

SJOG Richmond Hospital

Hydraulic Services

Infrastructure Management Plan

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Attention: Brent Railton

Date: 01 October 2020

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Ref: 43762

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Revision

Revision	Date	Comment	Prepared By	Approved By
001	06/02/2020	Preliminary Issue	TM	ALM
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Contents

1.	Introduction	1
1.1	Proposed development	1
1.2	SEARs Requirements	2
1.3	Design Standards	2
1.4	Design Criteria	2
1.5	Local context	3
2.	Hydraulic Utility Services	4
2.1	Existing Authority Hydraulic Infrastructure	4
2.2	Proposed Hydraulic Services	6
2.3	Construction Period Services Continuity	7
	Appendix A Sydney Water Statements	1

1. Introduction

Wood & Grieve Engineers has been engaged by St John of God Health Care Inc to prepare an Infrastructure Management Plan report for the proposed St John of God Richmond Campus redevelopment.

The St John of God Richmond Campus is located at 177 Grose Vale Road, North Richmond in New South Wales. The site is located outside the township of North Richmond on a 10-hectare site.

A significant feature of the site is Belmont House. Built in 1892 this substantial building is of historical significance and has a commanding position on the site overlooking lawns and mature specimen trees.

The current facility on the site has developed on site since 1953 when the Hospitaller Order of the Brother of St John of God (SJOG) purchased the site.

Over the years the hospital has been extended and developed to meet the expanding role of a mental health facility.

The hospital currently is a mix of building of various ages and several them do not meet with current guidelines for health facilities, or the expectations of the private patients.

1.1 Proposed development

The hospital is now commencing a redevelopment at Richmond that will see mental health undergo a total service transformation.

Currently an 88-bed hospital of varying room types including shared rooms and shared facilities, the new development will deliver the following:

- 112 sole occupancy bedrooms with ensuites;
- Generous lounge and break out areas within the Residence Pavilions;
- Large dining area with various seating arrangements for a restaurant feel;
- Alfresco dining areas;
- Café;
- Pharmacy;
- Group rooms and associated clinical support areas, and
- ECT & TMS Suite.

The above will form the bulk of the new building which will be linked together with a multi-use space that will have informal seating areas and provide a communal area from the residences to dining pavilion.

Refurbishment of the existing administration building will include the new home of the Chapel, as well as reception and waiting area upgrades. Xavier House will be completely refurbished to house the relocated and expanded CTC, Medical Centre and Education Hub.

Along with the demolition of the sub-standard building stock and proposed new build, site wide infrastructure will be upgraded, extended parking and traffic management implemented with landscaping to the new buildings undertaken.

A wellness centre has been identified as a key component for the health and well-being of clients staying at the facility.



1.2 SEARs Requirements

This report addresses the requirements outlined in the Planning Secretary's Environmental Assessments Requirements (SEARs) for the SSDA application for St John of God Richmond Hospital.

This report addresses the specific requirement with regards to Utilities as follows:

- Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation and easement requirements of the development for the provision of utilities including staging of infrastructure.

1.3 Design Standards

The Hydraulic Services will be designed in accordance with, but not limited to, the following codes, standards and guidelines:

- Hydraulic services to comply with the Building Code of Australia 2019
- Hydraulic services to comply with all current statutory requirements and guidelines including HAWKESBURY CITY COUNCIL, Water Authority, Waters and Rivers Commission, Fire and Emergency Services Authority, Health Department and Department of Environmental Protection
- Hydraulic Services to comply with current Australian Standards where applicable and particularly the following:
 - AS 3500 : National Plumbing and Drainage Code incorporating:
 - Part 1 : 2018 Water Supply
 - Part 2 : 2018 Sanitary Plumbing and Drainage
 - Part 3 : 2018 Stormwater Drainage
 - Part 4 : 2018 Heated Water Services
 - AS 2419 : 2005 Fire Hydrant Installations
 - AS 2441 : 2005 Fire Hose Reel Installations
 - AS 5601 : 2013 Gas Installations
 - AS 1596 : 2014 The Storage and Handling of LP Gas
 - NSW Health Engineering Services Guidelines

1.4 Design Criteria

- Hot Water : Storage Temperature (domestic use) minimum 60°C
: Supply Temperature (domestic use) Maximum 50°C
: Supply Temperature to disabled facilities maximum 42°C
- Stormwater:
 - Box Gutter Systems : Average recurrence interval (ARI) 1:100 years
: Intensity 234 mm/hour



	:	Duration 5 minutes
Eaves Gutter Systems	:	Average recurrence interval (ARI) 1:100 years
	:	Intensity 234 mm/hour
	:	Duration 5 minutes
Paved Areas	:	Average recurrence interval (ARI) 1:10 years
	:	Intensity 150 mm/hour
	:	Duration 5 minutes

Note: Average recurrence intervals and storm intensities have been taken from AS 3500 3:2018 Stormwater Drainage.

