



infrastructure & development consulting

33 Medhurst Road, Menangle  
Servicing Report

August 2022

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<b>Project Number</b>	21-022	<b>Date</b>	12 August 2022
<b>Project Name</b>	Rosalind Park, Menangle	<b>Status</b>	Updated to include new lots
<b>Client</b>	LEDA Holdings	<b>Revision</b>	3
<b>Author</b>	R. Higginson	<b>Reviewed</b>	C. Avis

## 1 Introduction

This document relates to the provision of potable water, sewer and electricity services to support the proposed development of approximately 1,450 lots at 33 Medhurst Road, 101 and 111 Menangle Road, Menangle (the site). Sydney Water's Growth Servicing Plan indicates that the potable water and sewer infrastructure for the site and surrounding area is currently in the strategic planning phase. However, recent engagement with them indicates that the current Sydney Water Strategy for Greater Macarthur North is to transfer sewer flows to the Glenfield Wastewater Treatment Plant. This strategy is therefore based on discharges to this facility.

Endeavour Energy have also provided advice on the servicing requirements for the site which are also summarised below.

## 2 Drinking Water

Sydney Water have confirmed that the site is located in the Rosemeadow Reservoir's supply catchment. They have also indicated that trunk main servicing for the site can either come for this system, or the 1,200mm Trility main that runs through the site. We would expect that the final decision on this will depend on timing of service availability and commercial negotiations with SWC and Trility (including potential future DSPs).

Due to the required service elevations on site in relation to surrounding infrastructure, we expect that a booster will be required. However, if SWC determine that additional water storage is required a reservoir may be required on site which depending on the exact location and elevation of houses, may also include a booster.

We do note that the DPE work on Greater Macarthur in 2015 did not propose a new reservoir on the Site but does include a reservoir at Mt Gilead as shown below. Although this work is now dated it does demonstrate that a solution is possible without a reservoir on the site. As such we recommend that the "base case" include costs for a booster on site, with appropriate project contingency to include a temporary reservoir.

Figure 1 - DPE Greater Macarthur Servicing Report (AECOM 2015)

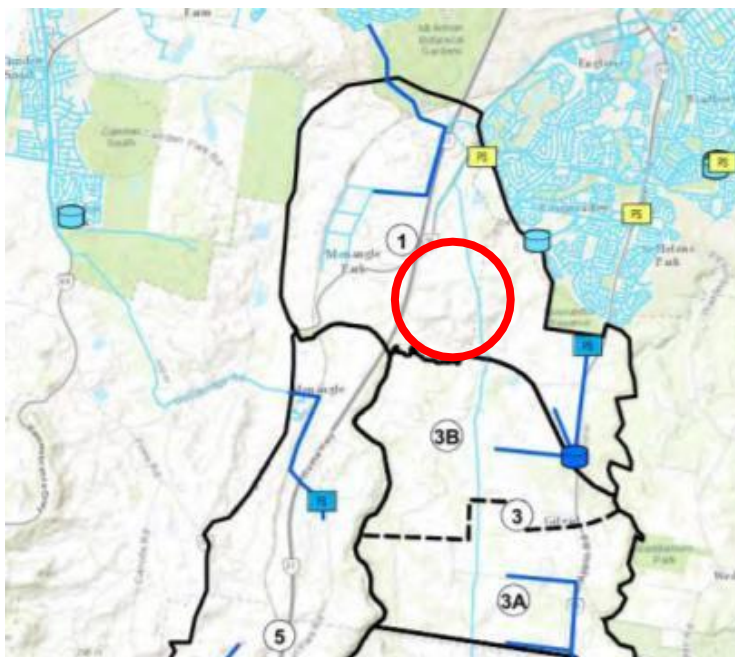


Figure 2 - DPE Water Servicing Strategy (Reservoirs) with Site Plan



## 2.1 Water Reservoir Sizing

A high-level assessment has been undertaken to determine a potential reservoir size. Please note this assessment includes the required operating storage capacity with an estimate of the reserve storage capacity. The reserve storage capacity will need to be determined through an appropriate risk-based assessment in consultation with SWC. For the purpose of this assessment, it has been assumed that all dwellings are single residential dwellings (<40 dwellings/ha). The results are tabulated below.

Table 1 - Reservoir Sizing Calculations

Criteria	Units	Value
Max Day Demand Rate	kL/net Ha/day	41
Net Developable Area	Ha	130
Max Day Demand	kL	5,330
Peak Hour Demand	kL/hr	444
Required Minimum Operating Storage (8 hours)	ML	1.8
Usable Reservoir Capacity (estimate only – 12hrs storage)	ML	2.7

Based on the above, a minimum of 1.8ML of storage would be required to support the proposed development. This could increase if we are required to service additional areas beyond the site (which would open up potential partial cost recovery). For the purposes of early budget estimates, we recommend using a 3ML reservoir.

