

Tolucy Pty Ltd



Water and Sewer Servicing Strategy: Proposed Seniors Living Development, 85 Booralie Road, Terrey Hills, NSW

ENVIRONMENTAL



WATER



WASTEWATER



GEOTECHNICAL



CIVIL



PROJECT
MANAGEMENT



P1705808JR02V02
March 2017

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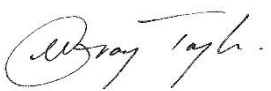
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Head Office
Suite 201, 20 George Street
Hornsby, NSW 2077, Australia
ACN 070 240 890 ABN 85 070 240 890
Phone: +61-2-9476-9999
Fax: +61-2-9476-8767
Email: mail@martens.com.au
Web: www.martens.com.au

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All enquiries regarding this project are to be directed to the Project Manager.

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1 Overview

1.1 Introduction

Martens and Associates Pty Ltd have been engaged to develop a water and sewer operations and management servicing strategy to support a development application (DA) for a proposed seniors-living development at 85 Booralie Road, Terry Hills, NSW, to be combined with the approved seniors living development adjacent, at number 83 Booralie Road.

Existing services within and adjacent to the site have been identified that can potentially service the proposed development via direct connection or extension, and is based on information provided in a Sydney Water feasibility letter dated 29th May 2016 (Attachment B) and pressure and flow enquiry for 83 Booralie Road dated 14th December 2012 (Attachment C).

1.2 Scope

The scope of this report includes:

1. Locate existing utility services near to the site.
2. Determine likely demands for the services from the proposed development.
3. Comment on the likely capacity of the existing infrastructure to service the proposed development.

1.3 Proposed Development

We understand that the development is to consist of the following key elements:

1. Amalgamation with approved seniors living development on 83 Booralie Road.
2. 37 x 2 and 3 bedroom senior living units/apartments on a site area of approximately 2.10 Ha.
3. Internal access driveway with street access from Booralie Road.
4. Internal landscaping.
5. Internal site stormwater management system.

6. Upgrade of existing Sydney Water connection.
7. New pump to sewer system.

1.4 Site Description

Site description is summarised in Table 1.

Table 1: Site summary.

Element	Detail
Site address	85 Booralie Road, Terrey Hills, NSW
Lot/DP	Lot 2 DP 530145
Local Government Area (LGA)	Northern Beaches Council (NBC) (formerly Warringah Council)
Current zoning	RU4 – Primary Production Small Lots
Current land use	Rural residential
Proposed land use	Residential
Surrounding land uses	Residential, rural residential

A proposed development plan is provided in Attachment A.

2 Sewer Servicing

2.1 Existing Sewer infrastructure

The existing dwelling is not presently connected to the Sydney Water sewer network.

A sewer main located on the eastern side of Laitoki Road services residential lots east of Laitoki Road. The sewer main is a 150mm diameter vitrified clay (VC) main flowing south joining into a 225mm diameter VC main approximately half way between Nambucca Road and Tooronga Road. The concurrent development at 83 Booralie Road is approved connect to the sewer network at this point.

2.2 Sewer Servicing Strategy

The scope of this sewer strategy includes:

1. Estimate sewage generation rates.
2. Prepare a concept system design.
3. Document broad operating requirements.

Sydney Water's feasibility letter dated 19th May 2016 (Attachment B) advised that the proposed development can be serviced by an extension to the 225 mm main in Laitoki Road. Based on this advice as well as previous advice for 83 Booralie Road, a combination gravity drainage and pumped sewer system will be acceptable. The following are Sydney Water's connection requirements:

1. The site sewer is to connect into the access chamber located on the eastern side of Laitoki Road, adjacent to 83 Booralie Road's south east boundary. This is an extension of the 225 mm main in Laitoki Road and the connection point for the development at 83 Booralie Road.