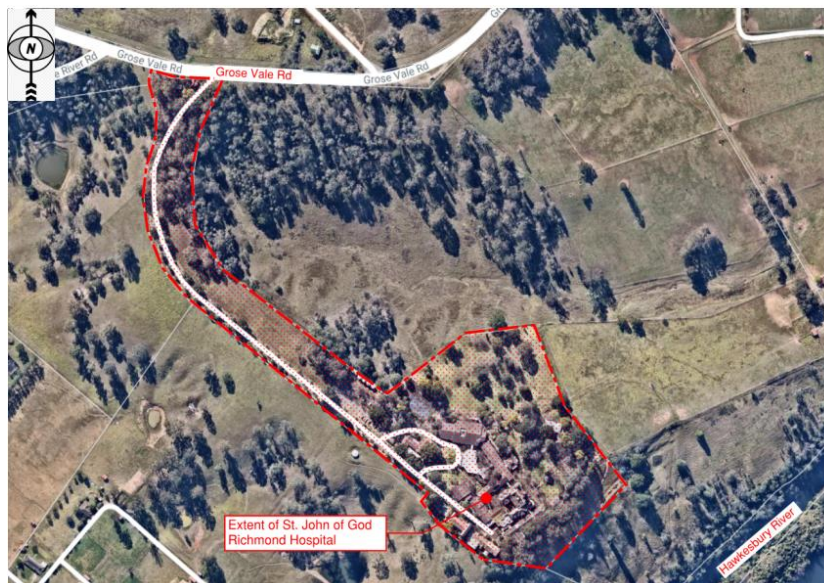
1.5 Local context

The St John of God Richmond Hospital (Lot 11 DP 1134453) is located just to the south of the Hawkesbury centre and to the east of the Railway Station on a site at 177 Grose Vale Road, North Richmond. The campus occupies an elongated irregular shaped area of some 10 ha with an extensive 100m frontage to Grose Vale Road.

Entrance to the main site is via an access road (approx. 580m long) from Grose Vale Road. The surrounding terrain consists of natural landscape (cleared for grazing and other agricultural activity).

The surrounding uses comprise:

- the Catalina Stud which adjoins to the north and east
- the Darley Farm which adjoin to the west
- the Hawkesbury River to the south
- the Kingsford-Smith Village to the north



2. Hydraulic Utility Services

2.1 Existing Authority Hydraulic Infrastructure

Existing Authority (Sydney Water) Infrastructure is located on Grose Vale Road. The site is served through existing easement connecting to Potable Water Main and Sewer Main.

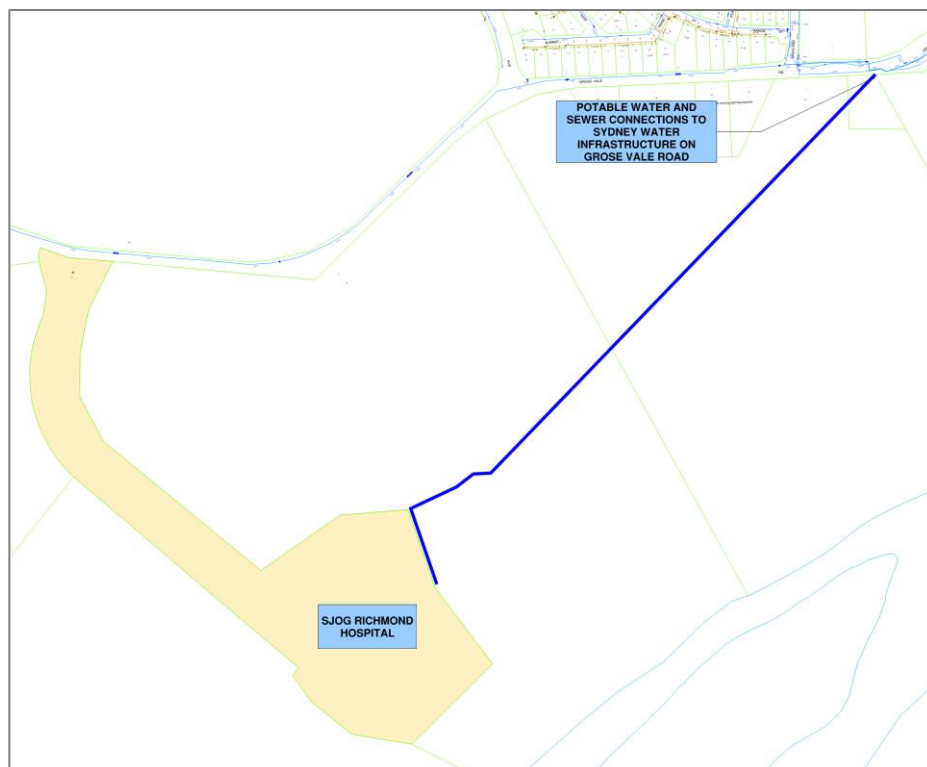
Existing site services include:

- Potable water ring supplying existing buildings from the on-site potable water tanks
- Gas services supplying the existing buildings from on-site LPG storage tanks
- Sewer services with on-site sewage tank

2.1.1 Potable Water

The potable cold water to the entire site is fed via an 80mm tapping from the existing water main located on Gros Vale Road at the Sydney Water, North Richmond Water Boosting Reservoir.

The Current on-site storage consist of a precast 100kL concrete tank with 10kL buffer tank used for maintenance when cleaning out the main storage tank.





2.1.2 Gas

The gas serving site comes from two onsite 6,750L Liquefied Petroleum Gas (LPG) Tanks located off the entry driveway adjacent to the lodge. Based on the gas consumption there is no evident need based on the future expansion at this stage of the project.

Closest natural gas reticulation network in Richmond area terminates at the RAAF base Richmond. Extending that gas line to supply existing and the new SJOG Richmond hospital is not cost-effective solution, therefore we advise that existing LPG tanks should be used as gas supply to the site.

2.1.3 Sewer

The existing site is connected to the on-site storage tank and pump station which extends through an easement across three properties and connects to Sydney Waters main gravity infrastructure.



2.2 Proposed Hydraulic Services

Proposed design of the new SJOG Richmond hospital development includes Potable Water, Gas and Sewer services.

Feasibility application has been submitted to Sydney water in October 2019. At the time of producing this Report, we were still waiting for Sydney Water response.

Pressure and Flow statements from Sydney water has been issued and are part of this Report.

2.2.1 Potable Water

The potable cold water to the entire site is fed via an 80mm tapping from the existing water main located on Grose Vale Road at the Sydney Water, North Richmond Water Boosting Reservoir.

Pressure and Flow Statements from Sydney Water has been issued at the two locations. At the existing tap-in location and at the main site entrance to explore possible future connection to the site. Pressure and Flow Statements are attached as Appendix A and are part of this Report.

The Current onsite storage consist of a precast 100kL concrete tank with 10kL buffer tank used for maintenance when clearing out the main storage tank.

Existing Hospital has capacity of 88 beds. Planed redevelopment will increase bed capacity to 112 beds.

Based on Sydney Water Average Daily Water Use guidelines by property development type, anticipated water consumption is:

Property type: Hotel/motel/serviced apartments – 360liters/day/each room

Existing hospital

Number of beds:	88 beds
Water usage per each bed:	360.00 l/bed/day
TOTAL POTABLE WATER DEMAND:	31,680.00 l/day

New redevelopment

Number of beds:	112 beds
Water usage per each bed:	360.00 l/bed/day
TOTAL POTABLE WATER DEMAND:	40,320.00 l/day

Existing Domestic Potable Water tank (100kL capacity) will be of sufficient capacity to cater planed redevelopment of the SJOG Richmond hospital.

Pressure and Flow statements show that existing Authority Infrastructure will be of sufficient capacity to in-fill Potable Water Tank and cater SJOG Richmond hospital demands.



2.2.2 Gas

The gas serving site comes from two onsite 6,750L Liquefied Petroleum Gas (LPG) Tanks located off the entry driveway adjacent to the lodge. Based on the gas consumption there is no evident need based on the future expansion at this stage of the project.

2.2.3 Sewer

The new development will be connected to the existing infrastructure. Sewer will be collected and discharged to the existing on-site 100kL storage tank. Sewer services extends through an easement across three properties and connects to Sydney Waters main gravity infrastructure.

