

Strathfield Golf Course - 84 Centenary Drive

Utility Services Feasibility Study

50614033

Prepared for
Strathfield Golf Club

February 2014



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1 Introduction

1.1 Background

This Feasibility Study has been prepared by Cardno (NSW/ACT) Pty Ltd for Strathfield Golf Club in accordance with our fee proposal dated 14 January 2014.

The objective of this report is to assess the availability of key utilities to service the potential development of this site. This report has also been prepared in support of Strathfield Golf Club's proposal to rezone part of the existing practice fairway and club house from RE2 Private Recreation to B4 Mixed Use and R3 Medium Density, to facilitate development.

The infrastructure assessed in this report comprises stormwater, electricity, gas, potable water, sewer and telecommunications services. Flood information obtained from Council's flood mapping and recent flood study has also been reviewed as part of this Feasibility Study. This Feasibility Study has been prepared based on an assumed development scale of 100 residential units over four blocks and a mixed use development area of approximately 8000 m².

1.2 Site Context

The site comprises two allotments and is legally described as Lots 1 and 2 in DP 854298, which adjoin Strathfield South High School. The total area of the site is approximately 20,240 m² and is bound by Centenary Drive to the west, Hedges Avenue to the east, while the golf course continues to the north.



Figure 1-1 Subject site and its immediate surrounds

The existing site is largely clear, with the existing practice fairway covering the majority of the site. The Club house and car park is located to the eastern edge of the proposed site.

The site is within the Local Government Area of the Strathfield Municipal Council, and falls within the Cooks River and Coxs Creek catchment area.

1.3 Sources of Information and Limitations

The information provided in this report is based primarily on our engineering judgement, given our experience in land development and delivery of lead-in infrastructure. Service enquiries have been made with Strathfield Municipal Council, Jemena, Ausgrid, Telstra, NBN Co and Sydney Water.

Our findings have been based upon the following:

- > Review of 'Dial Before You Dig' information provided by Ausgrid, Jemena, Sydney Water and Telstra;
- > Specialist advice from in-house drainage designers, civil engineers and electrical designers;
- > Verbal advice and information provided by Strathfield Council's drainage engineers including existing flood mapping for the site area;
- > *Cooks River and Coxs Creek Flood Study (Public Exhibition Draft)*, prepared for Strathfield Municipal Council by WMA Water (May 2010);
- > Written advice from Jemena and NBN Co; and
- > Written advice from Sydney Water and Ausgrid.

2 Concept Drainage Strategy

2.1 Stormwater

The Strathfield Golf Course is located within the Cooks River and Coxs Creek catchment area. Contact has been made with Strathfield Municipal Council's Drainage Engineer to identify the existing stormwater network in the area.

A copy of the plan obtained from Council has been included in Appendix A.

The plan indicates that an existing open stormwater channel that is owned and maintained by Strathfield Council runs along the Cooks River. A connection to this stormwater channel via a pit and pipe network, will need to be constructed to service the development.

As it is a requirement that on-site detention is to be provided to ensure that the post-development runoff matches the natural water runoff as closely as possible, no upgrade will be required to the existing stormwater network as a result of the proposed development.

Refer to Appendix B for a sketch showing the proposed route and drainage strategy.

2.2 Drainage Strategy

Increased runoff is generated from hard surfaces such as roofs and roads, and measures are required to control this runoff before the water exits the land. As such, a drainage strategy is required to manage the site drainage in terms of quality and quantity so that there is no negative impact on the surrounding areas as a result of development.

Urban development increases the pollution load entering the surrounding environment. Stormwater quality controls as listed in the Strathfield Council DCP 2005, have been derived through the modelling of numerous combinations of urban development types and stormwater management / Water Sensitive Urban Design (WSUD) strategies at various locations. They have been designed to reflect a cost-effective level of stormwater treatment, that is considered to be technically feasible in terms of the land-take of stormwater / WSUD measures likely to be required for compliance.

The Strathfield Municipal Council DCP 2005 outlines the following stormwater quality requirements for the type of development proposed:

- 90% reduction in the post development mean annual load of total gross pollutant (greater than 5mm);
- 85% reduction in the post development mean annual load of Total Suspended Solids (TSS);
- 60% reduction in the post development mean annual load of Total Phosphorus (TP); and
- 45% reduction in the post development mean annual load of Total Nitrogen (TN).

Bioretention systems are commonly used to meet stormwater quality targets, and typically consist of vegetated soil media filters. These filters treat stormwater by allowing it to pond on the vegetated surface, then slowly infiltrate through the soil media. Treated water is captured at the base of the system and discharged via outlet pipes.

Based on an initial assessment by a Water Sensitive Urban Design specialist, the site can be designed to meet compliance criteria. Council requires the development to not increase the peak flow from the existing site. It has been estimated that an approximate area of 650 m² would be needed to provide on-site detention. This includes space for batters, access ramps, weirs and stilling ponds. Approximately 200 m² would be required to provide the bioretention system.

A typical cross section of a bio-retention system is provided in Figure 2.1 below.

A conceptual drainage strategy is shown in Appendix B.