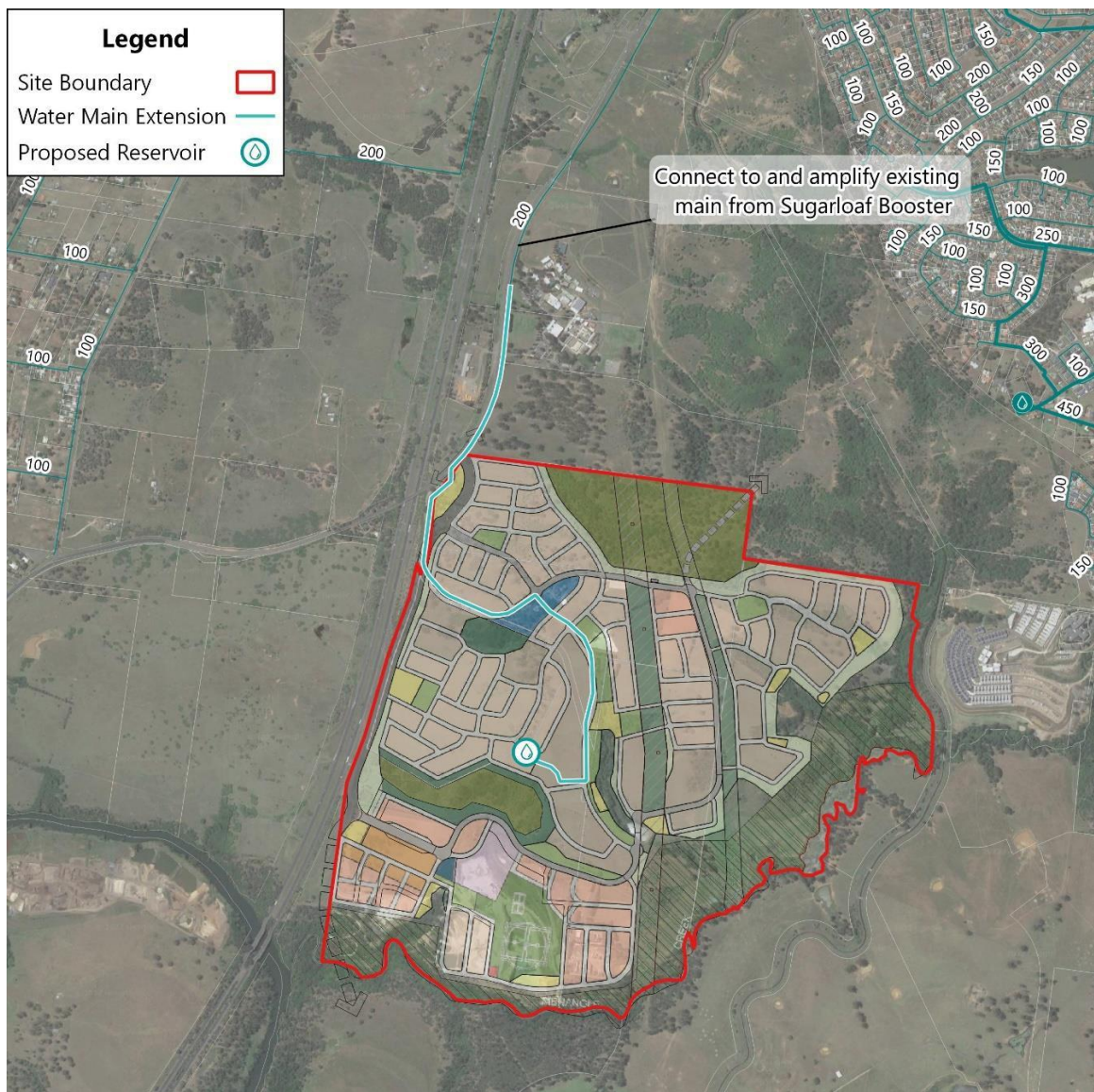
The reservoir would need to be located on a high point within the site and connect to existing trunk water infrastructure. A potential location for a reservoir is shown in Figure 6 below. Minor amendments to the master plan may be required to facilitate this option.



## 2.2 Option 1 – Construct Lead-In from Existing Sugarloaf Booster

The site could receive water services by extending the existing infrastructure between Menangle Road and Abington Crescent to the site. A 750mm trunk main and water pump station (Sugarloaf Booster) are located approximately 2km north of the site. A new main could be constructed within the eastern verge of Menangle Road and extended to the site. A minimum 300mm diameter main would be required to support all development within the site. This would consist of approximately 1km of new main and 1.5km of upgraded main. This option is shown in Figure 3 below.