Design will include provisional sewer rising main to the site entrance for possible future connection.

Existing Hospital has capacity of 88 beds. Planed redevelopment will increase bed capacity to 112 beds.

Based on Sydney Water Average Daily Water Use guidelines by property development type, anticipated water consumption is:

Property type: Hotel/motel/serviced apartments – 360liters/day/each room

Existing hospital

Number of beds:	88 beds
Water usage per each bed:	360.00 l/bed/day
TOTAL WATER DISCHARGE TO SEWER (80% of Water Usage):	25,344.00 l/day

New redevelopment

Number of beds:	112 beds
Water usage per each bed:	360.00 l/bed/day
TOTAL WATER DISCHARGE TO SEWER (80% of Water Usage):	32,256.00 l/day

Existing Sewer tank (100kL capacity) will be of sufficient capacity to cater planed redevelopment of the SJOG Richmond hospital.

2.3 Construction Period Services Continuity

Minimal disruption is expected during the construction period. It is not proposed to construct new buildings over the existing authority infrastructure.



Appendix A Sydney Water Statements



Case Number: 181533

12 February 2020

ST JOHN OF GOD RICHMOND HOSPITAL
c/- ROSE ATKINS RIMMER

FEASIBILITY LETTER

Developer: ST JOHN OF GOD RICHMOND HOSPITAL
Your reference: 10/26089
Development: Lot 12 DP1134453 177 GROSE VALE RD, North Richmond
Development Description: Proposed redevelopment of Richmond Hospital Mental Health Facility. Existing hospital has capacity of 88 beds. Planned redevelopment will increase bed capacity to 112 beds (24 more beds) with the future aim to increase capacity to 140 beds.
Your application date: 17 October 2019

Note: Level 2 water restrictions are in place from December 10, which limits how and when water can be used outdoors. This can impact you and your contractors in the activities they need to undertake for this proposal.

Using water to suppress dust is only permitted via a permit when no other water source is available.

You/your contractors will need to apply for an exemption permit to use water for most outdoor uses including:

- Cleaning equipment and the exterior of **new** buildings
- Drilling and boring, and
- Batching concrete on-site

Fines for deliberate breaches of restriction rules are in place.

For more information on the restrictions and for applying for an exemption, visit our web site at <https://www.sydneywater.com.au/SW/water-the-environment/what-we-re-doing/water-restrictions/level-2-water-restrictions/index.htm>

The more water everyone saves, the longer we can stave off the progression to stricter restrictions or emergency measures.

Please provide this information to your contractors and delivery partners to inform them of their obligations and check our web site for up to date restriction information.

Dear Applicant

This Feasibility Letter (Letter) is a guide only. It provides general information about what Sydney Water's requirements could be if you applied to us for a Section 73 Certificate (Certificate) for your proposed development. **The information is accurate at today's date only.**

If you obtain development consent for that development from your consent authority (this is usually your local Council) they will require you to apply to us for a Section 73 Certificate. You will need to submit a new application (and pay another application fee) to us for that Certificate by using your current or another Water Servicing Coordinator (Coordinator).

Sydney Water will then send you either a:

- Notice of Requirements (Notice) and Developer Works Deed (Deed) or
- Certificate.

These documents will be the definitive statement of Sydney Water's requirements.

There may be changes in Sydney Water's requirements between the issue dates of this Letter and the Notice or Certificate. The changes may be:

- if you change your proposed development eg the development description or the plan/site layout, after today, the requirements in this Letter could change when you submit your new application; and
- if you decide to do your development in stages then you must submit a new application (and pay another application fee) for each stage.

No warranties or assurances can be given about the suitability of this document or any of its provisions for any specific transaction. It does not constitute an approval from Sydney Water and to the extent that it is able, Sydney Water limits its liability to the reissue of this Letter or the return of your application fee. You should rely on your own independent professional advice.

What You Must Do To Get A Section 73 Certificate In The Future.

To get a Section 73 Certificate you must do the following things. You can also find out about this process by visiting www.sydneywater.com.au > Plumbing, building & developing > Developing > Land development.

1. **Obtain Development Consent from the consent authority for your development proposal.**
2. **Engage a Water Servicing Coordinator (Coordinator).**

You must engage your current or another authorised Coordinator to manage the design and construction of works that you must provide, at your cost, to service your development. If you wish to engage another Coordinator (at any point in this process) you must write and tell Sydney Water.