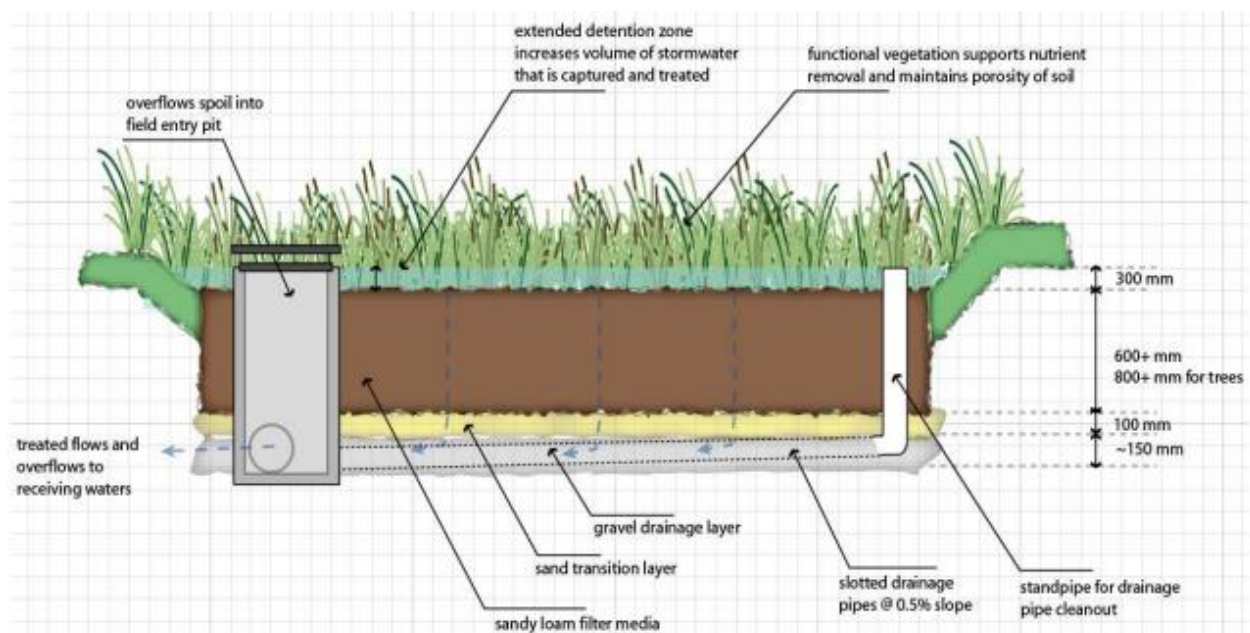


Figure 2-1 Bioretention system typical arrangement

(Source: Strathfield Council WSUD Reference Guideline, March 2011)

3 Utility Services Assessment

3.1 Electricity

A formal application for a connection of load was submitted to Ausgrid in relation to the proposed development. Ausgrid have advised that they are unable to provide detailed connectivity advice at this point in time.

A formal connection application is required once DA approval has been obtained to ensure timing of any upgrade can be coordinated, as there are long lead times involved in creating an additional feeder, and capacity may need to be reserved. Ausgrid also require firm electrical load details for the development once consent has been received.

Further advice has been sought from Cardno's accredited electrical designer. To service a residential development of the proposed size, it is estimated that two 1000kVa kiosk substations or an applicable chamber type substation will be required on site. This assumption is based on the development size being equivalent to 100 residential units with an After Diversity Maximum Demand of 6kVa per unit, and 8000m² of mixed business space requiring 120Vam/sq the total load would be approximately 1.6MVA. The cost of the provision of these substations is to be borne by the developer, and as such should be considered a development cost.

Currently the Ausgrid high voltage network is located in the vicinity of the site, however at this stage it is unknown whether capacity exists in this network or whether upgrade of the network would be required to make capacity available. This work could involve the establishment of a new feeder from the nearest zone substation, but would more than likely involve reconfiguring the existing switching to cater for the additional load. Advice from Cardno's electrical designer is that it is probable that no additional feeder works will be required.

We do not envisage any lead-in costs associated with provision of electricity services to service the proposed development.

A copy of the advice from our Electrical Designer has been included in Appendix C.

3.2 Gas

All gas infrastructure in the area is owned by Jemena. During the planning stages of the development it is the developer's responsibility to contact Jemena with details of their proposed development. Jemena will then undertake an economic analysis and consider whether it is in their interest to provide gas infrastructure to the site, and whether a contribution will be required from the developer.

We have contacted Jemena and have been advised that there is an existing supply in Hedges Avenue that could be extended to supply the proposed development. The existing supply is a 7kPa low pressure pipe that serves the surrounding residential development, and based on historical gas load data for developments of similar size to that proposed, Jemena advise that this will be sufficient. However, Jemena do not reserve capacity for any individual project.

Should capacity not be available at the time of construction of the proposed development, gas supply can be extended from Liverpool Road, opposite Braidwood St, from a medium pressure 210kPa network.

It is anticipated all gas within the development will be laid in a shared trench with the relevant telecommunications provider. The exact trench arrangements will be confirmed prior to construction.

In this instance, we anticipate no major constraints in gas supply to the site. Any developer contributions are likely to be minimal due to the close proximity of the supply in Hedges Avenue.

A copy of the correspondence received from Jemena has been included in Appendix D.

3.3 Potable Water

A formal Feasibility Application was lodged with Sydney Water in relation to the proposed development site.

The advice from Sydney Water is that there exists a 250mm diameter potable water main which runs along Centenary Drive, and that this is suitable for the proposed development.

We do not envisage any lead-in costs associated with provision of potable water supply to service the proposed development.

A copy of the correspondence received from Sydney Water has been included in Appendix E.

3.4 Sewer

Sydney Water is the governing authority for sewer in the area, and the formal Feasibility Application lodged with Sydney Water also covered Sydney Water's sewer requirements in relation to the proposed development.

The advice from Sydney Water is that there is a 300mm gravity sewer main along the other side of the Cooks River that crosses through Strathfield Golf Course. There is currently no sewer extending to this site, and therefore to service the development an extension would need to be constructed. Sydney Water classify this connection as "major works", however this does not constitute lead in works. The identified connection point is approximately 160m from the lot boundary for the proposed development.

Sydney Water has advised that the 300mm sewer main has sufficient capacity to service the development. No amplification of existing assets will be required. However, the infrastructure for the proposed development will be sized and configured according to the Sewerage Code of Australia after Development Application consent has been obtained.

A copy of the correspondence received from Sydney Water has been included in Appendix E.

3.5 Telecommunications

Telecommunications services include telephone and internet services. Telstra and NBN Co. are the governing authority for these services in the area. NBN Co. were contacted to determine the servicing feasibility.

Advice from NBN Co. is that the site is serviceable and the development is within their fibre footprint or the footprint could be extended if required. NBN Co. has currently rolled out their broadband network up to the boundary of the proposed development. Figure 3.1 below shows the current area serviced by NBN Co.

Current legislation relating to provision of fibre to the development outlines that for a development larger than 100 dwellings, NBN Co are obliged to service the development.

To service the development NBN Co require the developer to engage a designer who will be responsible for the provision of telecommunications design to NBN Co network standards. This is done much the same way electrical works are undertaken by independent accredited 3rd parties, with designs submitted to NBN Co for review and approval. Once the design has been approved NBN Co take ownership of the network and are responsible for funding the cable reticulation.

A formal application for this service can only be submitted once DA approval has been received, and the developer is required to pay for the design and any pit and pipe network required to service the development.

A copy of the correspondence received from NBN Co. is contained in Appendix F.