2.3 Sewage Generation Rate

The proposed seniors-living units are typically planned for as having a peak design population of 3 equivalent persons (EP) as per the Sewerage Code of Australia Table A1 for single occupancy medium density dwellings down to 300 m². Design peak site population is calculated in Table 2. The design peak sewer flow rate for the site (PWWF) is calculated to be 2.65 L/s. Note that sewer flow from

groundwater infiltration was assumed to be zero as the system will be a new uPVC network.

Table 2: Sewage generation and discharge rates.

Element	Value	Units
Units ¹	37	Each
Design Peak Population ¹	111	EP
ADWF ^{2,3}	16.65	kL/day
PDWF ^{2,3}	124.88	kL/day
PWWF Design Sewer Flow ³	2.65	L/s

Notes

¹ Based on 37 units @ 3.0 Equivalent Population/dwelling (Sewerage Code of Australia, WSA 02-2002-2.2, Table A1).

² ADWF - Average dry weather flow, PDWF - Peak daily dry weather flow, PWWF – Peak wet weather flow.

³ Based on design flow calculations in accordance with Appendix B, Sewerage Code of Australia, WSA 02-2002-2.2, Sydney Water Edition, Version 3.

2.4 Concept System Design

The proposed pump to sewer system component design is provided in Table 3. Design specifications are as follows:

1. Gravity drainage of the proposed development to an onsite pumping station, located to the south east of the site's developed area in accordance with AS/NZS 3500. Gravity drainage design is to occur at the detailed design stage.
2. An onsite sewer pumping station discharging to an extension of the existing Sydney Water's access chamber in Laitoki Road. Assumed maximum allowable total flow rate is 2 L/s in accordance with Sydney Water's previous requirement for 83 Booralie Road. The pumping station is to be fitted with a dual (duty and standby) operation transfer pump (pump type to be confirmed), subject to Sydney Water's approval. Connection to Sydney Water's sewer network is to be designed and approved by Sydney Water at the detailed design stage.
3. Wet weather holding capacity is provided by a separate holding tank. The wet weather holding tank takes overflows from the pumping station and is sized for 24 hours of ADWF storage. This equates to 10 hours of PWWF storage, providing time for maintenance in the event of pump / component failure, or storage during blackouts. Refer to Table 2.

4. High and intermediate level alarms are to be provided on sewer holding tanks.
5. Final location and the arrangement of sewer and pump station components are to be confirmed during detailed design.
6. Control shed or similar area to contain electrical control boards, maintenance register and ancillary items relating to the pump to sewer system.
7. The rising main from the sewer pump station to the access chamber is likely to consist of a DN63 PE discharge line.
8. Provision of a 3.0m wide access way for a medium rigid vehicle (MRV) for emergency and maintenance access to the sewer pump station and holding tank.

Table 3: Pump to sewer system design.

Element	Value	Units
Operating capacity (4 hrs PDWF)	20.81	kL
Wet weather overflow storage (10 hrs storage) ¹	43.4	kL
Total holding tank storage ²	65.0	kL
Pumping station discharge rate (maximum) ³	2	L/s

Notes

¹. Flows generated from ground water infiltration and rainfall inflow over 10hrs.

². Total storage includes 4 hrs of PDWF plus 10hrs of PWWF storage.

³. Likely Sydney Water requirement as per 83 Booralie Rd, subject to Sydney Water approval.

2.5 Scheme Operation Management

2.5.1.1 Visual Impact

All tanks, pumps, lines and sheds will largely be below ground and therefore will have minimal visual impact.

2.5.1.2 Noise Considerations

All wastewater transfer pumps will be submersible pumps (ie. operate below water level). Impact assessment for the operation of the pump station is as follows:

1. Pumps will not generate nuisance noise to any nearby buildings due to pumps being submersed and encased in a sealed tank below ground.

2. The pump to sewer system is not expected to generate excessive nuisance noise levels impacting on either proposed dwellings or existing adjacent dwellings along Laitoki Road.