Figure 3 - Option 1 Layout



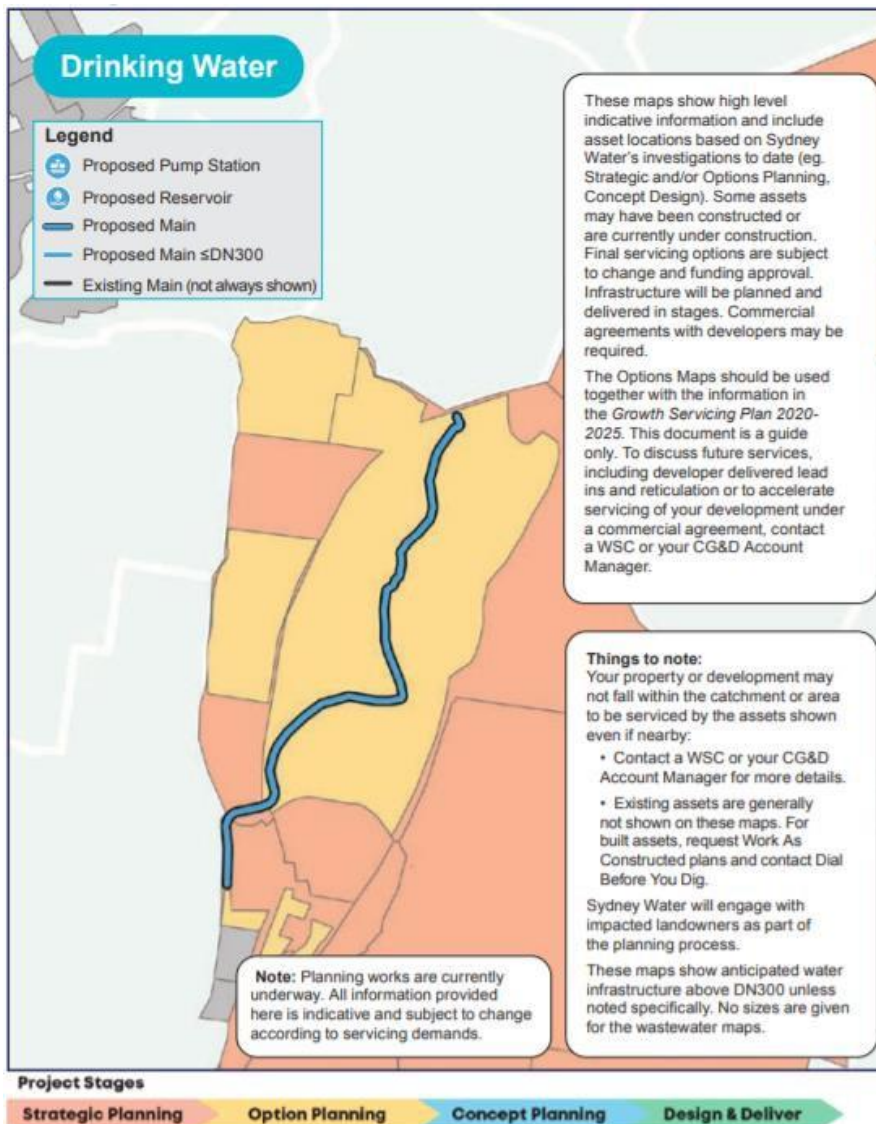
## Timing

As this option leverages off existing infrastructure and all works are located within either the road reserve or the site boundary, servicing could be achieved in the short term subject to suitable design and approval by Sydney Water.

### 2.3 Option 2 – Connect to Proposed Infrastructure in Menangle Park

Sydney Water's Growth Servicing Plan (GSP) shows a proposed trunk main within the Menangle precinct. This main appears to connect to an existing 750mm trunk main where it crosses the rail corridor. The indicative location of the proposed trunk main extends to approximately 480m west of the site. The GSP indicates that potable water for the Menangle precinct is currently in the options planning stage and infrastructure is flagged for delivery in the 2023 financial year.

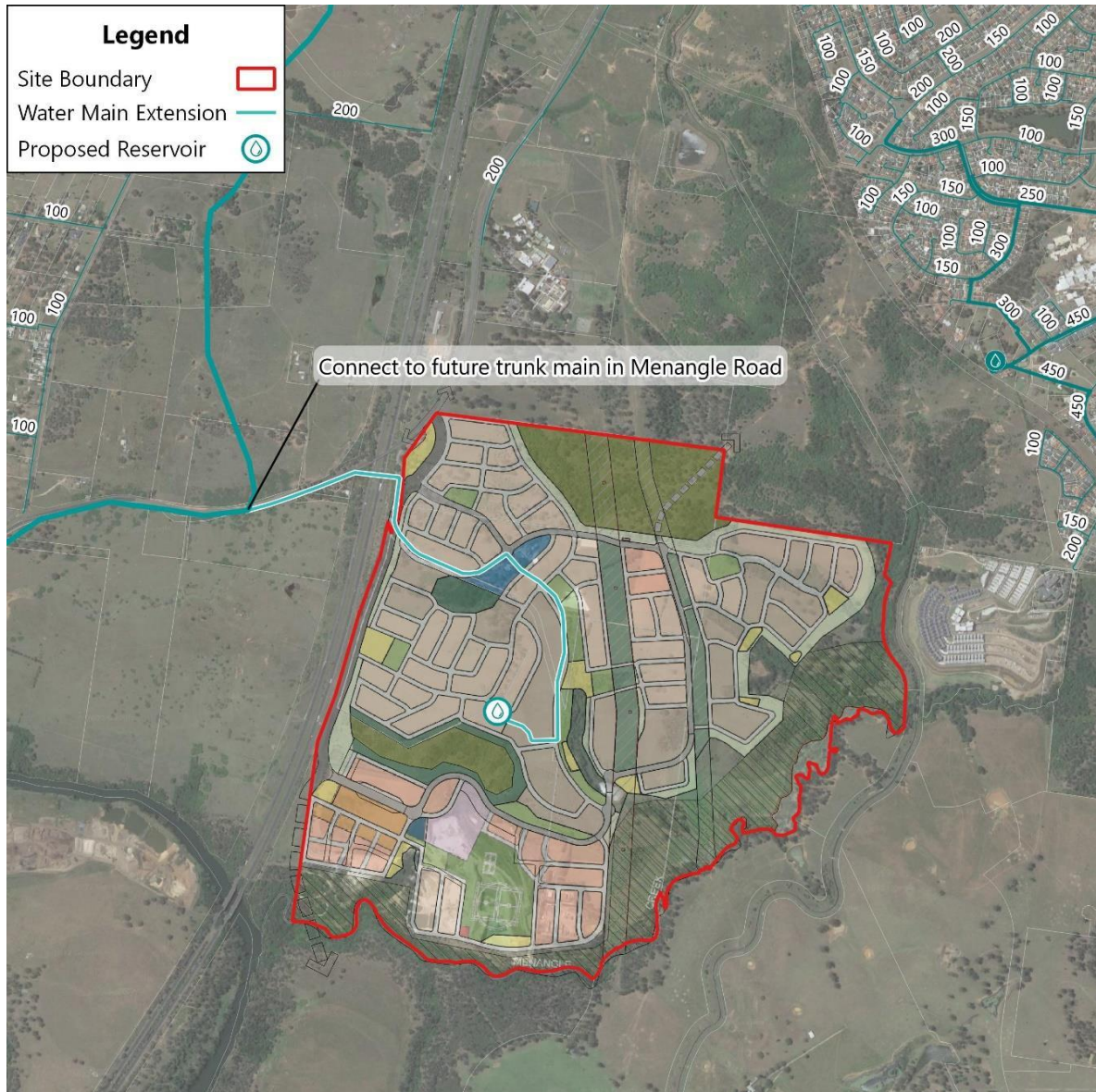
Figure 4 - Sydney Water GSP Excerpt (Drinking Water)