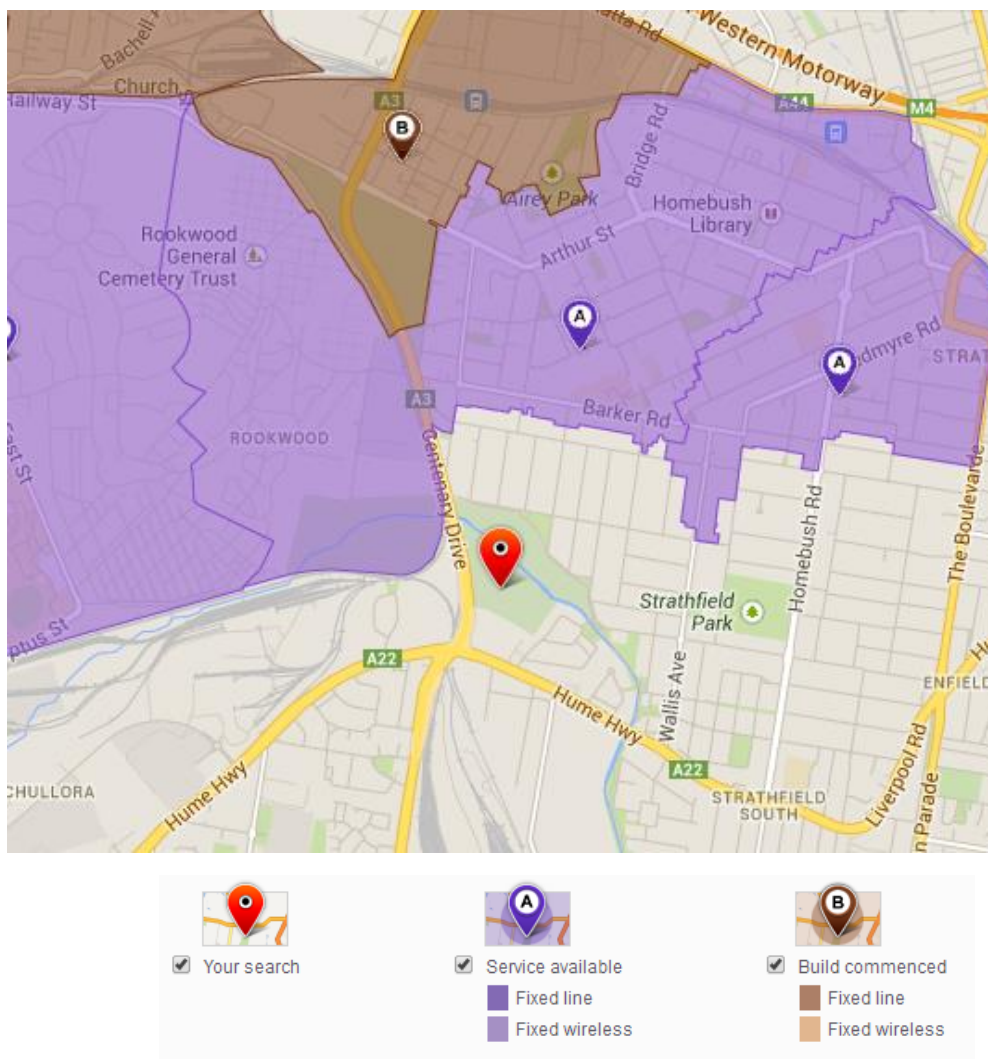


Figure 3-1 Current status of NBN Co. service rollout

4 Site Constraints

4.1 Flooding

When considering the feasibility of the proposed development in terms of flooding constraints, Strathfield Municipal Council's Flood Study for the Cooks River and Coxs Creek catchment area has been reviewed. The *Cooks River and Coxs Creek Flood Study* was prepared by WMA Water in May 2010. This flood study was prepared to determine the nature and the extent of the flood problem within the areas adjacent to the Cooks River and Coxs Creek, and to provide the basis for future management of the flood liable parts of the catchment area.

The study area comprises the 22.2 km² catchment which ultimately drains into the Cooks River. The area is heavily developed and consists primarily of residential and industrial development, and includes several schools, the Australian Catholic University, several parks and recreation reserves as well as the Strathfield Golf Course.

The Cooks River is concrete lined within the study area, except upstream of Hedges Avenue within Freshwater Park and Strathfield Golf Course where it is in a semi natural condition. As part of recent works in this area, the river is part vegetated and part rock lined. This vegetation is maintained by the golf course.

A number of locations within the catchment area are flood liable, and it has been identified that flooding within the study area occurs as a result of two main mechanisms:

- due to flow in excess of the capacity of the pit and pipe networks being conveyed along roads and overland flow paths to natural low points. Flooding may be exacerbated by inadequate or blocked local drainage systems and restrictions in overland flow paths such as building or fences; and
- due to the Cooks River and Coxs Creek overtopping the main channel and spreading into the overbank areas.

Flood mapping for the area has also been provided by Strathfield Municipal Council, this map is attached in Appendix G. From the flood mapping made available, it shows that for a 1 in 100 year flood, the proposed development site will not be affected by flooding. The peak 100 year flood level from the Cooks River is estimated to be between 18 – 19 mAHD. At the lowest point of the proposed development site, the ground level is approximately 20 mAHD, and as such is approximately 1m higher than the peak flood level for a 1 in 100 year flood event.

