Douglas Partners Pty Ltd
ABN 75 053 980 117
www.douglaspartners.com.au
96 Hermitage Road
West Ryde NSW 2114
PO Box 472
West Ryde NSW 1685
Phone (02) 9809 0666
Fax (02) 9809 4095

Project 72811.01
27 June 2012
PMO

Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Attention: Mr Alan Bright

Dear Sirs

Report on Groundwater Impact Assessment
Dubbo Base Hospital Redevelopment
Stage 1 & 2 State Significant Development DA

1. Introduction

This report presents the results of a groundwater impact assessment undertaken for proposed redevelopment works at Dubbo Base Hospital, Myall Street, Dubbo. The work was commissioned by Health Infrastructure, in consultation with TSA Management Pty Ltd.

The project scope includes the following items:

- Bulk excavation;
- A new one and two-storey building with future flexibility to expand to a three-storey building to accommodate a new Maternity Unit, Operating Theatre suite, Central Sterilising Department and Day Surgery Unit;
- Minor reconfiguration and refurbishment of Front of House (main entry and associated services);
- Demolition of existing Maternity Building and construction of new car parking spaces in the footprint of the existing building; and
- Stormwater infrastructure works.

A groundwater impact assessment was undertaken to assess the potential impacts that the proposed redevelopment works may have on the regional groundwater system. The assessment included a review of available information on groundwater in Dubbo and scientific analysis.

Douglas Partners Pty Ltd has undertaken several other assessments for the redevelopment works and these are reported separately.

2. Site Description and Geology

Dubbo Base Hospital is located to the north-east of the city centre and is bounded by Myall Street to the south, the Coonamble-Dubbo Railway line to the west, residential dwellings to the east, and vacant land to the north. The natural ground surface levels at the site appear to fall gently to the south and west.

At the time of the current investigation, the main hospital buildings were located in the southern and central portions of the site. A car park was located in the eastern portion, and the western and northern sections of the site were generally vacant.

The *Dubbo 1:250 000 Geological Series Sheet* shows that the site is close to a boundary between gravel and ferruginous sandstone, and olivine basalt and dolerite. Both of these geological units are of Cainozoic age.

The portion of the site on which the development works are proposed consists of Lot 12 in DP 1159243 in the Parish of Dubbo, County of Lincoln. A site location plan is shown on Drawing GW1 in Appendix A.

3. Hydrogeological Setting

3.1 General

The hospital campus is located approximately 1.7 km to the east of the Macquarie River and about 20 m above the ground surface levels immediately adjacent to the river. Stormwater infiltration is likely to travel towards the river as well as through permeable zones in the soil and bedrock underlying the site.

The main shallow groundwater aquifer in Dubbo is likely to be the Upper Macquarie Alluvium as identified in *Water Availability in the Macquarie-Castlereagh: Summary of a report to the Australian Government from the CSIRO Murray-Darling Basin Sustainable Yields Project* (CSIRO, 2008). It should be noted, however, that low volume production may also be possible in other geological units.

A search of licensed groundwater bores indicated that there are three shallow monitoring bores (1.5 m to 2 m depth), one deeper monitoring well (18 m) and two stock/domestic production wells (30 m to 63 m depth) close to the site. The available installation information indicates standing water depths in the order of 15 m in the deepest wells closest to the site. The search information is attached in Appendix B.

Previous intrusive investigations undertaken on the site by Douglas Partners did not encounter groundwater within 5 m of the ground surface. This confirms the fact that the groundwater surface is well below the ground surface levels on the site.

3.2 Dubbo Local Environmental Plan 2011

Section 7.5 of the *Dubbo Local Environmental Plan 2011* (LEP) identifies the hospital site as having Moderately High Groundwater Vulnerability (the lowest category of vulnerability), presumably due to the proximity of the site to the Macquarie River. The objective of this section of the LEP is to, "maintain the hydrological functions of key groundwater systems and to protect vulnerable groundwater resources from depletion and contamination as a result of inappropriate development."

