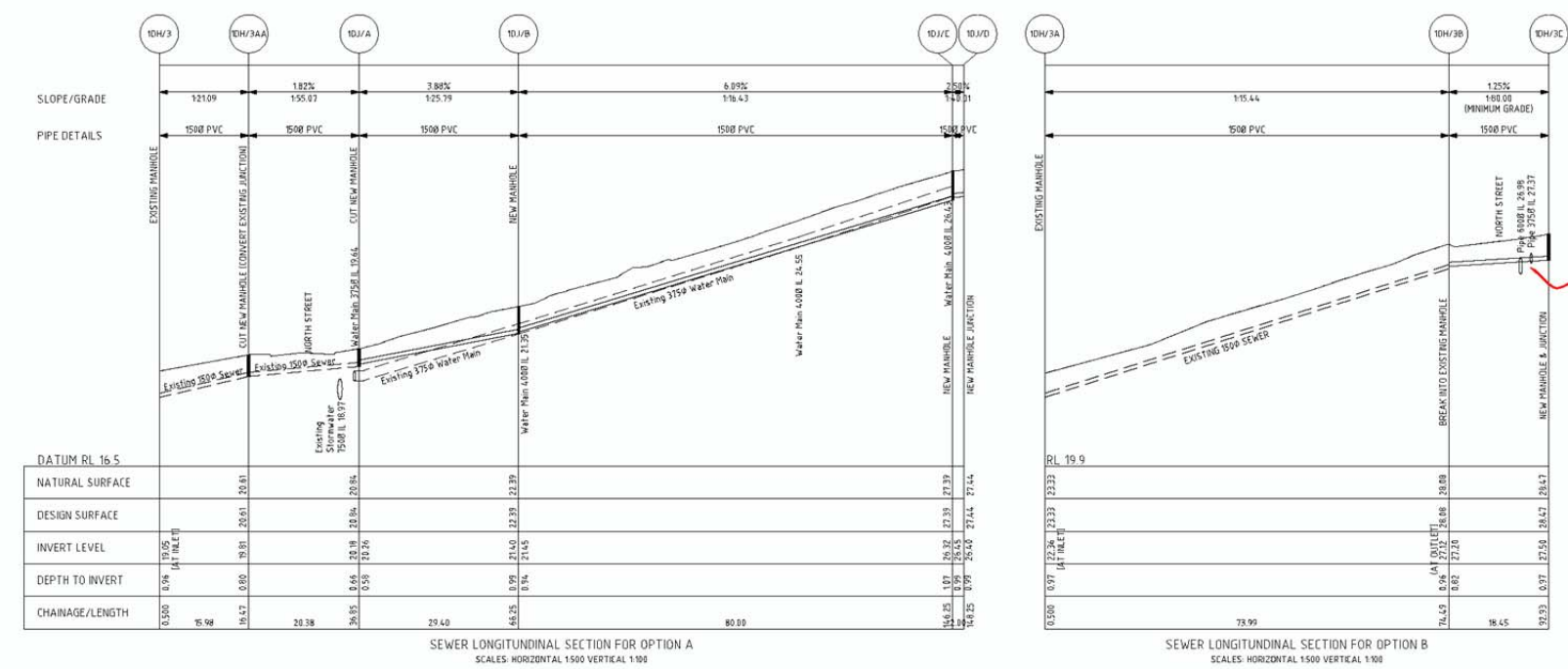
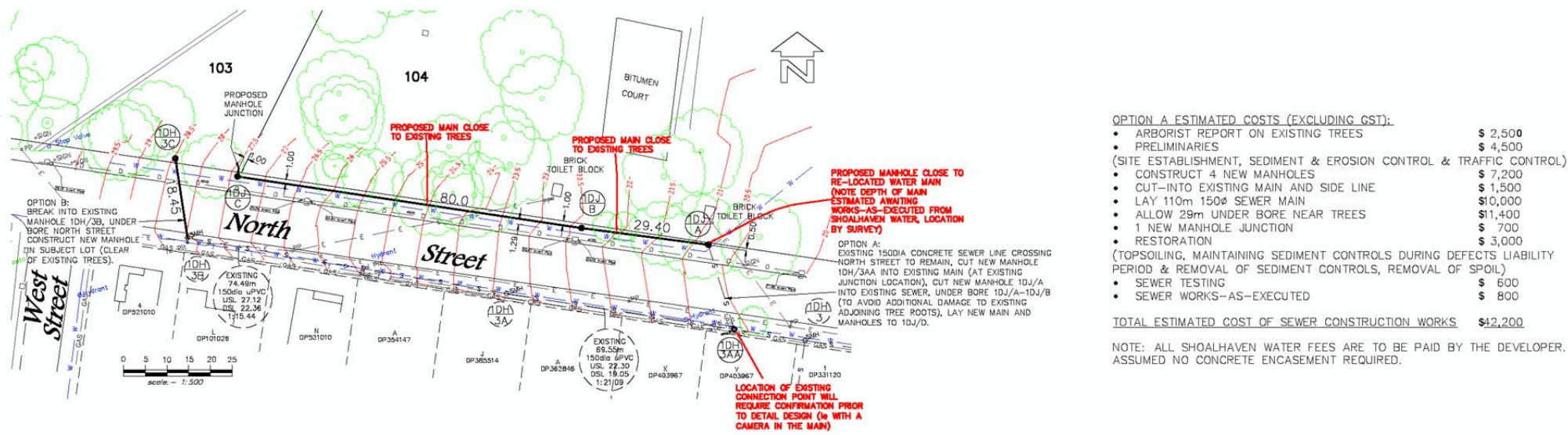
I apologise for the delay in providing a written reply. If you need further information about this matter, please contact me on (02) 4429 3255 or Mr Matthew Kidd on 4429 3439. Please quote Council's reference 14315E.

Yours faithfully



Ljupco Lazarevski
Systems Development Engineer
Shoalhaven Water

APPENDIX E-PRELIMINARY SEWER CONCEPT DESGN



NOT FOR CONSTRUCTION

RATIO:
AS SHOWN
(AT A1 SIZE)

DATUM:
AUSTRALIAN HEIGHT DATUM
ORION: SSM 12221
RL 19.034
DATE OF PLAN: JULY 2011

SURV: GH/PK/TJ
DESIGN: CEG
DRAIN: CEG
CHECK: MJP

REVISION:
PO SEWER OPTIONS FOR REVIEW

BY: CEG
DATE: 27.07.2011

allen, price & associates
land and development consultants
76 plunkett street, nowra, nsw. 2541
phone: (02) 4421 6544
consultants@allenprice.com.au www.allenprice.com.au

PLAN SHOWING SEWER SERVICE OPTIONS
FOR PROPOSED LOT 103
AT NORTH STREET, NOWRA
FOR SHOALHAVEN INTEGRATED CANCER CARE CENTRE

REF. No:
25451-201

SHEET **1** OF 1 SHEETS
P0