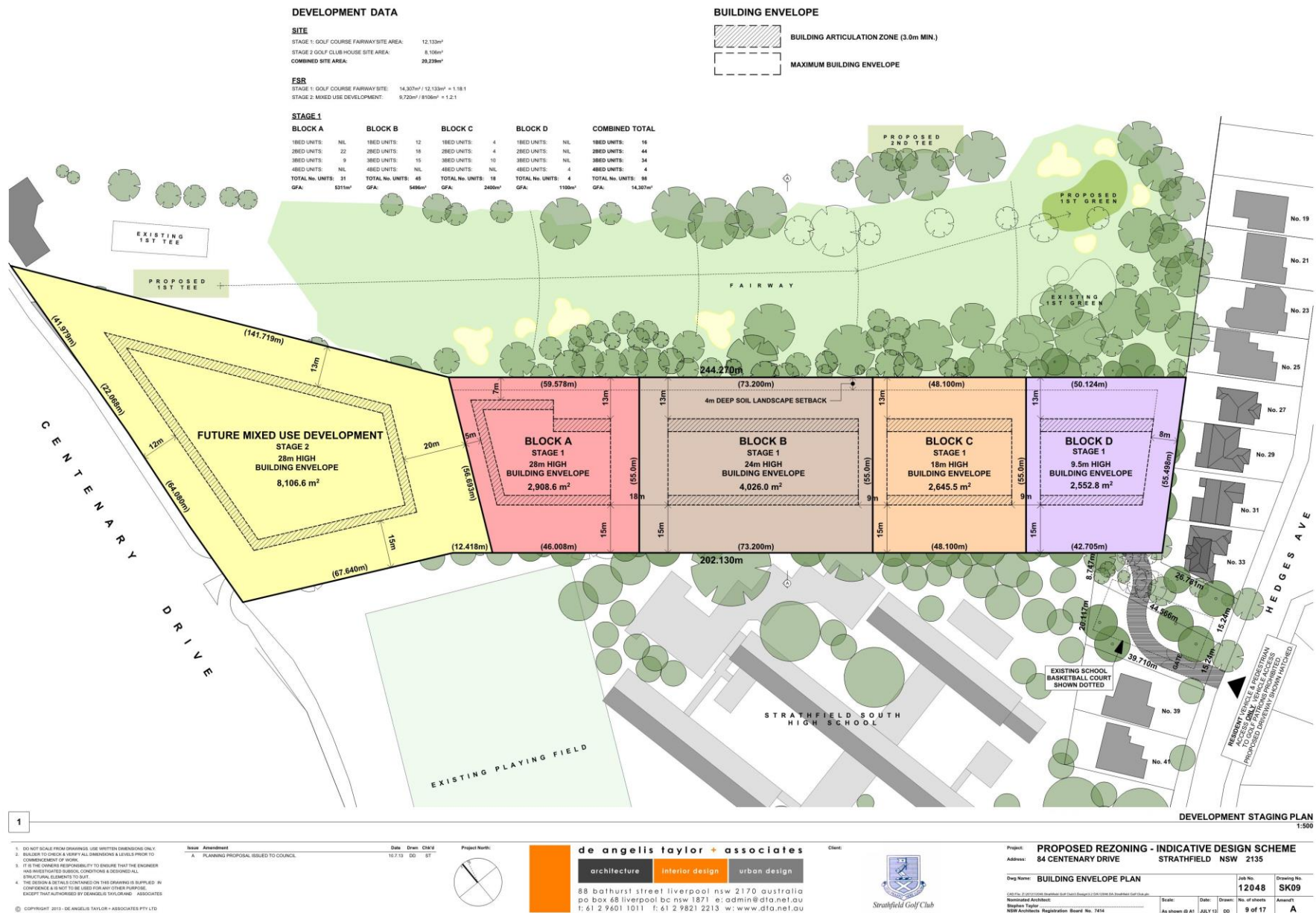


Figure 4-1 Indicative Building Layout, showing secondary site access from Hedges Avenue

5 Cost Estimate

A review of the existing utility services surrounding the site has been undertaken. It has been determined that no lead-in infrastructure is required to service the site, and therefore no cost estimate has been prepared for the lead-in infrastructure.

6 Conclusion

This Feasibility Study assesses the availability of key utility services to enable the proposed development of the existing practice fairway and club house of Strathfield Golf Course. It has been determined that no lead-in infrastructure is likely to be required to be constructed, however a connection to the existing stormwater and sewer network will need to be provided.

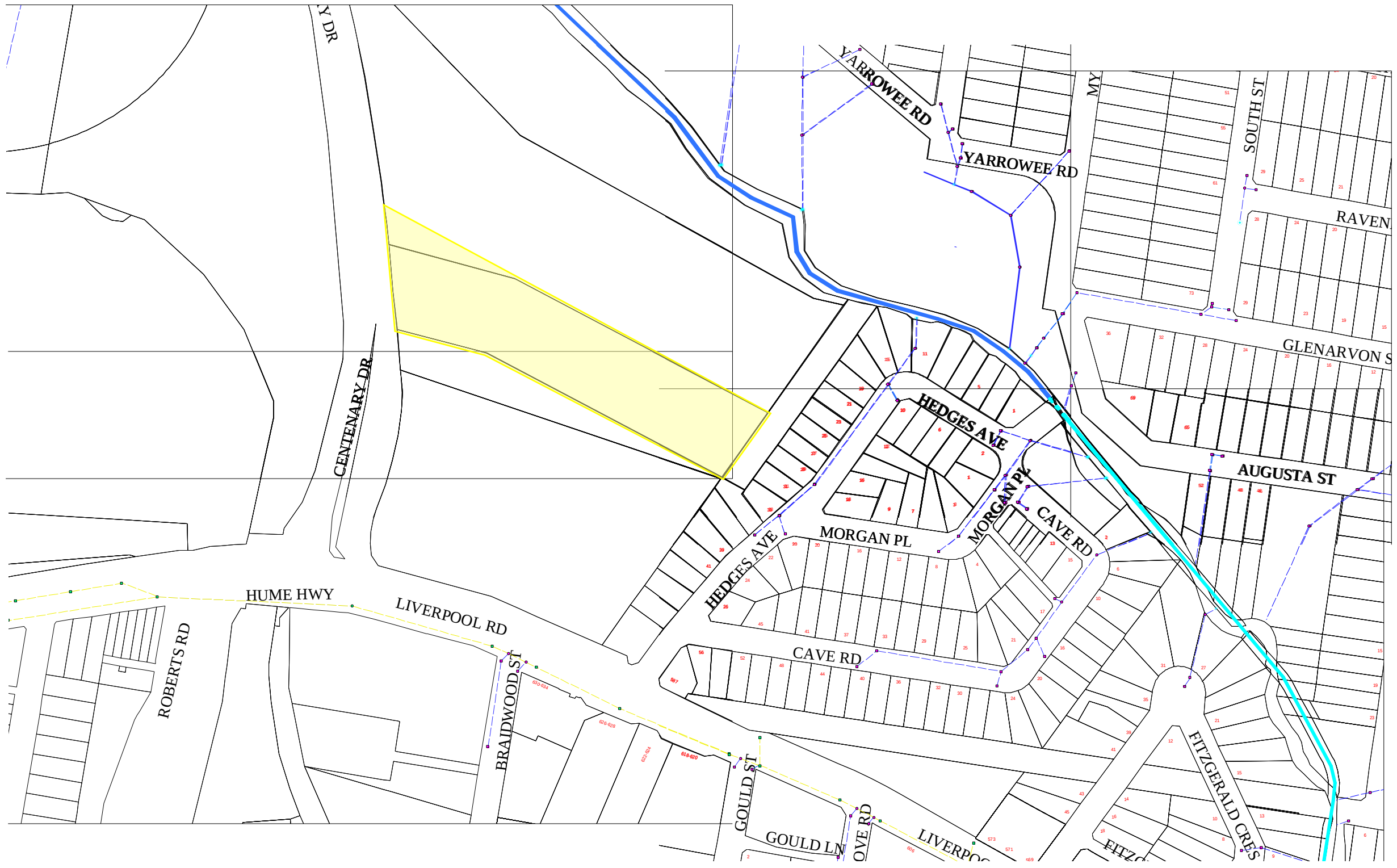
The site is not affected by flooding along the Cooks River, as shown on the flood mapping made available by Strathfield Council.

