Tolucy Pty Ltd c/- Playoust Churcher Architects

Preliminary Servicing Assessment – Proposed Seniors Living Development, 25 Laitoki Road, Terrey Hills, NSW.

ENVIRONMENTAL

WATER

WASTEWATER

GEOTECHNICAL

CIVIL

PROJECT MANAGEMENT

P1806682JR03V01
February 2019

Copyright Statement

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

Contents

1 Overview

1.1 Introduction

This preliminary servicing assessment has been prepared by Martens and Associates to inform a proposed seniors living development located at 25 Laitoki Road, Terrey Hills, NSW. The assessment is based on available information from service providers.

1.2 Proposed Development

The proposed seniors living development will include the following:

1. 60 self-contained residences, consisting of:
    a. 8 houses with 3 bedrooms each.
    b. 4 houses with 4 bedrooms arranged as duplexes.
    c. 10 terrace houses with 3 bedrooms each.
    d. 32 self-contained units with 3 bedrooms each.
- Internal roads, paths and car parking areas
- Associated site service infrastructure (including stormwater management, sewer, water supply, electricity, gas and telecommunications).

The proposed layout is provided in Attachment A.

1.3 Scope

The scope of works for this preliminary servicing assessment includes:

- Provide water demand, wastewater generation and power demand analyses for the development to inform preliminary design requirements.
- Preliminary engineering design of water supply and sewage management systems including any controls, storages, pumps and pumping stations.
- Report outcome of Sydney Water feasibility assessment.

- Consideration of likely availability of other services (telecommunications and / or NBN, electricity, gas and stormwater drainage).

1.4 Relevant Standards and Policy

Standards considered pertinent to this assessment include:

- Water Services of Australia (WSA, 2009) *Sewage Code of Australia WSA02-2002-2.2 Sydney Water Edition Version 3.*
- Water Services of Australia (WSA, 2012) *Water Supply Code of Australia WSA03-2011-3.1 Sydney Water Edition 2012.*

2 Site Description

2.1 Site Location and Existing Land Use

Site information is summarised in Table 1 and site location and general surrounds shown in Attachment A.

Table 1: Site background information.

Item	Description / Detail
Site address	25 Laitoki Road, Terrey Hills, NSW.
Lot/DP[1]	Lot 261 DP775299.
Approximate area[1]	Approx 2.00 ha.
Local Government Area (LGA)	Northern Beaches Council (Warringah Area)
Current zoning and land use	RU4 Primary Production Small Lots.
Proposed land use	Seniors living development.
Site description	The site contains a double storey clad dwelling, garage, above ground pool and horse stables. Site has both cleared and treed areas.
Surrounding land uses	Mixture of rural, rural residential and low density residential.
Drainage	Drainage is typically via overland flow to Neverfail Creek (centre of site draining approximately south-south-west).
Topography	The site has grades of 5 – 15% towards the centre of the site. Site elevation is between approximately 192 mAHD adjacent to the eastern site boundary and 177 mAHD in the vicinity of the existing headwall and pipe draining Neverfail Creek to the south of the site.
Expected geology	The Sydney 1:100,000 Geological Series Sheet 9130 (Geological Survey of NSW, 1983) indicates that the site is underlain by Hawkesbury Sandstone comprising medium to coarse grained quartz sandstone, very minor shale and laminite lenses.

3 Services Demand Assessment

3.1 Water Demand

Site water demand rates are calculated using the Sydney Water (2012) version of the WSA water supply guidelines (WSA03-2011-3.1). A number of assumptions have been adopted in determining the site water demand as follows:

- 3 persons / dwelling average occupancy rate for all houses, townhouses and units.
-

Table 2 provides a summary of the estimated water demands for the development.

Table 2: Summary of estimated water demands for the development.