Subject to discussions with Sydney Water, a new lead-in main could be constructed, extending from the proposed main in Menangle. This main would extend approximately 800m to the site and need to be a minimum of 300mm diameter to supply all proposed development. The lead-in would need to cross the Hume Highway to reach the site. This option is shown in Figure 5 below.

Figure 5 – Option 2 Layout



### Timing

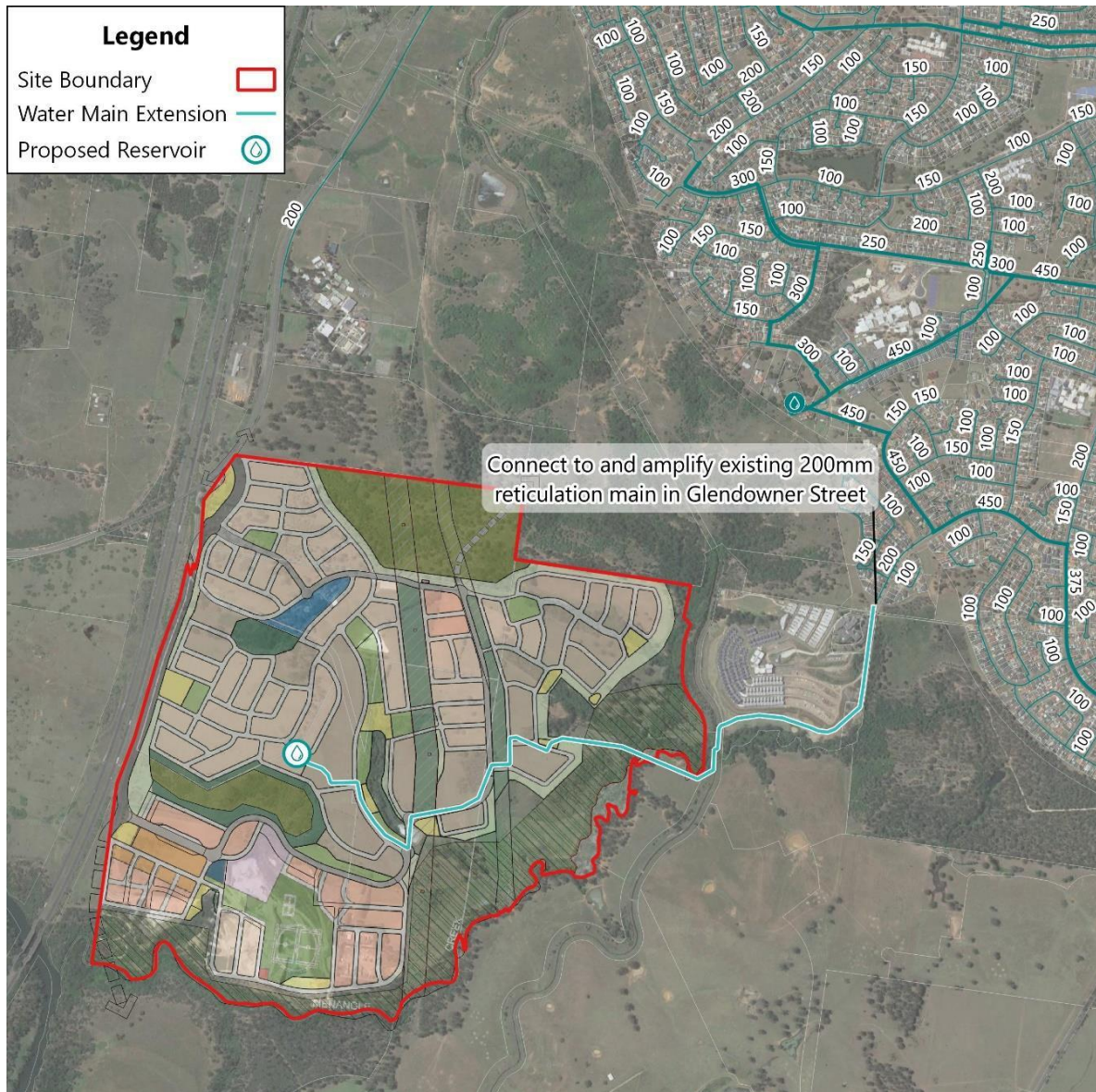
The Sydney Water GSP indicates that potable water servicing will be available in the Menangle precinct in the 2023 financial year. Any connection to the proposed main would occur after this date. In addition, the involvement/approval of TfNSW may be required for the lead-in to use the existing bridge structure across the motorway.