This assessment has covered the following utility services:

- **Stormwater** – a connection through a pit and pipe network will need to be provided to the existing open stormwater channel adjacent to the Cooks River.
- **Electricity** – Ausgrid are not able to provide definitive advice on the capacity of the current system, however it is considered unlikely that any significant lead in works would be required.
- **Gas** – a connection to the existing low pressure 7kPa gas main in Hedges Avenue will provide gas for the proposed development. This would generally be paid for by Jemena, however this needs to be confirmed by Jemena at the DA stage.
- **Potable Water** – the development site is well serviced by potable water mains, which have sufficient capacity to service the proposed development. As such, there are no lead in works envisaged.
- **Sewer – there exists sufficient capacity in the sewer main along the Cooks River to service the development.** A connection to this sewer main would need to be constructed to connect to the development site.
- **Telecommunications** – NBN Co. have advised that the site is serviceable and within their development footprint. Formal application would need to be submitted once DA approval has been received, however there are no lead in costs associated with these works.

APPENDIX A

CORRESPONDENCE FROM STRATHFIELD COUNCIL





Strathfield Council Dial Before You Dig Information

Important Information

Drawings and Plans provided by Strathfield Council are indicative only and their completeness can not be guaranteed. The Drawings and Plans are correct to the best of Council's knowledge however the exact location of Council's drainage assets can not be provided with any certainty.

Duty of Care

It is the responsibility of the Company or Person undertaking the excavation works to:

- Request and obtain plans or drawing from Council prior to the commencement of works.
- Physically located Council's drainage assets using non-destructive excavation methods or hand digging. A services locator may be engaged to assist with the exact location of the assets
- Contact Council if any construction is planned near or over drainage assets or any damage has occurred to drainage assets

Asset Relocation

Drainage assets may be relocated as part of the Development Application process. The application must be accompanied by a drainage plan specifying Invert Levels and Pit and Pipe Capacity. The application will be assessed by Council's Drainage Engineer; Council reserves the right to refuse the application.

Damage to Drainage Assets

Any damage to Strathfield Council's drainage assets are to be reported to Council immediately through Council's Customer Service Counter on 9748 9999.

All costs to repair Council's drainage assets shall be borne by the Person or Company undertaking the construction works.

Working Distances

When working on or near Council's drainage assets the following working distances are to be adhered to:

- Heavy Vibration or Pneumatic Breakers - Not within 0.5 meters of actual location
- Mechanical Excavators – Not within 1.0 meters of actual location
- Boring Equipment (Horizontal, Vertical, In-line) – Not within 3.0 meters of actual location
- Heavy Vehicle Traffic – Not to be driven over drainage assets with less than 0.5 meters of cover

The depth of Council's drainage assets are to be verified by non-destructive excavation methods or hand digging only

Strathfield Council DBYD Legend

Symbol	Explanation
	Strathfield Council's Drainage inlet pit
	Strathfield Council's Junction Pit
	Strathfield Council's Surface Inlet Pit
	Strathfield Council's Storm water Open Channel
	Strathfield Council's Storm water pipe
	Sydney Water's Storm water Inlet
	Sydney Water's Storm water Open Channel
	Sydney Water's Storm water pipe
	RTA Drainage Inlet Pit
	RTA Junction Pit
	RTA Storm water pipe
	Inter-allotment Drainage inlet Pit
	Inter-allotment Junction Pit
	Inter-allotment Storm water Pipe

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APPENDIX B

SKETCH OF PROPOSED CONCEPT DRAINAGE STRATEGY

Site Plan

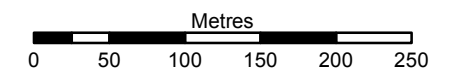
CENTENARY DRIVE, STRATHFIELD

Legend

-  Site Boundary (36.5 ha)
-  2m Contours (LPI)
-  Cadastre (LPI, 2011)



1:5,000 Scale at A3



Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2013-05-14
Coordinate System: GDA 1994 MGA Zone 56
Project: NA50613003-01
Map: G1005_SitePlan_CentenaryDr.mxd 01
Aerial imagery supplied by NearMap (May 2013)

Utility Services Feasibility Study

APPENDIX C

CORRESPONDENCE FROM AUSGRID

Lauren Connors (Sydney)

From: Brendon Hince (Sydney)
Sent: Wednesday, 26 February 2014 10:05 AM
To: Lauren Connors (Sydney)
Cc: Matthew Zollinger (Sydney)
Subject: RE: Strathfield Golf Course - Feasibility Study

Hi Lauren,

We submitted a supply enquiry application to Ausgrid, they have advised that at this point in time that they are unable to provide detailed connectivity advice for the property located at 84 Centenary Drive Strathfield. Ausgrid require a connection application to be submitted with a copy of the DA and firm electrical load details. Connections to Ausgrids network are governed by a set of rules and laws referred to as the National Energy Customer Framework (NECF). Included in the NECF are the National Electricity Rules. Under these rules, a binding contract may only be formed after a connection application is lodged and Ausgrid has made a connection offer.

Based on the information above an indicate supply arrangement has been outlined below based on the following. The development will consist of the following,

- Four residential towers totally 100 units
- 8000m sq of mixed business development

It is envisage that two 1000KVA kiosk substations or an applicable chamber type substation within the building will be required on site. Based on 100 units at an After Diversity Maximum Demand of 6KVA per unit and 8000m sq of mixed business space at 120VAm sq then the total load would be in the order of 1.6MVA. The cost of the design and establishment of these substations will be borne by the developer. Currently Ausgrids high voltage network is located in the vicinity of the site. It is envisaged a connection to the high voltage network would be required from possibly the network adjacent the intersection of Hedges Ave and Caves Rd, however it is unknown whether capacity exists in this network or whether additional works will be required to make capacity available, this may constitute the establishment of a new feeder from the nearest zone substation but more likely reconfiguring existing switching to cater for the additional load. It is probable though that no additional feeder works will be required. The diagram below shows the location of Ausgirds high voltage network.

WebGIS - MiniGIS

← → ↺

https://forms.energy.com.au/webgis/minigis/#map|-33.88148023428151|151.0697305383759|16

☆ ☰

Theme Detail

84 centenary Drive Strathfield Asset

Map Satellite

9:43 AM
26/02/2014

Please don't hesitate to contact me should you require further information.

Brendon Hince

ELECTRICAL INFRASTRUCTURE DESIGN MANAGER
CARDNO



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APPENDIX D

CORRESPONDENCE FROM JEMENA

Lauren Connors (Sydney)

From: Neale Hilton <Neale.Hilton@jemena.com.au>
Sent: Friday, 21 February 2014 6:00 PM
To: Lauren Connors (Sydney)
Subject: RE: Strathfield Golf Course Feasibility Enquiry

Lauren

In relation to the proposed development of Strathfield Golf Course, Jemena appreciates being involved in the early planning and looks forward to the potential of Natural Gas supply once construction has been confirmed.