Development component	Number	Average daily demand (kL/day)	Peak daily demand (kL/day)	Peak hourly demand (L/s)
Houses	12	9.0	26.4	0.76
Townhouse	10	7.0	16.0	0.41
Units	32	20.2	43.2	1.00
Total	54	36.2	85.6	2.17

Based on WSA (2012), average daily potable water demand for the site is estimated to be approximately 36.2 kL/day, peak daily demand is estimated to be approximately 85.6 kL/day and peak instantaneous demand is estimated to be approximately 2.2 L/s. This figure may be revised at detailed design stage depending on site requirements for non-potable water capture and re-use (e.g. roofwater capture and storage for garden irrigation use).

3.2 Fire Fighting Demand

Review of the Northern Beaches Council (NBC) online mapping shows that the site is not currently mapped as bushfire prone. Fire-fighting demand is therefore determined using Australian Standard 2419 (2005). In determining the fire-fighting demands for the development, the following assumptions are made:

- Building floor area for the self-contained units is estimated to be approximately 7,320 m^2.
- Buildings will have an automated sprinkler system for fire control internal to all buildings.

Given the above areas, each 'fire compartment' (taken to include all buildings which are self-contained units) is greater than 1,000 m^2 but less than 10,000 m^2. It is therefore concluded that the site will require fire-fighting capacity to allow for two external hydrants to be operational simultaneously. For the purposes of checking that Sydney Water potable water supply is adequate for supplying fire-fighting demands, it is assumed that the two required hydrants are located such that one is fighting a fire on the eastern side of the site and the other is on the western side.

AS2419 (2005) requires the following performance specifications for the fire-fighting system.

Table 3: Performance specifications for proposed fire-fighting system.

System component	Minimum requirements	Comments
All hydrants	Not located in roadway / access. 65 mm diameter hose coupling. Located not more than 10 m from the building it is protecting and such that a 60 m length of hose and 10 m jet of water will reach all parts of the building.	To be positioned generally adjacent to site accessway.
Feed hydrant	10 L/s at 150 kPa (minimum pressure).	Feed hydrant designed to supply water to a fire appliance (typically a NSWFB or NSWRFS fire-fighting vehicle) which boosts the pressure.
Attack hydrant	10 L/s at 250 kPa (if located maximum 50 m from hardstand). 10 L/s at 700 kPa (if located more than 50 m from hard stand).	Attack hydrant designed to supply water to a standalone fire-fighting system (usually a hose) without pressure boosting.
Water supply and storage	Sufficient to run each hydrant for a minimum of 4 hours – 144 kL/hydrant operating. Provision to be made in water storage for tanker to pump water directly from the tank.	Adopted as 288 kL requirement for site. This may be either a reticulated (Sydney Water) supply, a dedicated onsite storage for fire-fighting or a combination of both, depending on assessment by Sydney Water of availability of potable water to site.

The site fire-fighting system shall also require mains, valves, booster hydrant assembly on top of the components summarised above.

Should Sydney Water determine that potable water is unavailable for fire-fighting purposes at the site, a dedicated tank with a minimum 288 kL static storage capacity will need to be constructed to supply site fire-fighting demand. This tank may be incorporated into any on-site detention structure deemed necessary for the site and be fully or partially supplied by captured stormwater runoff. An on-site storage for fire-

fighting purposes would also require both a booster pump set (operating on a duty / standby basis), control system and telemetry.

3.3 Sewage Generation

Site sewage generation estimates have been calculated using the WSA (2009) *Sewage Code of Australia WSA02-2002-2.2 Sydney Water Edition Version 3.*

Assumptions used to calculate the sewage generation rates are as follows:

- 3 persons / dwelling average occupancy rate for all houses, townhouses and units.
-
- Wet weather ingress to the sewage system within the site is presumed to be negligible on account of all pipes, manholes, *etc.* being considered to have little opportunity for leakage due to age related factors (deterioration of materials, joints, ingress of vegetation, *etc.*). Peak wet weather flow is therefore the same as peak dry weather flow.

Sewage generation rates are summarised in Table 4.