## 2.4 Option 3 – Connect to Rosemeadow Reservoir

This option gains supply from the Rosemeadow Reservoir to the northeast of the site. In this instance, connection would be made to the existing 200mm as shown in Figure 6 below with the lead-in required to navigate through private properties, then across the water supply canal to the site. The existing main in Glendownner Street would likely require upgrade back to the 450mm trunk main.

Figure 6 – Option 3 Layout



### Timing

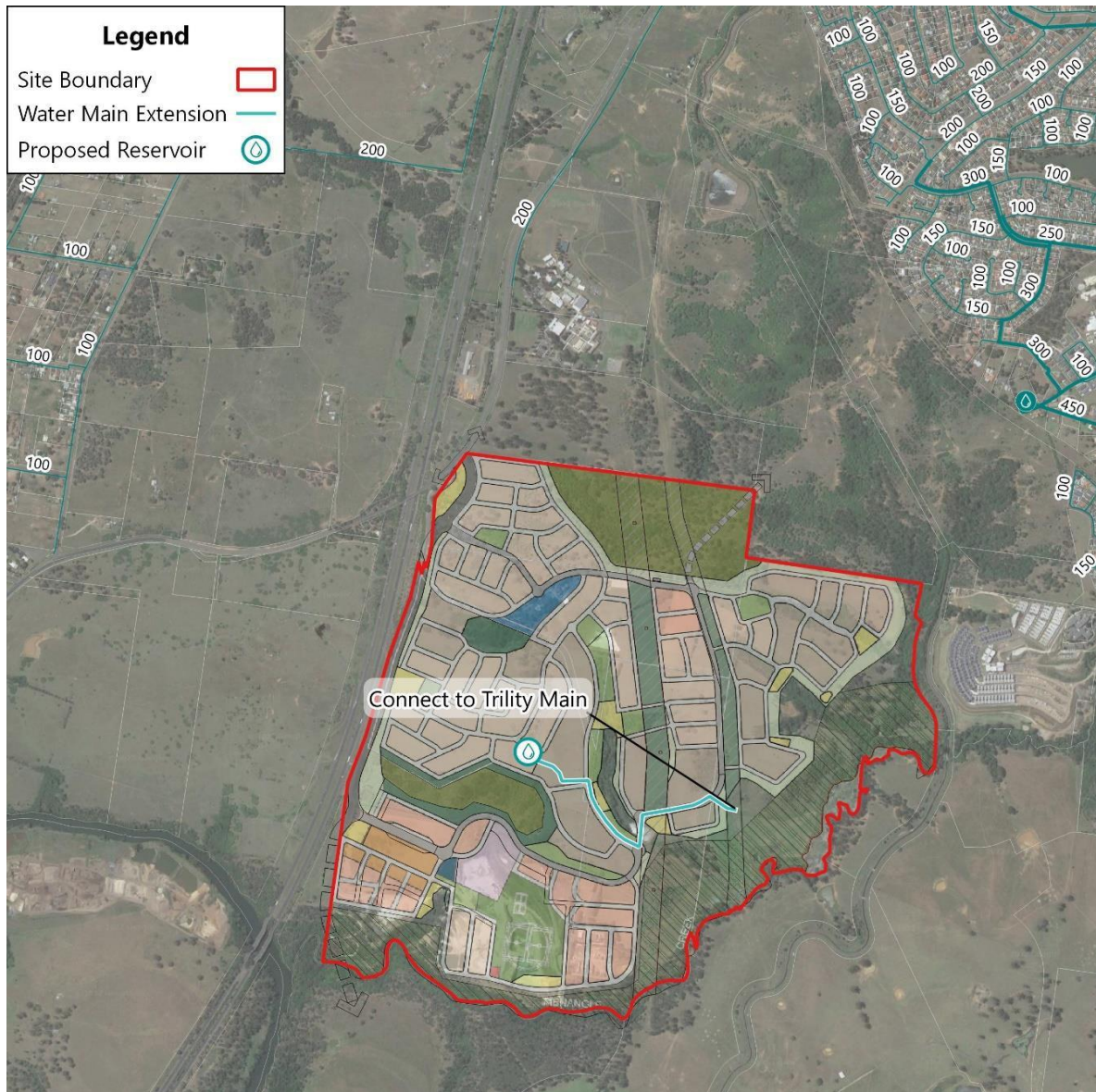
Due to the need to negotiate the lead-in through private property and crossing the water supply canal (which would require Water NSW approval) timing for this option is less certain. In addition, the main would need to be constructed through Cumberland Plain vegetation/threatened species which would require ecological studies, biocertification, etc.