Currently the low pressure 7kPa residential network located in Hedges Ave could be extended to supply this proposal based on historical gas loads from similar projects. However please note that Jemena does not reserve capacity for any individual project. Should capacity not be available at time of construction a new network can be extended from Liverpool Rd, opposite Braidwood St, up to the access road entry in Hedges Rd, from a medium pressure 210kPa network.

Again thank you and a formal offer could be supplied once construction is imminent and actual appliance loads are known. Regards

Neale Hilton
Network Development Manager
Sydney

Jemena Gas Networks (NSW) Limited
Address Level 20, 111 Pacific Highway North Sydney NSW 2060
Postal Address Locked Box 2/159 Ridgeway Drive Castle Hill 2154
Mobile 0402 060 151 Fax (02) 9899 3571 Email neale.hilton@jemena.com.au

thenaturalchoice.com.au

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From: Lauren Connors (Sydney) [<mailto:Lauren.Connors@cardno.com.au>]
Sent: Wednesday, 19 February 2014 9:19 AM
To: Neale Hilton
Subject: RE: Strathfield Golf Course Feasibility Enquiry

Neale,

I was just wondering if you had any further information about the gas network in the surrounding area?

Thanks in advance,
Lauren

Lauren Connors
ASSISTANT PROJECT MANAGER
CARDNO



Phone +61 2 9496 7700 Fax +61 2 9439 5170 Direct +61 2 9024 7195
Address Level 9 - The Forum, 203 Pacific Highway, St Leonards, NSW 2065 Australia

Email Lauren.Connors@cardno.com.au Web www.cardno.com

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From: Neale Hilton [<mailto:Neale.Hilton@jemena.com.au>]
Sent: Tuesday, 11 February 2014 11:13 AM
To: Lauren Connors (Sydney)
Subject: RE: Strathfield Golf Course Feasibility Enquiry

Lauren

Thank you for the initial advice regarding this proposal. I will endeavour to check current capacity based on historic gas load profiles as none have been supplied to test on our network. Basically the only available network is a low pressure 7kPa network located in Hedges Ave and further information will be supplied shortly. Thanks

Neale Hilton
Network Development Manager
Sydney

Jemena Gas Networks (NSW) Limited
Address Level 20, 111 Pacific Highway North Sydney NSW 2060
Postal Address Locked Box 2/159 Ridgeway Drive Castle Hill 2154
Mobile 0402 060 151 Fax (02) 9899 3571 Email neale.hilton@jemena.com.au

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From: Elle Peters
Sent: Monday, 10 February 2014 9:32 PM
To: Neale Hilton
Subject: Fwd: Strathfield Golf Course Feasibility Enquiry

Over to you.

Sent from my iPhone

Begin forwarded message:

From: "Lauren Connors (Sydney)" <Lauren.Connors@cardno.com.au>
To: "Elle Peters" <Elle.Peters@jemena.com.au>
Subject: Strathfield Golf Course Feasibility Enquiry

Hi Elle,

Gemma passed on your name and contact details, as we are completing another feasibility study this time for a development at Strathfield Golf Course. The site location is as per the figure below.

[[cid:image002.png@01CF1DAD.30BD1700](#)]

The proposed development consists of approx. 100 units in 4 blocks, plus approx. 8000 m2

of mixed use development space. Please refer to attached plans for further information about the proposed development.

We need to understand the quantum of lead-in works to be able to service this site and if any existing would need to be modified/upgraded.

If you need any additional information to assess, please don't hesitate to get in contact.

Many thanks in advance.

Kind Regards,

Lauren Connors
ASSISTANT PROJECT MANAGER
CARDNO

[cid:image002.gif@01CF267E.4D7287C0]

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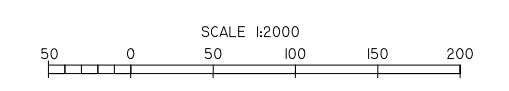
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REGENTS PARK 6A



THIS MAP UPDATED ON 17/12/2013
THIS PLAN IS DIAGRAMATIC ONLY. DISTANCES
SCALED FROM THIS PLAN MAY NOT BE ACCURATE.
DATE ALTERED:..... BY:.....

RP2D	RP3C	RP3D
RP5B	RP6A	RP6B
RP5D	RP6C	RP6D

ADJOINING MAPS

771	772	STRATHFIELD
586	531	BANKSTOWN

NETWORK AREA MUNICIPALITY AREA

Jemena KEY

MAX ALLOWABLE OPERATING PRESSURE

T	TRUNK MAIN	7000 kPa
P	PRIMARY MAIN	3500 kPa
S	SECONDARY MAIN	1050 kPa
		300 kPa
		210 kPa
		7 kPa
400		400 kPa
100		100 kPa
		2 kPa

PR 1-2-3	STEEL MAIN PROJECT NUMBER
P	PRESSURE MONITORING STATION
Δ	VALVE
□	SYSTEM PRESSURE REGULATOR
S	SIPHON
123	NETWORK NODES
1235	ITEM DETAIL SKETCH AVAILABLE
698	VALVE NUMBER (OLD NUMBERING)
6NB	6 INCH CAST IRON MAIN
150MM	150MM STEEL MAIN
100MM PE/NY	100MM POLYETHYLENE/NYLON MAIN
6NB 50MM NY	50MM NYLON INSERTED INTO 6NB MAIN CAST IRON MAIN
1.2MBL	DISTANCE IN METRES OF MAIN FROM BUILDING LINE (TOLERANCE OF 0.4M)
1957	YEAR LAID
+++++	MUNICIPALITY BOUNDARY
=====	NETWORK BOUNDARY
123	HOUSE NUMBER

APPENDIX E

CORRESPONDENCE FROM SYDNEY WATER

Case Number: 136876

17 February 2014

STRATHFIELD GOLF CLUB
c/- CARDNO FORBES RIGBY PTY LTD

FEASIBILITY LETTER

Developer: STRATHFIELD GOLF CLUB
Your reference: 50614033-136876
Development: Lot 2 - DP854298 - Liverpool Road, Strathfield
Development Description: proposed development of 98 units in 4 blocks, plus approx. 8000 m2 of mixed use development space
Your application date: 5 February 2014

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:

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 > Building and Developing > Developing Your Land.

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 > Building and Developing > Developing Your Land 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 250 mm main in Centenary Drive.

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:

- An extension of the wastewater system will be required from the 300 mm main constructed under SO 44681, which will provide a point of connection at least 1m inside all the proposed lot boundaries.
- The proposed wastewater infrastructure for this development will be sized & configured according to the Sewerage Code of Australia (Sydney Water Edition WSA 02-2002-2.2).
- **You must construct a waste water main extension to serve your development.** The terms of the Deed define this extension 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.

Stamping and approval of your building plans

Please note that the building plans must be stamped and approved when each lot is developed. This can be done at a Quick Check agency. For an agency list visit www.sydneywater.com.au > Building and Developing > Quick Check or call 13 20 92).