2.5.1.3 Odour Considerations

A vent with attached odour scrubber is to be located to the south of the site away from dwellings to reduce likelihood of nuisance odours.

2.5.1.4 Emergency Response

The proposed system provides holding capacity of generated sewer volumes from the following:

1. 4 hours' storage of peak daily dry weather flows (PDWF), or 24 hours of average dry weather sewer flows (ADWF).
2. 10 hours storage of rainfall dependent inflow and infiltration, peak daily dry weather flow and groundwater infiltration into the onsite sewer network (PWWF).

In the event of equipment failure, extended power failure or excessive flows to the onsite sewer system, provision is to be made allowing pump out of the holding tank or emergency maintenance. The proposed tank location is to allow for a 3.0m wide access way accommodating a medium rigid vehicle (MRV) to turn around for emergency and maintenance purposes.

3 Water Servicing

3.1 Existing Water Service Infrastructure

The existing site is currently serviced with a single 20mm domestic water connection to Sydney Water's network. This connection point is located along the western section of the northern site boundary.

The attached Sydney Water feasibility letter (Attachment B) indicates the following:

1. Sydney Water has an existing 200mm water main in Booralie Road.
2. This water main is available for connection.
3. Approval for a larger water connection to service the proposed development is required. This should take place at the detailed design stage.
4. Appropriate backflow prevention is required.

3.2 Water Demand Rates

3.2.1 Dwelling Demand

Demand for potable water from the development was calculated using the Water Supply Code of Australia, WSA 03-2011-3.1 and is summarised in Table 4 and Table 5.

Table 4: Drinking water demand rates.

Element	Value	Units
Average daily dwelling demand ¹	3.60	L/m ² /day
Gross floor area ²	6,660	m ²
Number of units	37	No.
Total daily demand per dwelling	648	L/unit/day
Internal dwelling demand	80	%
Average daily demand per unit (internal use)	518.4	L/unit/day
Average daily demand per unit (external use)	129.6	L/unit/day

Notes

¹. Based on group housing <30 dwellings per hectare (Water Supply Code of Australia, WSA 03-2011-3.1, Table SW2.1).

². Gross floor area based on 180m²/dwelling (incl. outdoor areas). Includes 37 town houses.

3.2.2 Garden and Landscape Demand

We understand that gardens and site landscaping will consist of the following:

1. Deep soil landscape area of approximately 0.8 Ha, surrounding the developed area of which 0.4 ha was assumed to be irrigated in addition to small garden areas of say 20 m² attached to the 37 units. Total of 0.47 Ha of irrigatable area.
2. A garden and lawn irrigation rate of 2 ML/ha/year was used for water demand analysis in addition to Sydney Water's dwelling demand rates to account for landscaped areas.

3.2.3 Total Supply Demand

A larger connection will be required to service the proposed development. This will involve applying to Sydney Water via Quick Check agent once a hydraulic layout and a list of all fixtures and fittings are known. These details are to be confirmed at the detailed design stage.

Total site water demand is summarised in Table 5.

Table 5: Potable water demand rates.

Element	Value	Units
(A) Daily average dwelling demand (internal) ¹	19.18	kL/day
(B) Daily average dwelling demand (external) ²	4.80	kL/day
(C) Daily site irrigation allowance ³	2.60	kL/day
(A)+(B)+(C) Daily average site demand	26.58	kL/day
Peak Site Daily Demand ⁴	61.12	kL/day
Peak Hourly Demand (potable) ⁵	1.6	L/s

Notes

1. Calculated as 518.4 L multiplied by 37 units.
2. Calculated as 129.6 L multiplied by 37 units.
3. Calculated on an irrigated area of 0.47 Ha multiplied by 2 ML/Ha/yr.
4. Daily average site demand multiplied by peak day factor of 2.3 (Water Supply Code of Australia, WSA 03-2011-3.1, Table SW2.1).
5. Average hourly demand on peak day multiplied by peak hour factor of 2.2 (Water Supply Code of Australia, WSA 03-2011-3.1, Table SW2.1).