Table 4: Summary of sewage generation rates for proposed development.

Development component	Number	Average dry weather flow (kL/day)	Peak dry weather flow (kL/day)	Average flow to sewer (L/s)
Houses	12	7.6	47.6	0.09
Townhouse	10	5.4	34.0	0.06
Units	32	17.3	108.9	0.20
Total	54	30.2	190.5	0.35

The above estimated flow rates correlate relatively well with the estimated water demand rates given in Table 2. The estimated sewage generation rate will need to be re-assessed at detailed design stage of the development.

3.4 Power Demand

A preliminary analysis of the likely power requirements has been completed for the site. Review of the Ausgrid (2017) Local Council Community Electricity Report indicates that the daily average power use per customer for the Northern Beaches Council LGA is 16.4 kWh / customer / day. Assuming a site population of 162 persons – based on 3

persons / dwelling, this equates to a power demand of 2.66 MWh/day, or approximately 970 MWh/year.

4 Existing Services Infrastructure and Capacity

4.1 Dial Before You Dig Enquiry

A 'Dial-before-you-Dig (DBYD) enquiry was lodged for the site on 6 July 2018 and responses for existing services were received from the following service providers:

- Sydney Water (water and sewerage);
- Jemena (gas);
- Telstra (telecommunications), and;
- Ausgrid (electricity);

4.2 Sydney Water Existing Assets and Connection Availability

The DBYD results indicate that Sydney Water has an existing 150 mm diameter CICL water main and a 125 mm diameter PE water main located adjacent to the site in the Cooyong Road and Laitoki Road reserves respectively.

A feasibility assessment (Attachment B) has been received from Sydney Water that indicates the existing 125 mm PE water main in Laitoki Road has existing spare capacity to provide domestic water supply to the development. It is not known if supply for firefighting purposes is available from the Sydney Water main.

4.3 Sydney Water Sewerage Network

The DBYD results appear to indicate that the site is currently connected to a Sydney Water reticulated sewer service located in Laitoki Road. The existing connection is a 150 mm VC pipe directed to a manhole adjacent to 35 Laitoki Road. Review of the plans also show an existing sewage pump station located approximately 25 m to the south and east of the site. It is not known if the downstream sewer and pumping station have sufficient capacity to convey expected flows from the site, nor if the system is appropriately designed to convey flows from the development.

The feasibility assessment from Sydney Water recommends that the development may require a pump-to-sewer connection and that further modelling would be required to confirm that spare sewer capacity is available. The assessment notes that off-peak discharge to sewer may be necessary.

4.4 Gas

Review of the DBYD plans provided by Jemena show that there is currently a 32 mm gas main located in both the Cooyong and Laitoki Road reserves.

Correspondence with Jemena's new connections team has indicated that the site is likely to be able to be supplied with reticulated gas, subject to a detailed design and review being conducted at the detailed design stage of the development. A Clearance Certificate is being sought from Jemena to that effect.

4.5 National Broadband Network

Review of the DBYD plans shows that there is not currently an in-service cable within the Cooyong or Laitoki Road reserves adjacent to the site. However, review of the NBN website indicates that construction of the NBN will be commenced and likely finished prior to the development being completed. This suggests that the site will be connectable to the NBN, subject to detailed design at Construction Certificate stage of the development.

4.6 Telecommunications

Under Telstra's Universal Services Obligation incorporated into the Telecommunications (Consumer Protection and Service Standards) Act (1999), Telstra is legally obligated to provide standard telephone services, payphones and prescribed carriage services to all businesses within Australia (Telstra, 2005).

A detailed design of the proposed development will need to be submitted to Telstra's 'Smart Community' development assessment team to determine the minimum upgrades and / or new assets required to adequately service the site.

Review of the DBYD plans show the existence of existing Telstra services within the Cooyong and Laitoki Road reserves adjacent to the site. It is not known if these are sufficient to supply telecommunications to the development or if an upgrade would be required.