## 2.5 Option 4 – Construct Lead-In From the Trility Main

The site could also receive potable water connection from the existing Trility main that traverses the site. This would require a separate negotiation process for connection but come with reduced lead-in costs. The available pressure in the main is not known and the potential for a booster or reservoir remains. The proposed location is shown in Figure 7.

Figure 7 – Option 4 Layout



### Timing

With no external lead-ins (other than that from the connection point to a potential booster or reservoir) this option can be realised as soon as a commercial agreement has been reached with Trility. The design approval, construction and commissioning process is also unknown at this time but is not anticipated to be materially different to that of SWC.

## 2.6 Potable Water Infrastructure

The above shows that there are at least four feasible avenues to obtain potable water servicing. Based on the costs, timing impacts, approval by asset owners and technical viability we believe that the Trility main connection (option 4) be pursued as a preferred option (subject to Sydney Water/Trility negotiations), with the next best case (SWC) being the Menangle Connection (Option 2) as the risk of this service not being available for connection is considered low.

Table 2 - Water Quantities

Item	Qty	Units
Option 1 Lead-in to Booster (to nearest site boundary)	1,100	m
Option 2 Lead-in to Booster (to nearest site boundary)	800	m
Option 3 Lead-in to Booster (to nearest site boundary)	1,200	m
Option 4 Lead-in to Booster (to nearest site boundary)	0	m
Option 1 Lead-in to Reservoir Location	1,400	m
Option 2 Lead-in to Reservoir Location	1,400	m
Option 3 Lead-in to Reservoir Location	1,800	m
Option 4 Lead-in to Reservoir Location	1,000	m
Water Pressure Booster (base case)	1	Item
3ML Reservoir (contingency case)	1	Item