Based on the Sydney Water Statement of Available pressure and flow for the approved, concurrent development at 83 Booralie Road, dated 14/12/2012 (Attachment C), the site peak hourly demand of 1.6 L/s is expected to result in an acceptable operating pressure of at least 28 m head within Sydney Waters' main. This is to be confirmed at detailed

design stage once the hydraulic layout and all fixtures and fittings are determined.

3.2.4 Fire Services Demand

An external fire hydrant service will be provided to service the proposed development.

Two attack hydrants will be required to meet the required minimum hydrants in accordance with AS 2419 (2005).

Hydrant performance (attack hydrant) is achieved without the use of a fire brigade pumping appliance and the specification is 10 L/s at 25 m residual head pressure (i.e. 250 KPa) in accordance with AS 2419 (2005). Hydrants should be positioned to ensure that all buildings may be reached by a 10 m jet of water from a 60 m length of hose attached to a hydrant.

Attack fire hydrants shall be above ground, have two outlets each individually valve controlled.

The Sydney Water Statement of Available Pressure and Flow, dated 14/12/2012 (Attachment C), indicates an expected water mains pressure at the connection point of:

1. 60m head (maximum pressure)
2. 29m head (minimum pressure)

Based on Sydney Waters' pressure, flow modelling, there is enough capacity to meet the flow demand for fire services. Depending on the size of connection to the main, and number of external hydrants required, a booster pump assembly may be required to maintain the minimum required pressure mentioned above and is to be confirmed at the detailed design phase.

3.3 System Concept Design and Specification

A preliminary water supply scheme will include the following elements:

1. New larger water connection size with provision of appropriate backflow prevention device.
2. Nominal 100 mm potable and fire supply main(s) to the development.
3. Hydrants to be serviced from the fire supply main.

3.4 Scheme Operation and Management

3.4.1 Sydney Water Supply

For the purposes of this report, we have assumed that the connection will be made available from the mains situated within the Booralie Road reserve. There are no significant operational or maintenance issues related to this connection.

3.4.2 Hydrants

All hydrants should be tested and certified as operating correctly in accordance with AS 1851 and manufacturer's specifications by a suitably qualified person.

4 References

Standards Australia (2005), *AS2419 (2005) Fire Hydrant Installations*.

Sydney Water (2016), *Feasibility Letter, 29/05/2016*.

Sydney Water (2012), *Statement of Available Pressure and Flow, 14/12/2012*

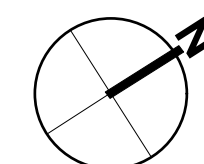
Water Services Association of Australia (2002) *Sewerage Code of Australia – Sydney Water Edition Version 3*.

Water Services Association of Australia (2011) *Water supply Code of Australia – Sydney Water Edition Version 3.1*.

5 Attachment A – Proposed Development Plan



Project : 83-85 Booralie Road Terry Hills
 Sketch Design-02 : Site Plan
 Scale : 1:500@A2
 Date : 20/01/2016



11 marian street
 killara NSW 2071
 T 02 9498 8511
 F 02 9498 4970

info@playoustchurcher.com.au
 www.playoustchurcher.com.au

PLAYOUST
 CHURCHER



John J F Playoust & Co Pty Limited ACN 008 503 188 & Brett Churcher Architects Pty Ltd
 ACN 003 751 611 trading as Playoust Churcher Architects

6 **Attachment B – Sydney Water Feasibility Letter**

Case Number: **154421**

19 May 2016

TOLUCY PTY LTD
c/- QALCHEK PTY LTD

FEASIBILITY LETTER

Developer: TOLUCY PTY LTD
Your reference: PM 16929
Development: Lot 2 DP530145 85 BOORALIE RD, Terrey Hills
Development Description: Proposed seniors development with 37 dwellings.
Client would like Sydney Water to address the following sewer connection options:
Full wastewater connection for the entire development via easement through 83 Booralie Rd and connection to Latoki Rd connection point (PM15969). Preliminary design indicates that based on levels for the connection point this could be achieved through a mixture of gravity and pump.
Your application date: 10 May 2016