For a list of authorised Coordinators, either visit www.sydneywater.com.au > Plumbing, building & developing > Developing > Providers > Lists or call **13 20 92**.

The Coordinator will be your point of contact with Sydney Water. They can answer most questions that you might have about the process and developer charges and can give you a quote or information about costs for services/works (including Sydney Water costs).

3. **Developer Works Deed**

It would appear that your feasibility application is served from existing mains and does not require any works to be constructed at this time. Sydney Water will confirm this with you after you have received Development Approval from Council and your Coordinator has submitted a new Development application and Sydney Water has issued you with a formal Notice of Requirements.

4. **Water and Sewer Works**

4.1 **Water**

Your application to increase the demand from your existing connection from 32kL/day to 51kL/day has been assessed.

Sydney Water has found that:

- The existing private service and meter in Gross Vale Rd will serve your development.
- Permission to increase the size of the existing water is **NOT** given.
- Connection to the 315 mm PE water main in Grose Vale Rd is **NOT** available.

4.2 Sewer

Sydney Water has assessed your application and found that:

- **The proposed development is in an area where sewerage facilities are not provided by Sydney Water.**

5. Ancillary Matters

5.1 Asset adjustments

After Sydney Water issues this Notice (and more detailed designs are available), Sydney Water may require that the water main/sewer main/stormwater located in the footway/your property needs to be adjusted/deviated. If this happens, you will need to do this work as well as the extension we have detailed above at your cost. The work must meet the conditions of this Notice and you will need to complete it **before we can issue the Certificate**. Sydney Water will need to see the completed designs for the work and we will require you to lodge a security. The security will be refunded once the work is completed.

5.2 Entry onto neighbouring property

If you need to enter a neighbouring property, you must have the written permission of the relevant property owners and tenants. You must use Sydney Water's **Permission to Enter** form(s) for this. You can get copies of these forms from your Coordinator or the Sydney Water website. Your Coordinator can also negotiate on your behalf. Please make sure that you address all the items on the form(s) including payment of compensation and whether there are other ways of designing and constructing that could avoid or reduce their impacts. You will be responsible for all costs of mediation involved in resolving any disputes. Please allow enough time for entry issues to be resolved.

OTHER THINGS YOU MAY NEED TO DO

Shown below are other things you need to do that are NOT a requirement for the Certificate. They may well be a requirement of Sydney Water in the future because of the impact of your development on our assets. You must read them before you go any further.

Approval of your building plans

Please note that the building plans must be approved when each lot is developed. This can be done at Sydney Water Tap inTM. Visit www.sydneywater.com.au > Plumbing, building & developing > Building > Sydney Water Tap inTM.

This is not a requirement for the Certificate but the approval is needed because the construction/building works may affect Sydney Water's assets (e.g. water, sewer and stormwater mains).

Where a Sydney Water stormwater channel, pipe or culvert is located within ten (10) metres of your development site it must be referred to Sydney Water for further assessment.

Your Coordinator can tell you about the approval process including:

- Possible requirements;
- Costs; and
- Timeframes.

Note: You must obtain our written approval before you do any work on Sydney Water's systems. Sydney Water will take action to have work stopped on the site if you do not have that approval. We will apply Section 44 of the *Sydney Water Act 1994*.

Requirements for Business Customers for Commercial and Industrial Property Developments

If this property is to be developed for Industrial or Commercial operations, it may need to meet the following requirements:

Backflow Prevention Requirements

Backflow is when there is unintentional flow of water in the wrong direction from a potentially polluted source into the drinking water supply.

All properties connected to Sydney Water's supply must install a testable **Backflow Prevention Containment Device** appropriate to the property's hazard rating. Property with a high or medium hazard rating must have the backflow prevention containment device tested annually. Properties identified as having a low hazard rating must install a non-testable device, as a minimum.

Separate hydrant and sprinkler fire services on non-residential properties, require the installation of a testable double check detector assembly. The device is to be located at the boundary of the property.

Before you install a backflow prevention device:

1. Get your hydraulic consultant or plumber to check the available water pressure versus the property's required pressure and flow requirements.
2. Conduct a site assessment to confirm the hazard rating of the property and its services. Contact PIAS at NSW Fair Trading on **1300 889 099**.

For installation you will need to engage a licensed plumber with backflow accreditation who can be found on the Sydney Water website:

<http://www.sydneywater.com.au/Plumbing/BackflowPrevention/>

Water Efficiency Recommendations

Water is our most precious resource and every customer can play a role in its conservation. By working together with Sydney Water, business customers are able to reduce their water consumption. This will help your business save money, improve productivity and protect the

environment.