Further, the LEP requires the development consent authority to consider:

- whether or not the development (including any on-site storage or disposal of solid or liquid waste chemicals) will cause any groundwater contamination or any adverse effect on groundwater dependent ecosystems; and
- the cumulative impact (including the impact on nearby groundwater extraction for potable water supply or stock water supply) of the development and any other existing development on groundwater.

Although the LEP may not strictly be relevant for a State Significant Development, it does help to put the development site into the local context.

4. Proposed Development

As outlined in Section 1 of this report, the project involves excavation, construction of a new building, refurbishment of an existing building, demolition of the existing Maternity Building, construction of car parking spaces and stormwater infrastructure works.

The use of the site (a hospital) is to remain unchanged and the proposed buildings will house facilities that are currently housed elsewhere on the site. As such, no new potentially contaminating activities are proposed.

Hospital waste is currently handled in accordance with the *Waste Management Policy and Plan* (2010) to protect the hospital and general communities from infectious and contaminating hazards. It is understood that operations in the new buildings will continue to be undertaken in accordance with these adopted procedures.

5. Assessment of Potential Groundwater Impacts

The proposed development will not involve groundwater extraction and therefore will not reduce groundwater yields in the area. It is therefore considered that there will be no discernable impact on groundwater yields as a result of the development.

There is a potential for groundwater contamination from the use of chemicals within the hospital campus and also from the spillage of stored wastes. However, chemical use for medical procedures is expected to be limited to internal areas of buildings and the use of chemicals for ground maintenance activities will not change due to the development works. Further, the waste materials are stored in sealed containers for regular (daily) off-site disposal away from Dubbo. The potential impact on groundwater from chemicals is therefore considered to be very low.

The development works may results in an increase in hardstand area which may decrease stormwater infiltration into the underlying soils and therefore decrease aquifer recharge on the site. However, the volume of this decrease is likely to be very small and the surface runoff would be expected to ultimately flow into the Macquarie River thereby recharging the alluvial aquifer. The impact of the physical site works is therefore also considered to be very low.

On the basis of the information outlined in this report, the groundwater impacts associated with the proposed development are considered to be very low.

6. References

1. CSIRO (2008), *Water Availability in the Macquarie-Castlereagh: Summary of a report to the Australian Government from the CSIRO Murray-Darling Basin Sustainable Yields Project.*
2. NSW Government Regulation (2011), *Dubbo Local Environmental Plan 2011*.
3. Greater Western Area Health Service (2010), *Waste Management Policy and Plan*.

7. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for a project at Dubbo Base Hospital in accordance with DP's proposal dated 2 May 2012 and acceptance received from Health Infrastructure. The report is provided for the use of Health Infrastructure for this project only and for the purpose(s) described in the report. It should not be used for other projects or by a third party.

DP's advice is based upon information available at the time of the assessment. Intrusive investigation to positively identify the depth of the groundwater aquifer(s) on the site was considered unnecessary due to the very low potential for impacts associated with the proposed development.

This report must be read in conjunction with all of the attached notes and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by a statement, interpretation, outcome or conclusion given in this report.

We trust the above information meets your present requirements.