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**

After the Coordinator has submitted your new application, they will receive the Sydney Water Notice and Developer Works Deed. You and your accredited Developer Infrastructure Providers (Providers) will need to sign and lodge both copies of the Deed with your nominated Coordinator. After Sydney Water has signed the documents, one copy will be returned to the Coordinator.

The Deed sets out for this project:

- your responsibilities;
- Sydney Water's responsibilities; and
- the Provider's responsibilities.

You must do all the things that we ask you to do in that Deed. This is because your development does not have sewer services and you must construct and pay for the following works extensions under this Deed to provide these services.

Note: The Coordinator must be fully authorised by us for the whole time of the agreement.

4. **Water and Sewer Works**

- 4.1 **Water**

Your development must have a frontage to a water main that is the right size and can be used for connection.

Sydney Water has assessed your application and found that:

- **The drinking water main available for connection is the 200 mm main on the southern side of Booralie Road.**

4.2 Sewer

Your development must have a sewer main that is the right size and can be used for connection. That sewer must also have a connection point within your development's boundaries.

Sydney Water has assessed your application and found that:

- **You must construct a waste water main extension to serve your development.** The proposed development will be served by an extension off the 225mm wastewater main in Laitoki Rd which will provide a point of connection at least 1m inside all the property boundaries. **The terms of the Deed define this extension as 'Major Works'.**
- § Your WSC can assess the water/wastewater mains and advise you of any amplification requirements based on your connection points and corresponding discharge.
- § The proposed wastewater infrastructure for this development will be sized & configured according to the Sewerage Code of Australia.
- § This advice is not a formal approval of our servicing requirements. Formal requirements for servicing the developments will be determined as part of the Section 73 application phase. More information about the Section 73 application process is available on our web page in the [Land Development Manual](#).
- You must use Sydney Water's new **Technical Specifications for Leak Tight Sewer Systems** to plan, design and construct the sewer. This specification must be used in conjunction with (and have precedence over) the Sewerage Code of Australia, WSA02-2002 (Sydney Water Edition).
- **If your development requires adjustment/deviation of a "live" wastewater main you must work with your Water Service Coordinator to ensure that:**
 - Your Building Plans are approved prior to temporary pipework and excavation,
 - You submit your temporary pipework design (if required) with your permanent wastewater deviation design for approval,
 - Accept in writing to bonding conditions that will be provided in the Bond Agreement,
 - Submit your Bond and signed Bond Agreement,
 - Submit the Construction Commencement Notice for construction of the temporary pipework,
 - Have your temporary pipework constructed by a listed provider, and then
 - Complete your permanent deviation works

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.

5.3 Costs

Construction of these **future** works will require you to pay project management, survey, design and construction costs **directly to your suppliers**. Additional costs payable to Sydney Water may include:

- water main shutdown and disinfection;
- connection of new water mains to Sydney Water system(s);
- design and construction audit fees;
- contract administration, Operations Area Charge & Customer Redress prior to project finalisation;
- creation or alteration of easements etc; and
- water usage charges where water has been supplied for building activity purposes prior to disinfection of a newly constructed water main.

Note: Payment for any Goods and Services (including Customer Redress) provided by Sydney Water will be required prior to the issue of the Section 73 Certificate or release of the Bank Guarantee or Cash Bond.

Your Coordinator can tell you about these costs.

6. Approval of your Building Plans

You must have your building plans approved **before the Certificate can be issued. Building construction work MUST NOT commence until Sydney Water has granted approval.** Approval is needed because construction/building works may affect Sydney Water's assets (e.g. water and sewer mains).