Some water efficiency measures that can be easily implemented in your business are:

- Install water efficiency fixtures to help increase your water efficiency, refer to WELS (Water Efficiency Labelling and Standards (WELS) Scheme, <http://www.waterrating.gov.au/>
- Consider installing rainwater tanks to capture rainwater runoff, and reusing it, where cost effective. Refer to <http://www.sydneywater.com.au/Water4Life/InYourBusiness/RWTCalculator.cfm>
- Install water-monitoring devices on your meter to identify water usage patterns and leaks.
- Develop a water efficiency plan for your business.

It is cheaper to install water efficiency appliances while you are developing than retrofitting them later.

Contingency Plan Recommendations

Under Sydney Water's [customer contract](#) Sydney Water aims to provide Business Customers with a continuous supply of clean water at a minimum pressure of 15meters head at the main tap. This is equivalent to 146.8kpa or 21.29psi to meet reasonable business usage needs.

Sometimes Sydney Water may need to interrupt, postpone or limit the supply of water services to your property for maintenance or other reasons. These interruptions can be planned or unplanned.

Water supply is critical to some businesses and Sydney Water will treat vulnerable customers, such as hospitals, as a high priority.

Have you thought about a **contingency plan** for your business? Your Business Customer Representative will help you to develop a plan that is tailored to your business and minimises productivity losses in the event of a water service disruption.

For further information please visit the Sydney Water website at: <http://www.sydneywater.com.au/OurSystemsandOperations/TradeWaste/> or contact Business Customer Services on **1300 985 227** or businesscustomers@sydneywater.com.au

Fire Fighting

Definition of firefighting systems is the responsibility of the developer and is not part of the Section 73 process. It is recommended that a consultant should advise the developer regarding the firefighting flow of the development and the ability of Sydney Water's system to provide that flow in an emergency. Sydney Water's Operating Licence directs that Sydney Water's mains are only required to provide domestic supply at a minimum pressure of 15 m head.

A report supplying modelled pressures called the Statement of Available pressure can be purchased through Sydney Water Tap inTM and may be of some assistance when defining the firefighting system.

The Statement of Available pressure may advise flow limits that relate to system capacity or diameter of the main and pressure limits according to pressure management initiatives. If mains are required for firefighting purposes, the mains shall be arranged through the water main extension process and not the Section 73 process.

Large Water Service Connection

A water main is available to provide your development with a domestic supply. The size of your development means that you will need a connection larger than the standard domestic 20 mm size.

To get approval for your connection, you will need to lodge an application with Sydney Water Tap inTM. You, or your hydraulic consultant, may need to supply the following:

- A plan of the hydraulic layout;
- A list of all the fixtures/fittings within the property;
- A copy of the fire flow pressure inquiry issued by Sydney Water;
- A pump application form (if a pump is required);
- All pump details (if a pump is required).

You will have to pay an application fee.

Sydney Water does not consider whether a water main is adequate for firefighting purposes for your development. We cannot guarantee that this water supply will meet your Council's firefighting requirements. The Council and your hydraulic consultant can help.

Disused Water Service Sealing

You must pay to disconnect all disused private water services and seal them at the point of connection to a Sydney Water water main. This work must meet Sydney Water's standards in the Plumbing Code of Australia (the Code) and be done by a licensed plumber. The licensed plumber must arrange for an inspection of the work by a NSW Fair Trading Plumbing Inspection Assurance Services (PIAS) officer. After that officer has looked at the work, the drainer can issue the Certificate of Compliance. The Code requires this.

Other fees and requirements

The requirements in this Notice relate to your Certificate application only. Sydney Water may be involved with other aspects of your development and there may be other fees or requirements. These include:

- plumbing and drainage inspection costs;
- the installation of backflow prevention devices;
- trade waste requirements;
- large water connections and

- council firefighting requirements. (It will help you to know what the firefighting requirements are for your development as soon as possible. Your hydraulic consultant can help you here.)

No warranties or assurances can be given about the suitability of this document or any of its provisions for any specific transaction. It does not constitute an approval from Sydney Water and to the extent that it is able, Sydney Water limits its liability to the reissue of this Letter or the return of your application fee. You should rely on your own independent professional advice.

END

Design with
community in mind

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For more information please visit
www.wge.com.au



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