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*.

Individual metering of units

All multi-level unit developments now have the option (not mandatory) to prepare their building's plumbing for individual unit metering. For more information visit www.sydneywater.com.au > Plumbing > Meters and look at our *Multi-level individual metering guide*. It is important that you understand that this will become mandatory from late 2013 and that you should consider this in planning your development.

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 > BackflowPrevention.

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.

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 NSW Code of Practice for Plumbing and Drainage (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 NSW Code of Practice for Plumbing and Drainage (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

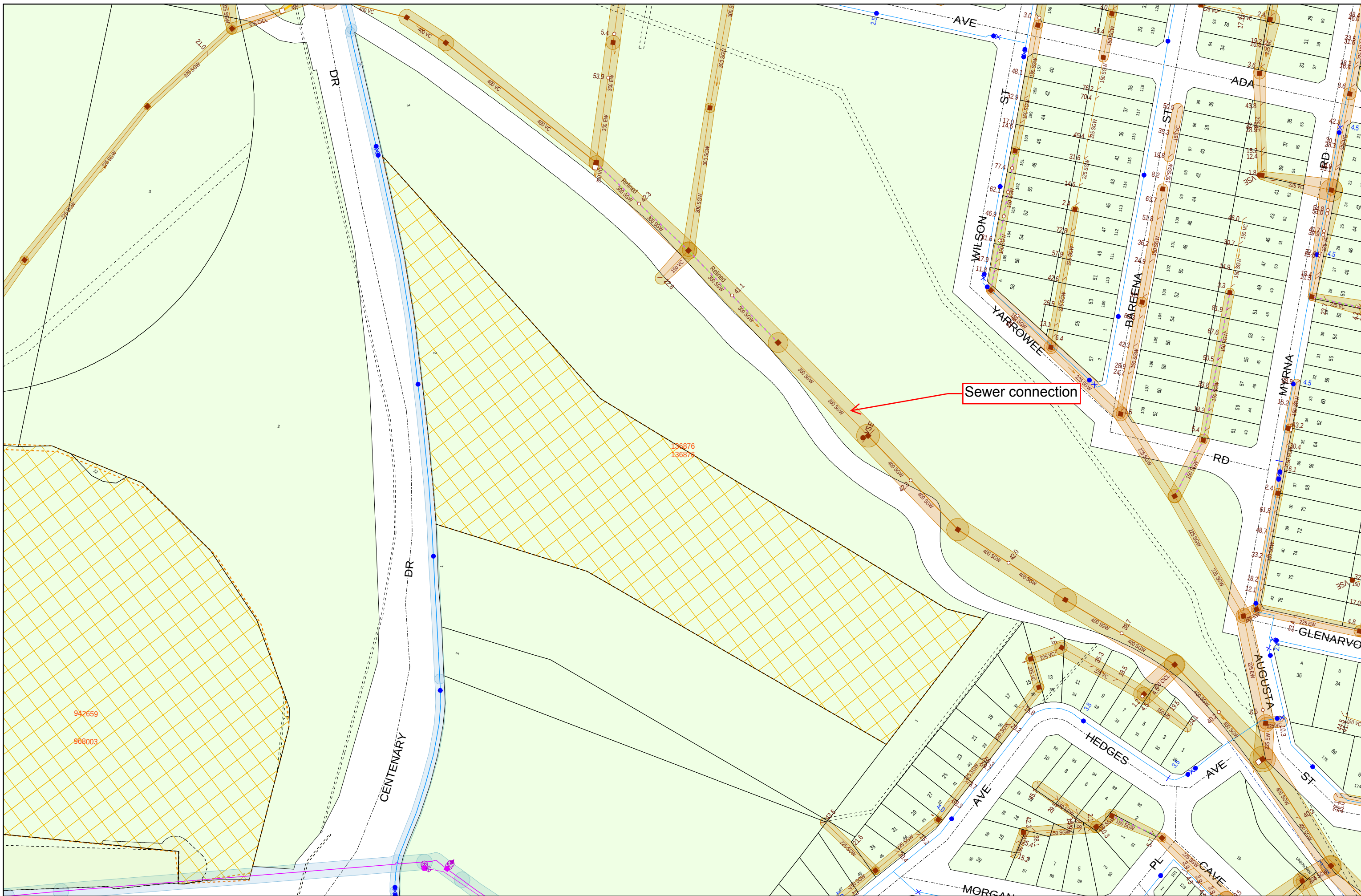
The requirements in this Notice relate to your Certificate application only. Sydney Water may be involved with other aspects of your development and there may be other fees or requirements.

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.

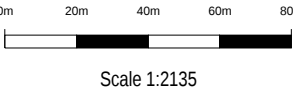
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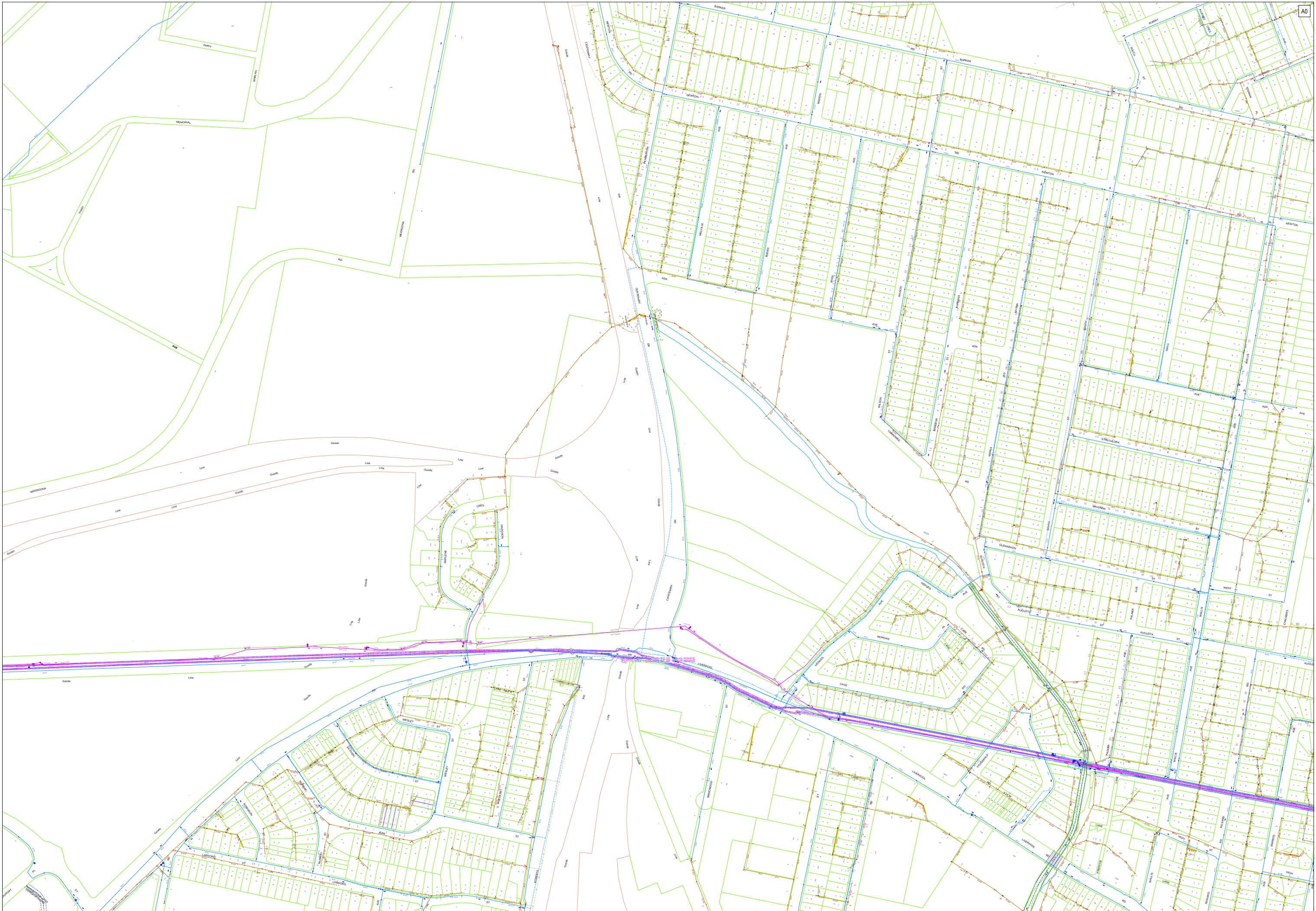