4.7 Electricity Supply

Review of the DBYD plans showed that Ausgrid has no underground supply cables immediately adjacent to the site in either the Cooyong or Laitoki road reserves. Site inspections confirm that existing electricity infrastructure consists of overhead cables and associated poles.

It is reasonably expected that electricity will be available to the development, subject to a detailed design of the existing electricity supply network to be completed by a suitably qualified Level 3 Accredited Service Provider (ASP). This may involve provision of a pole or pad mounted transformer.

5 Recommendations

5.1 Availability of Services

A preliminary review of the availability of utility services has been completed for the site. It shows that, subject to detailed design of the development, utility services shall be generally available to the development.

5.2 Recommended Actions at Detailed Design Stage of Subdivision

We recommend that the following be undertaken at detailed design stage of the development:

- Engagement of a Water Servicing Coordinator to design the internal water supply network and sewerage connection for the development and to apply for a Section 73 Compliance Certificate from Sydney Water.
- Engagement of a Level 3 ASP electrical designer to design the internal electricity supply system for the development and to liaise with and obtain relevant approvals from Ausgrid.
- Engagement of a suitably qualified gas network designer to design the new gas supply network within the site and to liaise with Jemena with respect to minimum supply requirements and required approvals.
- Engagement of a suitably qualified person or person(s) to design the telecommunications network (including NBN connection) to suit the requirements of Telstra and NBN Co.

6 References

https://www.1100.com.au

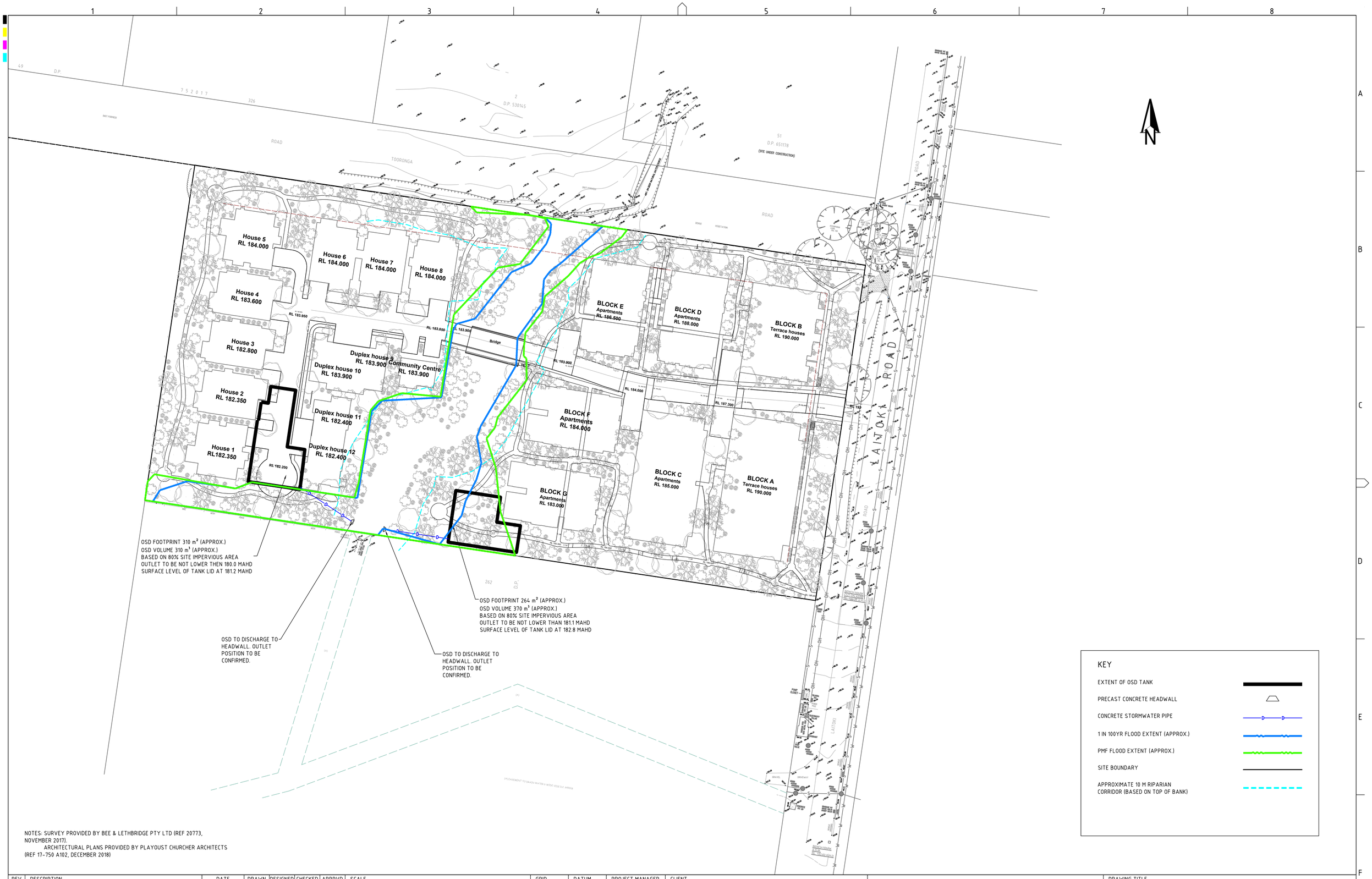
Standards Australia (2005) *Australian Standard 2419.1 – Fire hydrant installations Part 1: System design, installation and commissioning.*