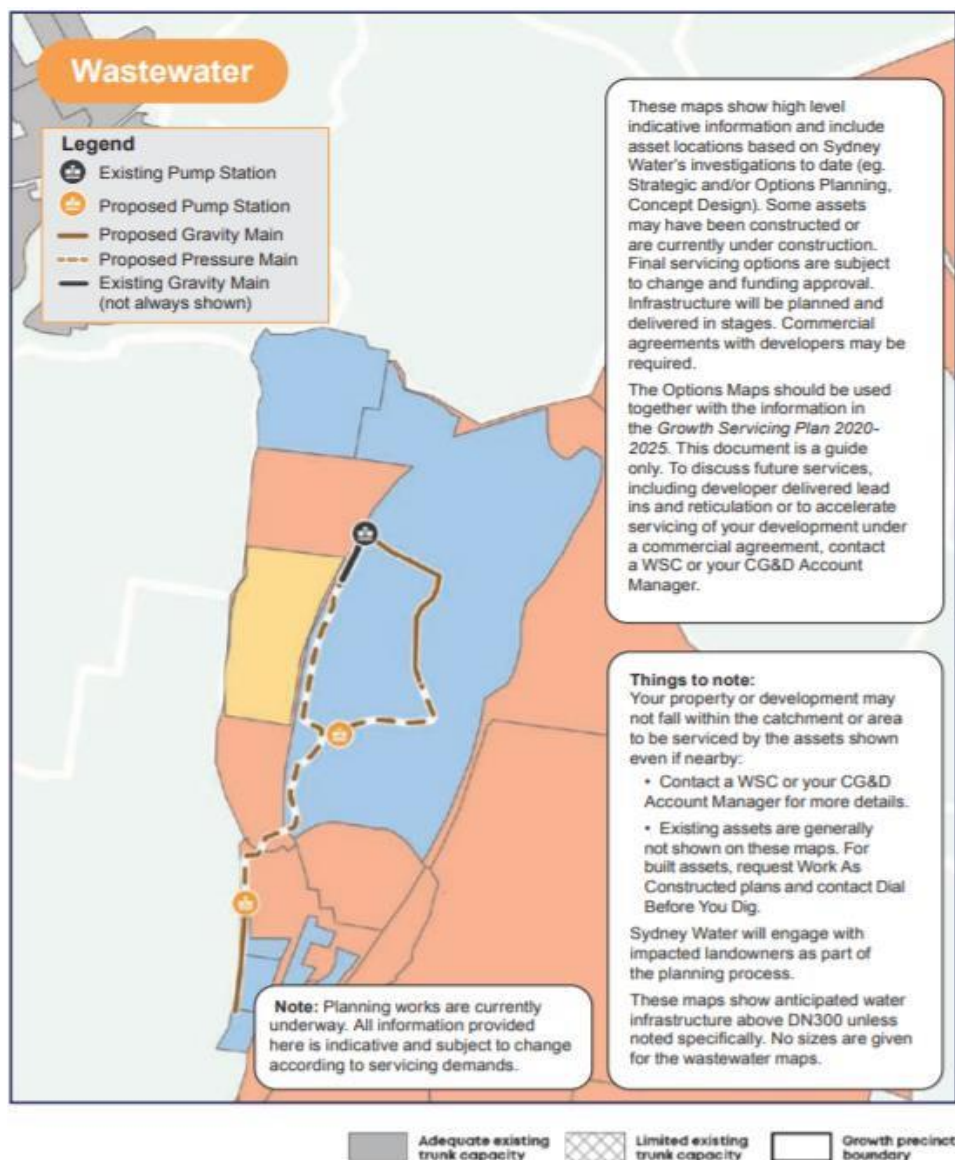


### 3 Sewer

The site is situated within the Glenfield Water Recycling Plant (WRP) sewer catchment. Assuming the development of the site will yield approximately 1,450 lots, an Equivalent Population (EP) of 5,100 can be expected. With a minimum grade of 1 in 100 (1.00%) a gravity pipe size of 300mm would be required. The schematic sewer layout is based on the existing gravity catchments and is shown below.

Sydney Water's Growth Servicing Plan (GSP) shows two proposed sewer pump stations (SPS) and a number of gravity and pressure mains within the Menangle precinct. This infrastructure connects to an existing SPS north of Fitzpatrick Street, located 2km northwest of the site (SP1185). SP1185 discharges to a 450mm diameter branch main where it crosses the Hume Motorway, approximately 2.6km north of the site and is transferred to the Glenfield WRP.

Figure 8 - Sydney Water GSP Excerpt (Sewer)



The GSP indicates that sewer servicing for the Menangle precinct is currently in the concept planning stage and infrastructure is flagged for delivery in the 2023 financial year.





### 3.1 Option 2

Alternatively, sewer from the site could be discharged to SP1185 via an internal SPS and associated rising main. The total length of rising main to connect the site to SP1185 would be in the order of 2.9km.

The capacity of SP1185 is unknown and would need to be clarified with Sydney Water, however the site appears to be “in catchment” for this SPS.

Figure 10 – Sewer Servicing Option 2

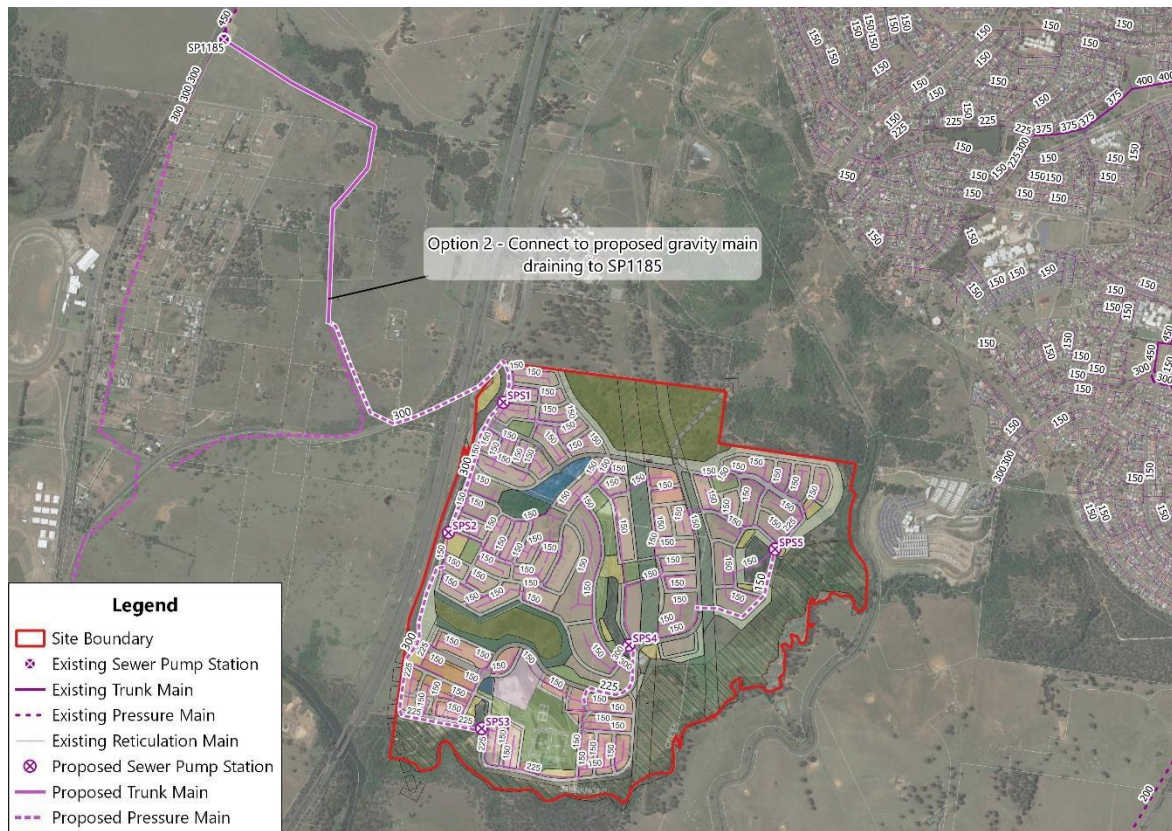


Table 4 - Sewer Quantities – Option 2

Item	Qty	Units
Gravity Main 150mm diameter	23,750	m
Gravity Main 225mm diameter	1,700	m
Gravity Main 300mm diameter	200	m
Option 1 Rising Main 150mm diameter	350	m
Option 1 Rising Main 225mm diameter	510	m
Option 1 Rising Main 300mm diameter	3,530	m
SPS1	700	EP
SPS2	1,900	EP
SPS3	2,800	EP
SPS4	4,500	EP
SPS5	5,100	EP