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SYDNEY WATER CORPORATION

Map:252 Grid:P1 Edition:Sydney UBD Edition 41





A0

Legend

Sewer

Sewer Main (with flow arrow & size type text)	
Disused Main	
Rising Main	
Maintenance Hole (with upstream depth to invert)	
Maintenance Hole with Overflow	
Ventshalt EDUCT	
Ventshaft INDUCT	
Property Connection Point (with chainage to downstream MH)	
Concrete Encased Section	
Terminal Maintenance Shaft	
Maintenance Shaft	
Rodding Point	
Lamphole	
Vertical	
Pumping Station	

Pressure Sewer

Pressure Sewer Main	
Pump Unit (Alarm, Electrical Cable, Pump Unit)	
Property Valve Boundary Assembly	
Stop Valve	
Reducer / Taper	
Flushing Point	

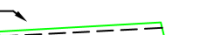
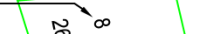
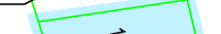
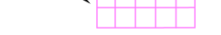
Vacuum Sewer

Pressure Sewer Main	
Division Valve	
Vacuum Chamber	
Clean Out Point	

Stormwater

Stormwater Pipe	
Stormwater Channel	
Stormwater Gully	
Stormwater Maintenance Hole	

Property Details

Boundary Line	
Easement Line	
House Number	
Lot Number	
INFORMATION ELSEWHERE see Guide ref 12345 (work-as-executed diagram available via website)	
Proposed Land	
Sydney Water Heritage Site (please call 132 092 and ask for the Heritage Unit)	

Water

WaterMain - Potable (with size type text)	
Disconnected Main - Potable	
Proposed Main - Potable	
Water Main - Recycled	
Special Supply Conditions - Potable	
Special Supply Conditions - Recycled	
Restrained Joints - Potable	
Restrained Joints - Recycled	
Hydrant	
Maintenance Hole	
Stop Valve	
Stop Vale with By-pass	
Stop Valve with Tapers	
Closed Stop Valve	
Air Valve	
Valve	
Scour	
Reducer / Taper	
Vertical Bends	
Reservoir	
Recycled Water is shown as per Potable above. Colour as indicated	

Private Mains

Potable Water Main	
Recycled Water Main	
Sewer Main	
Symbols for Private Mains shown grey	

APPENDIX F

CORRESPONDENCE FROM NBN. CO

Lauren Connors (Sydney)

From: Esra Kandan <EsraKandan@nbnco.com.au>
Sent: Tuesday, 11 February 2014 4:26 PM
To: Lauren Connors (Sydney)
Subject: RE: Strathfield Golf Course Feasibility Enquiry [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi Lauren,

If the development is less than 100 premises and it is not approved by Council yet, you can visit our website, www.nbnco.com.au and search the Rollout Map to check if it falls within an area NBN Co is servicing.

If the development is less than 100 premises & you have Development Approval from Council or if the development has 100 premises or more (plus approval from Council), feel free to register it online to check if it qualifies for fibre.

Please call me if you have any questions about the process.

Thank you.

Kind Regards,

Esra Kandan

Developer Liaison Advisor

NSW/ACT

P +61 2 8918 8483 | **M** 0407 695 476 | **E** esrakandan@nbnco.com.au

Level 11, 100 Arthur Street, North Sydney NSW 2060



To be kept up-to date on the most recent and important information for New Developments, subscribe to our eNewsletter by visiting: <https://www.nbnco.com.au/subscriptions>

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PLEASE CONSIDER OUR ENVIRONMENT BEFORE PRINTING

From: Lauren Connors (Sydney) [<mailto:Lauren.Connors@cardno.com.au>]
Sent: Monday, February 10, 2014 4:39 PM
To: Esra Kandan
Subject: Strathfield Golf Course Feasibility Enquiry

Hi Esra,

Gemma passed on your name and contact details, as we are completing another feasibility study this time for a development at Strathfield Golf Course. The site location is as per the figure below.



The proposed development consists of approx. 100 units in 4 blocks, plus approx. 8000 m2 of mixed use development space. Please refer to attached plans for further information about the proposed development.

We need to understand whether or not the proposed development falls within your fibre footprint, and whether or not NBN Co. would be prepared to service a 98 unit development.

If you need any additional information to assess, please don't hesitate to get in contact.

Many thanks in advance.

Kind Regards,

Lauren Connors

ASSISTANT PROJECT MANAGER
CARDNO



Phone +61 2 9496 7700 Fax +61 2 9439 5170 Direct +61 2 9024 7195
Address Level 9 - The Forum, 203 Pacific Highway, St Leonards, NSW 2065 Australia

Email Lauren.Connors@cardno.com.au Web www.cardno.com

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APPENDIX G

FLOOD MAPPING FROM STRATHFIELD COUNCIL