Your Coordinator can tell you about the approval process including:

- Your provision, if required, of a "Services Protection Report" (also known as a "pegout"). This is needed to check whether the building and engineering plans show accurately where Sydney Water's assets are located in relation to your proposed building work. Your Coordinator will then either approve the plans or make requirements to protect those assets before approving the plans;
- Possible requirements;
- Costs; and
- Timeframes.

You can also find information about this process (including technical specifications) if you either:

- visit www.sydneywater.com.au > Plumbing, building & developing > Building > Building over or next to assets. Here you can find Sydney Water's *Technical guidelines - Building over and adjacent to pipe assets*; or
- call 13 20 92.

Notes:

- **The Certificate will not be issued until the plans have been approved and, if required, Sydney Water's assets are altered or deviated;**
- **You can only remove, deviate or replace any of Sydney Water's pipes using temporary pipework if you have written approval from Sydney Water's Urban Growth Business. You must engage your Coordinator to arrange this approval; and**
- **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*.**

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.

Pumping of Effluent

If the conventional gravity sewerage facilities cannot be provided to the proposed development/lot, you will have to dispose of the effluent using another system that will meet both Sydney Water and Council requirements.

If you want information about pumping the effluent to Sydney Water's existing sewerage system contact your Coordinator.

Disused Sewerage Service Sealing

Please do not forget that you must pay to disconnect all disused private sewerage services and seal them at the point of connection to a Sydney Water sewer main. This work must meet Sydney Water's standards in the Plumbing Code of Australia (the Code) and be done by a licensed drainer. The licensed drainer 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.

Soffit Requirements

Please be aware that floor levels must be able to meet Sydney Water's soffit requirements for property connection and drainage.

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:

Trade Wastewater Requirements

If this development is going to generate trade wastewater, the property owner must submit an application requesting permission to discharge trade wastewater to Sydney Water's sewerage system. You must wait for approval of this permit before any business activities can commence.

The permit application should be emailed to Sydney Water's [Business Customer Services](mailto:businesscustomers@sydneywater.com.au) at businesscustomers@sydneywater.com.au

It is illegal to discharge Trade Wastewater into the Sydney Water sewerage system without permission.

A **Boundary Trap** is required for all developments that discharge trade wastewater where arrestors and special units are installed for trade wastewater pre-treatment.

If the property development is for Industrial operations, the wastewater may discharge into a sewerage area that is subject to wastewater reuse. Find out from Business Customer Services if this is applicable to your development.

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 15 meters 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 fire fighting 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 fire fighting 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 fire fighting 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 fire fighting 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 are 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 fireflow 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 fire fighting purposes for your development. We cannot guarantee that this water supply will meet your Council's fire fighting 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 fire fighting requirements. (It will help you to know what the fire fighting 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

**7 Attachment C – Sydney Water Statement of Available
Pressure and Flow for 83 Booralie Road dated 14/12/2012**

Statement of Available Pressure and Flow

Sydney
WATER

Martens & Associates
6/37 Leighton Pl
Hornsby, 2077

RECEIVED
17 DEC 2012

WMS No: 249990
Contact No: 8849-3531
Fax No: 8849-3063

Attention: Terry Harvey

BY:

Date: 14/12/2012

Pressure & Flow Application Number: 8306299

Your Pressure Inquiry Dated: Mon December 3 2012

Property Address: 83 Booralie Rd, Terrey Hills 2084

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Booralie	Side of Street: South
Distance & Direction from Nearest Cross Street	40 metres West from Latoki
Approximate Ground Level (AHD):	199 metres
Nominal Size of Water Main (DN):	200 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	60 metre head
Minimum Pressure	29 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	29
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 15	31 30 30
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	5 10 15	28 27 26
Maximum Permissible Flow	19	25

(Please refer to reverse side for Notes)

Robert Wickham
FOR Robert Wickham
Principal Planner
Urban Growth – Asset Services