Telstra (2005) *Telstra's Universal Service Obligation – Policy Statement.*

Water Services of Australia (WSA, 2009) *Sewage Code of Australia WSA02-2002-2.2 Sydney Water Edition Version 3.*

Water Services of Australia (WSA, 2012) *Water Supply Code of Australia WSA03-2011-3.1 Sydney Water Edition 2012.*

7 Attachment A – Concept Site Layout Plan



NOTES: SURVEY PROVIDED BY BEE & LETHBRIDGE PTY LTD (REF 20773, NOVEMBER 2017).
ARCHITECTURAL PLANS PROVIDED BY PLAYOUST CHURCHER ARCHITECTS (REF 17-750 A102, DECEMBER 2018)

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	DEVELOPMENT APPLICATION	19/12/2018	MGD	MGD	GT	GT

SCALE
0 5 10 15 20 25 30 35 40 45 50 METRES
A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
	MAHD	SN

CLIENT
TOLUCY PTY LTD

PROJECT NAME/PLANSET TITLE
ENGINEERING SERVICES
PRELIMINARY SITE INVESTIGATION
25 LAITOKI ROAD, TERREY HILLS, NSW

martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
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DRAWING TITLE
CONCEPT ONSITE STORMWATER MANAGEMENT PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806682	PS01	R02	PS01-E500	A

PRINTED: ---- USER: MDAVIS
A1 / A3 LANDSCAPE (A1LC_v02.0.01)
DRAWING ID: P1806682-PS01-R02-E500

8 Attachment B – Service Providers Correspondence

Case Number: **173650**

1 November 2018

TOLUCEY PTY LTD
C/- North Western Surveys Pty Ltd

FEASIBILITY LETTER

Developer:	**TOLUCEY PTY LTD**
Your reference:	**17197**
Development:	**Lot 261 DP 775299 (No. 25) Laitoki Road, Terrey Hills**
Development Description:	**Thirteen townhouses; Thirty-four 3 bedroom units; and Thirteen 3 bedroom houses.**
Your application date:	**20 September 2018**

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.

You have made an application for specific information. Sydney Water's possible requirements are set out on the following pages:

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 existing DN125 PE watermain located on the east side of Laitoki Road could provide for the **domestic needs** of the proposed development. Refer to additional advice on "Large Water Service Connections" and Fire Fighting" located at the end of this Letter.