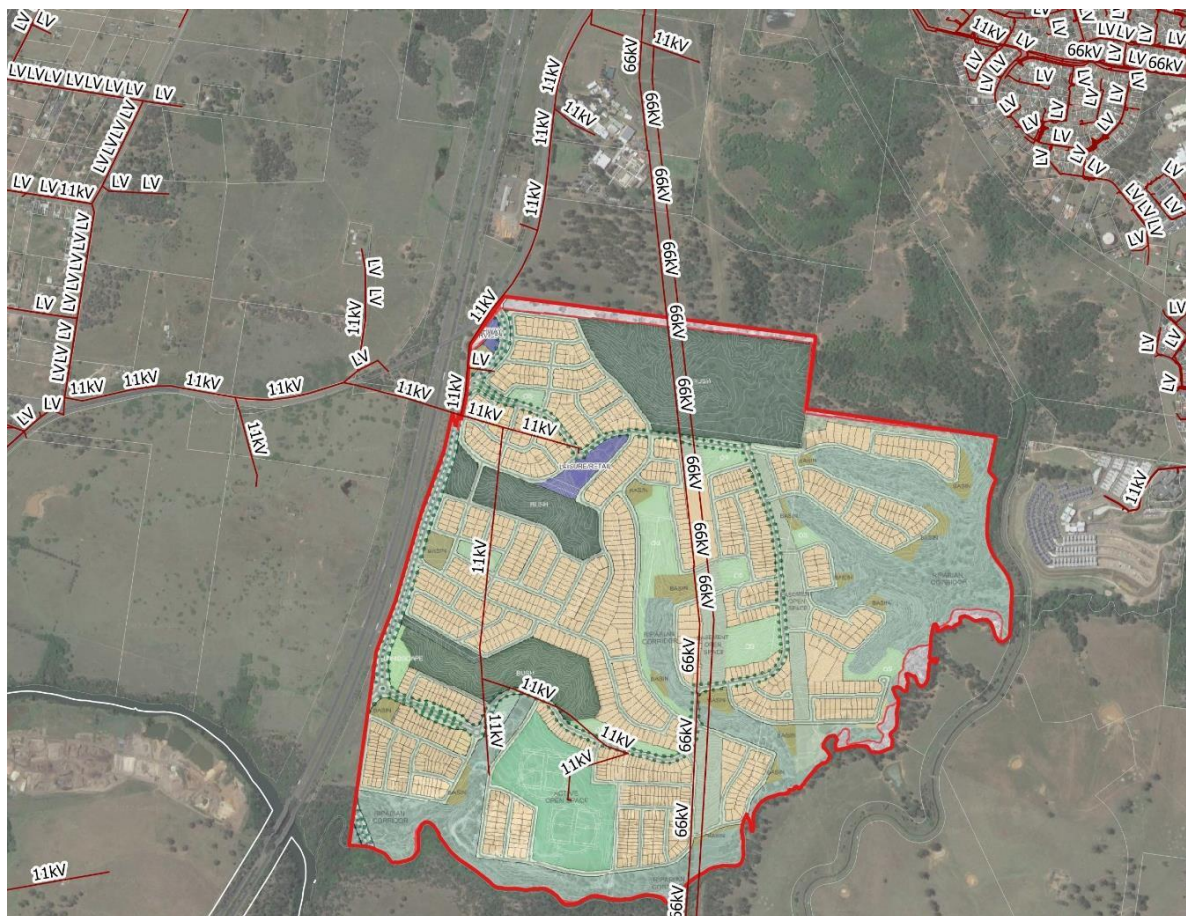
We understand that a feasibility application has been lodged with Sydney Water and feedback on these options is expected in the coming weeks and months.

## 4 Electricity

The site is located within the Endeavour Energy (EE) electrical supply zone. Early engagement with EE has provided the following advice:

- The nearby 11 kV feeder on Menangle Rd is Ambarvale Zone Substation (ZS) Feeder T874, but the spare capacity has been reserved for other developments
- After Menangle Park Mobile substation in the north-west is commissioned in 2021 Q4, some of Feeder T874 will be offloaded to Menangle Park Mobile
- Feeder T874 can then be brought into this development to supply the initial stages (possibly up to approx. 400 lots) and defer a new dedicated feeder from Menangle Park Mobile (could be Menangle Park permanent by then).
- Mt Gilead ZS is outside of the development's timeline so supply from there is unlikely
- It is likely that EE will seek spare ducts to connect Menangle Park ZS & Mt Gilead ZS
- The length of feeder required, based on the other feeder locations in the area is about 4,000m.

Figure 11 - Existing Electricity Layout



For the purposes of budgeting, we recommend assuming that the first 300 lots (less than the indicated 400 lots, but recommended as a somewhat conservative estimate) can be supplied without lead-ins. Following this, the next stage should include an allowance to bring an 11kV feeder to the site from the Menangle Park Zone Substation with spare ducts over a distance of 4,000m.