Yours faithfully,
Douglas Partners Pty Ltd

Peter Oitmaa
Senior Associate

Attachments: Appendix A: Drawing
Appendix B: Groundwater Bore Search Information

Appendix A

Drawing

Locality Plan

STORMWATER DETENTION ZONE

MATERNITY BUILDING

MAIN SWITCHROOM & GENERATOR

CHIMNEY

NEW BOILER

ELECTRICIAN'S STORE

LAUNDRY

OLD BOILER/ RECORDS

NURSE'S ACCOMMODATION

PROPOSED CARPARK WORKS

ONCOLOGY

ICT

ASSET

MAINTANANCE

AREA SUPPLY

MENTAL HEALTH

MORTUARY

9

10

11

12

13

14

16

JOIN LINE

SEE SHEET L03A

PAEDEATRIC & GENERAL
BRICK BUILDING
METAL ROOF

GARDEN AREA

MEDICAL RECORDS
BRICK BUILDING
METAL ROOF

COVERED WALKWAY

ADMISSIONS & EMERGENCY
BUILDING No. 68
BRICK BUILDING
METAL ROOF
FFL 277.16

AMBULANCE AWNING

IMAGING
BRICK BUILDING
METAL ROOF

"NGAMUUNG" MAMOGRAPHY
BRICK BUILDING
METAL ROOF

PLAYGROUND

CHILD MINDING CENTRE
BRICK BUILDING
METAL ROOF

DOCTORS ACCOMODATION
BRICK BUILDING
METAL ROOF

CARPARK

DIALYSIS UNIT

CSSD THEATRE COMPLEX
BRICK BUILDING
METAL ROOF

INTENSIVE CARE UNIT
BRICK BUILDING
METAL ROOF

KITCHEN
BRICK BUILDING
METAL ROOF
DINING ROOM

CHAPEL

ORGANISATIONAL DEVELOPMENT UNIT
(FIRST FLOOR)
ONE & TWO STOREY BRICK BUILDING
METAL ROOF

PHARMACY

CENTRE FOR POPULATION HEALTH
BRICK BUILDING
METAL ROOF
FFL 275.79

PHYSIOTHERAPY

CARDIAC REHABILITATION

FFL 276.44 (GRND LEVEL)

AMBULATORY CARE
BRICK BUILDING
METAL ROOF

LIBRARY

GEORGE HATCH BUILDING
TWO STOREY BRICK BUILDING
TILE ROOF
FFL 276.5 (GRND)
FFL 279.6 (TOP)

ORANA PATHOLOGY SERVICES
BRICK BUILDING
METAL ROOF

ADMINISTRATION

BOARD ROOM
BRICK BUILDING
METAL ROOF

ACACIA COTTAGE
BRICK BUILDING
METAL ROOF

PUMPHOUSE
BRICK BUILDING
METAL ROOF

PATIENT FLOW UNIT
BRICK BUILDING
TILE ROOF

RAMP

TELEPHONE BOX

Mc GUINN DRIVE

COBBORA ROAD

MYALL STREET

RAILWAY LAND

LOT 32 DP 747137

16102

10° 43' 50"

280° 14' 50"
299.29

190° 04' 30"
267.4

245° 53' 30"
61.46

0 5 10 15 20 25m

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Health Infrastructure	TITLE: **Areas of Proposed Redevelopment Works Dubbo Base Hospital Myall Street, DUBBO**	PROJECT No: 72811.01
	OFFICE: Sydney / DRAWN BY: PMO		DRAWING No: GW1
	SCALE: 1:1250@A3 / DATE: 13.06.2012		REVISION: 0