4.2 Sewer

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

Sydney Water has assessed your application and found that:

- The development is located outside of Sydney Water's existing Wastewater service area. In this instance, a connection to Sydney Water's network, via a Pump-to-sewer arrangement, may need to be considered.

- In this regard, Hydraulic Modelling would be required to confirm the actual point of connection. Please note that the results of the Modelling may confirm that discharge be restricted to off-peak times to minimise any detrimental effects to Sydney Water's wastewater system.

- **If necessary you may be required to provide a point of connection to accommodate your Pump-to-Sewer arrangement (if approved).** The terms of the Deed (referred to in Section 3 above) define this work as 'Major 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.

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 your building plans must be approved. This can be done at Sydney Water Tap in™. Visit www.sydneywater.com.au > Plumbing, building & developing > Building > Sydney Water Tap in™ or call 13 20 92.

This is not a requirement of the Certificate but the approval is needed because construction/ building works may impact on existing Sydney Water assets (e.g. water and sewer mains). In any case, these works MUST NOT commence until Sydney Water has granted approval.

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.*

Backflow Prevention Water supply connections

A backflow prevention containment device appropriate to the property's hazard rating must be installed at the property boundary. The device is to be installed on all water supplies entering the property, regardless of the supply type or metering arrangements. It is needed to reduce the risk of contamination by backflow from these supplies.

A licensed plumber with backflow accreditation can advise you of the correct requirements for your property. To view a copy of Sydney Water's Backflow Prevention Policy and a list of backflow accredited plumbers visit www.sydneywater.com.au > Plumbing, building & developing > Plumbing > Backflow prevention.

Large Water Service Connection

A DN125 PE water main located on the east side of Laitoki Road could 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 at Sydney Water Tap in™. 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 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.

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.

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.

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.

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; 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

Statement of Available Pressure and Flow

Michael Dumas
20 George Street
Hornsby, 2077

Attention: Michael Dumas Date: 24/08/2018

Pressure & Flow Application Number: 487065
Your Pressure Inquiry Dated: 2018-07-16
Property Address: 25 Laitoki 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: Laitoki Road	Side of Street: East
Distance & Direction from Nearest Cross Street	50 metres South from Tooronga Road
Approximate Ground Level (AHD):	194 metres
Nominal Size of Water Main (DN):	125 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	65 metre head
Minimum Pressure	34 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	34
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 15 20	36 34 31 26
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main) Maximum Permissible Flow	5 10 15 20 26	33 31 28 23 17

(Please refer to reverse side for Notes)

For any further inquiries regarding this application please email :

swtapin@sydneywater.com.au

General Notes

This report is provided on the understanding that (i) the applicant has fully and correctly supplied the information necessary to produce and deliver the report and (ii) the following information is to be read and understood in conjunction with the results provided.

1. Under its Act and Operating Licence, Sydney Water is not required to design the water supply specifically for fire fighting. The applicant is therefore required to ensure that the actual performance of a fire fighting system, drawing water from the supply, satisfies the fire fighting requirements.

2. Due to short-term unavoidable operational incidents, such as main breaks, the regular supply and pressure may not be available all of the time.

3. To improve supply and/or water quality in the water supply system, limited areas are occasionally removed from the primary water supply zone and put onto another zone for short periods or even indefinitely. This could affect the supply pressures and flows given in this letter. This ongoing possibility of supply zone changes etc, means that the validity of this report is limited to one (1) year from the date of issue. It is the property owner's responsibility to periodically reassess the capability of the hydraulic systems of the building to determine whether they continue to meet their original design requirements.

4. Sydney Water will provide a pressure report to applicants regardless of whether there is or will be an approved connection. Apparent suitable pressures are not in any way an indication that a connection would be approved without developer funded improvements to the water supply system. These improvements are implemented under the Sydney Water 'Urban Development Process'.