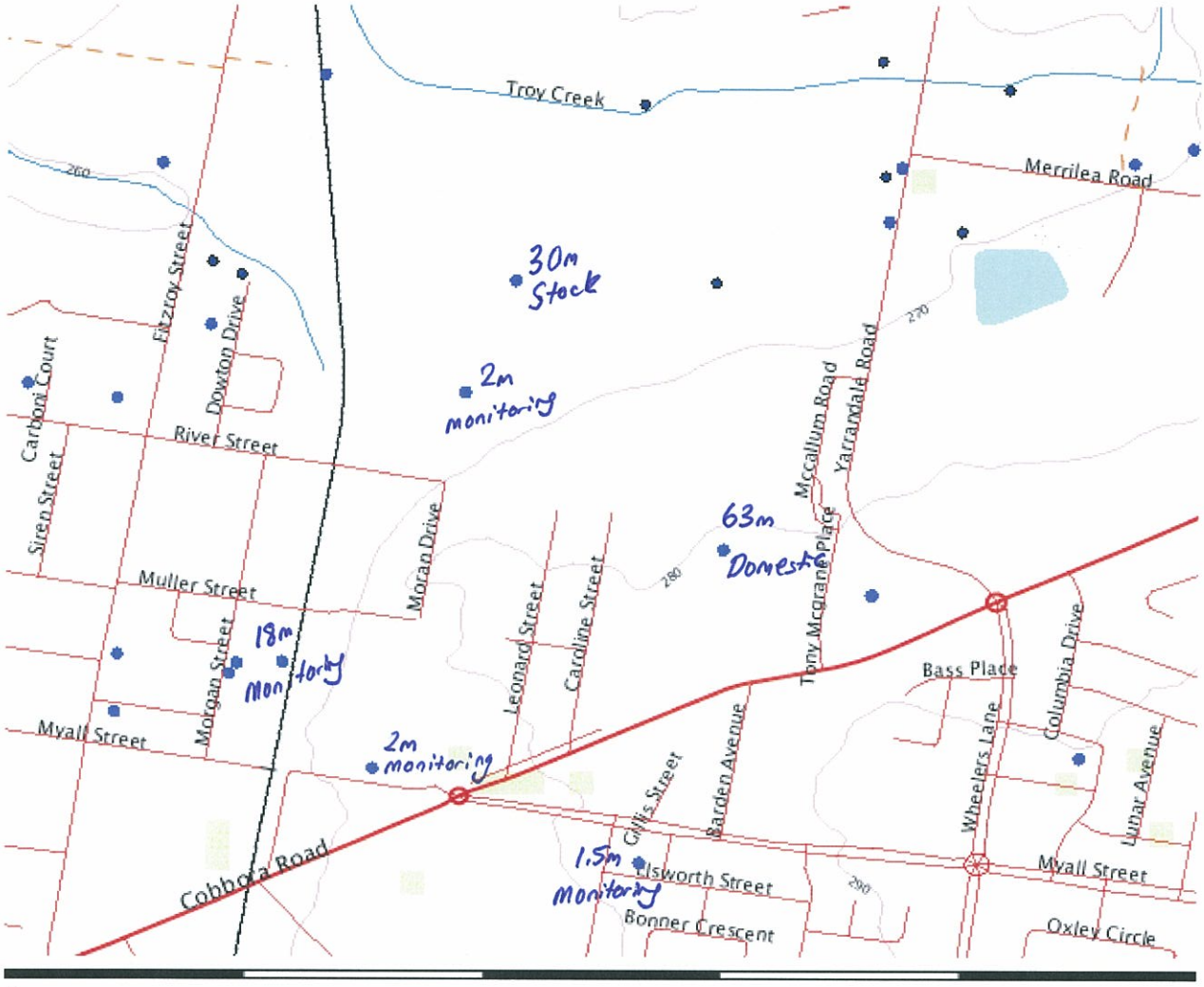
Appendix B

Groundwater Bore Search Information

Dubbo Base Hospital

Map created with NSW Natural Resource Atlas - http://www.nratlas.nsw.gov.au

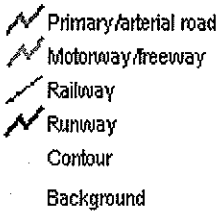
Thursday, February 09, 2012



0 2 Km

Legend

Symbol	Layer	Custodian
	Cities and large towns renderImage: Cannot build image from features	
Cowra	Populated places renderImage: Cannot build image from features	
	Towns	
	Groundwater Bores	
	Catchment Management Authority boundaries	
	Major rivers	
	Topographic base map	



Douglas Partners Pty Ltd
ABN 75 053 980 117
www.douglaspartners.com.au
96 Hermitage Road
West Ryde NSW 2114
PO Box 472
West Ryde NSW 1685
Phone (02) 9809 0666
Fax (02) 9809 4095

Project 72811.01
7 September 2012
PMO

Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Attention: Mr Alan Bright

Dear Sirs

Dubbo Base Hospital Redevelopment
Stage 1 & 2 State Significant Development DA

Douglas Partners Pty Ltd prepared a *Report on Groundwater Impact Assessment* for the above project dated 27 June 2012. We hereby confirm that the conclusions of the assessment remain valid with reference to *The NSW Groundwater Quality Protection Policy* (DLWC, 1998) which forms part of *The NSW State Groundwater Policy Framework Document* (DLWC, 1997).

We trust the above information meets your present requirements.

Yours faithfully,
Douglas Partners Pty Ltd

Peter Oitmaa
Senior Associate