5. Pumps that are to be directly connected to the water supply require approval of both the pump and the connection. Applications are to be lodged online via Sydney Water Tap in™ system -
Sydney Water Website – www.sydneywater.com.au/tapin/index.htm. Where possible, on-site recycling tanks are recommended for pump testing to reduce water waste and allow higher pump test rates.

6. Periodic testing of boosted fire fighting installations is a requirement of the Australian Standards. To avoid the risk of a possible 'breach' of the Operating Licence, flows generated during testing of fire fighting installations are to be limited so that the pressure in Sydney Water's System is not reduced below 15 metres. Pumps that can cause a breach of the Operating Licence anywhere in the supply zone during testing will not be approved. This requirement should be carefully considered for installed pumps that can be tested to 150% of rated flow.

Notes on Models

1. Calibrated computer models are used to simulate maximum demand conditions experienced in each supply zone. Results have not been determined by customised field measurement and testing at the particular location of the application.

2. Regular updates of the models are conducted to account for issues such a urban consolidation, demand management or zone change.

3. Demand factors are selected to suit the type of fire-fighting installation. Factor 1 indicates pressures due to system demands as required under Australian Standards for fire hydrant installations. Factor 2 indicates pressures due to peak system demands.

4. When fire-fighting flows are included in the report, they are added to the applicable demand factor at the nominated location during a customised model run for a single fire. If adjacent properties become involved with a coincident fire, the pressures quoted may be substantially reduced.

5. Modelling of the requested fire fighting flows may indicate that local system capacity is exceeded and that negative pressures may occur in the supply system. Due to the risk of water contamination and the endangering of public health, Sydney Water reserves the right to refuse or limit the amount of flow requested in the report and, as a consequence, limit the size of connection and/or pump.

6. The pressures indicated by the modelling, at the specified location, are provided without consideration of pressure losses due to the connection method to Sydney Water's mains.

A3

RD

20.1W

LAITOKI

AVE

TERRIGAL

TIARRI

RD

SP0646

Storage Culvert

VSE

150 CICL

200 DICL

100 CICL

225 VC

150 VC

Conc Encased

DBYD Address:
52 Cooyong Road
Terrey Hills NSW 2084

DBYD Job No: 14527185

DBYD Sequence No: 73201697

Scale: 1:1500

Date of Production: 06/07/2018

Plan 1 of 1

N

0m 9m 18m 27m 36m

TERREY HILLS 4B

"CAUTION: THE GAS MAINS IN THIS AREA MAY BE LAID IN MATERIAL CONTAINING ASBESTOS."

SCALE 1:2000

50 0 50 100 150 200

THIS MAP UPDATED ON 07/02/2018
THIS PLAN IS DIAGRAMATIC ONLY. DISTANCES SCALED FROM THIS PLAN MAY NOT BE ACCURATE.

DATE ALTERED:..... BY:.....

THIC	THID	TH2C
TH4A	TH4B	TH5A
TH4C	TH4D	TH5C

ADJOINING MAPS

469	WARRINGAH
NETWORK AREA	MUNICIPALITY AREA

Jemena

KEY

MAX ALLOWABLE OPERATING PRESSURE

T	TRUNK PIPELINE	7000 kPa
P	PRIMARY MAIN	3500 kPa
S	SECONDARY MAIN	1050 kPa
400	NETWORK MAIN	400 kPa
	NETWORK MAIN	300 kPa
	NETWORK MAIN	210 kPa
100	NETWORK MAIN	100 kPa
30	NETWORK MAIN	30 kPa
	NETWORK MAIN	7 kPa
	NETWORK MAIN	2 kPa
	NETWORK MAIN WITH MAIN STUBS	
	PROPOSED MAINS	
PR II-2 3	STEEL MAIN PROJECT NUMBER	
P	PRESSURE MONITORING STATION	
	VALVE	
	SYSTEM PRESSURE REGULATOR	
S	SIPHON	
123	NETWORK NODE	
123S	NETWORK VALVE NODE	
1098	VALVE NUMBER	
6NB	6 INCH CAST IRON MAIN	
150MM	150MM STEEL MAIN	
110MM PE/NY	110MM POLYETHYLENE/NYLON MAIN	
(6)NB 50MM NY	50MM NYLON INSERTED INTO 6NB MAIN CAST IRON MAIN	
1.2MBL	DISTANCE IN METRES OF MAIN FROM BOUNDARY LINE	
1957	YEAR LAID	
	MUNICIPALITY BOUNDARY	
	NETWORK BOUNDARY	
123	HOUSE NUMBER	

TERREY HILLS 4B

WARNING

Ausgrid's plans show the position of assets at the time of installation and may not account for subsequent changes to road alignments, fences or buildings. The plans show no more than the presence or absence of Ausgrid assets in the street.
Persons working near electricity networks must exercise care and will be held responsible for any damage caused.
You must excavate by hand or use vacuum excavation to establish the location of Ausgrid underground cables and associated assets.
Underground: Working near a cable may result in electric shock even if no contact is made. Any work in the vicinity of any cable should only be performed using safe work methods developed in accordance with the recommendations included in WorkCover Code of Practice for Excavation and WorkCover Guide for Work Near Underground Assets
as well as recommendations of Ausgrid's Network Standard NS156.
Overhead: Do not excavate near poles or towers until the stability of the foundation has been assessed by Ausgrid. Cables or earth conductors may be present close to substations, poles or towers.
Workers must maintain safe approach distances and follow applicable WorkCover Codes of Practice.
NOTE: 1. You must keep Ausgrid plans on site during excavation works. If the people actually performing the excavation works do not know how to read and interpret Ausgrid's plans, then the work must be directed by a person who knows how to read and interpret the plans. 2. This information includes data from the NSW Digital Cadastral Database by Land and Property Information (c) 2016, used under Creative Commons licence version 4.0.

ISG GRID

TH42322	TH42411	TH42412
TH42324	TH42413	TH42414
TH42342	TH42431	TH42432

GRID

136F5	136G5	136H5
136F6	136G6	136H6
136F7	136G7	136H7

GMLA0

Distribution - 73742740

INFORMATION ON THIS PLAN ONLY VALID FOR 30 DAYS FROM ISSUE DATE

24 Jul 2018

Page 1 of 1

1:323

0 — 19 metres

N

Ausgrid

Michael Dumas

From: Elle Peters <Elle.Peters@jemena.com.au>
Sent: Friday, 4 January 2019 11:43 AM
To: Michael Dumas
Subject: RE: P1806682 - 25 Laitoki Road, Terrey Hills - Proposed Development

Hi Michael,

I have estimated the load for the site will be 2,625 mj/hr based on the information you have given.
At present there is sufficient capacity in our network to supply.

Regards,

Elle Peters
Network Development Manager
Jemena
Level 14, 99 Walker Street, North Sydney, NSW 2060
(02) 9867 7000 | 0402060559
epeters@jemena.com.au | www.jemena.com.au
www.gonaturalgas.com.au

From: Michael Dumas <MDumas@martens.com.au>
Sent: Thursday, 3 January 2019 4:04 PM
To: Elle Peters <Elle.Peters@jemena.com.au>
Subject: P1806682 - 25 Laitoki Road, Terrey Hills - Proposed Development

Elle,

Further to our recent conversation, the proposed development at 25 Laitoki Road, Terrey Hills consists of:

- 12 dwellings
- 10 townhouses
- 32 self-contained units
- 1 community facility.

All dwellings, townhouses and units are proposed to be 3 bedrooms at this stage and the development is proposed as an 'over 55's independent living style development. Our Client has not yet determined whether there will be a single meter or individual meters to each dwelling.

As discussed, would Jemena be able to supply advice regarding the likely availability of gas supply, subject to detailed design and supply analyses?

Kind regards,