

# Gilead

Infrastructure and Servicing Strategy



**Prepared for Lendlease  
Communities (Figtree Hill) Pty  
Limited**

## Document Information

Prepared by  
**Enspire Solutions Pty Ltd**  
1302/83 Mount Street  
North Sydney NSW 2060  
ABN 71 624 801 690

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# Transmittal

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## Executive Summary

**Table 1 – Summary of Infrastructure and Servicing Strategy Assessment**

Service	Summary of Servicing Strategy
Potable Water	<p>A potable water connection to the Sydney Water network would comprise an initial development stage connection to the planned elevated potable water reservoir located on Lendlease owned land, east of Appin Road. This reservoir is expected to have spare capacity taking into consideration the ultimate Figtree Hill development. Further investigation into the increase in sizing of the Figtree Hill reservoir is recommended to be undertaken to service the ultimate development of the combined Figtree Hill and Gilead developments. It is proposed that the location of this upsized reservoir remains in the same position, to the east of Appin Road.</p>
Wastewater	<p>A wastewater connection to the Sydney Water network would comprise an initial development stage connection via a gravity trunk sewer main to Pumping Station SPS1206, currently being delivered in conjunction with Sydney Water. Sewage flows would transfer to the Glenfield Sewage Treatment Plant via pressure rising main. The balance of the Gilead development would be serviced through a second connection via gravity trunk sewer main to connect to the Bow Bowing carrier. Sewage flows to be transferred to the Glenfield Sewage Treatment Plant.</p>
Electricity	<p>Endeavour Energy advised that a new zone substation will be required to service the Gilead project and that the preference for the location of the zone substation is adjacent to the existing Endeavour Energy 66kV overhead feeders.</p>
Telecommunications	<p>OptiComm is the preferred optic fibre supplier for all Lendlease residential developments. OptiComm has advised that it can partner with Telstra or Optus to provide a connection to service the Gilead project.</p>
Gas	<p>Whilst augmentation to the existing gas network is possible, Lendlease's Global Sustainability commitments preclude the utilisation of gas in new developments.</p>



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## 1 Introduction

Enspire Solutions Pty Limited (Enspire) has been engaged by Lendlease Communities (Figtree Hill) Pty Limited (Lendlease) to prepare an Infrastructure and Servicing Strategy which summarises servicing options for the proposed development of the subject site known as Gilead in Gilead, NSW.

The scope of this report is to review the capacity constraints of existing utility services in the area surrounding the subject site and identify the preferred servicing strategies to support future residential development of Lendlease's landholding.

Gilead is located within Campbelltown LGA and is situated between Appin Road and Hume Highway. The land subject of this investigation includes:

- Lot 2 DP 1218887
- Lot 1 DP 603675
- Lot 2 DP 603674
- Lot 2 DP 249393

Refer to Figure 1 below for the site locality plan.



Figure 1: Site Locality Plan



## 1.1 Scope of Investigation

The scope of work of this report includes undertaking a review of existing services information in relation to the subject site for the following:

- Potable Water and Wastewater: Sydney Water
- Electricity: Endeavour Energy
- Telecommunications: OptiComm

This report presents the preferred servicing strategy for each of the abovementioned services. At this stage, limited stakeholder engagement has been undertaken due to the development's current status in the rezoning pathway. However, Lendlease is continuing to progress discussions with Sydney Water to confirm service delivery strategies to facilitate development of the subject site.

Gas has not been considered in the preparation of this report as Lendlease's Global Sustainability commitments preclude the utilisation of gas in new developments.

## 1.2 Limitations

Enspire has prepared this report for the exclusive use of Lendlease for this project only and for the purposes as described in this report. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of Enspire, does so entirely at its own risk and without recourse to Enspire for any loss or damage. In preparing this report, Enspire has relied upon information provided by the Client and/or their agents.

This report aims to faithfully convey the outcomes of investigations, meetings and discussions in order to accurately and adequately define the opportunities and constraints of the site. This investigation has not sought to accommodate all potential constraints for the proposed development.



## 2 Land Capability Assessment

### 2.1 Proposed Development

Greater Macarthur has been identified as Growth Area by the NSW Government and will provide for 15,000 new homes to the broader south Campbelltown region. Lendlease's landholding at Gilead has been identified as a Priority Precinct and will make the first contribution to housing supply in the region of approximately 3,300 new homes, a retail centre and education facilities.

Importantly, it will secure key conservation outcomes including the establishment of linked koala and fauna corridors between the Georges River and Nepean River.

To facilitate both the housing and conservation outcomes for the site, a Planning Proposal is being prepared to rezone the site under the State Environmental Planning Policy (Precincts – Western Parkland City) 2021. The Planning Proposal will establish the Urban Development Zone for land capable of development and introduce a C2 Environmental Conservation zone for land containing key fauna habitat to be retained as well as land that native bushland is to be reconstructed. This report specifically addresses the infrastructure and servicing strategy for the development and has been used to shape and inform the Planning Proposal and associated development outcomes.

This investigation has been undertaken based on the development conceptual illustrative masterplan prepared by Lendlease and its consultant team. The development masterplan will be developed in conjunction with Campbelltown City Council after the rezoning process has been concluded.

### 2.2 The Site

The Site consists of five properties including Lot 2 in DP 1218887, Lot 2 in DP 249393, Lot 1 DP603675, Lot 2 DP603674 and part of Lot 5 in DP 1240836 that have a combined area of 495ha.

The Site has been subject to significant clearing and used for cattle grazing. Intact stands of vegetation are generally contained within the creek lines that traverse the Site including the Menangle Creek, Nepean Creek and Woodhouse Creek and along the Nepean River. Outside of these areas, vegetation consists of pastureland and scattered paddock trees.

Access to the Site is provided by a battle axe handle on the eastern side of Lot 2 in DP 1218887 that connects to Appin Road. Access to the Site is also provided via an easement over land to the east that will be formalised through public roads being delivered by Lendlease as part of their Figtree Hill development.

Rural properties boarder the southern boundary of the Site including Beulah Reserve which contains a State Heritage Item and a registered BioBank. The Nepean River forms the western boundary of the Site with Menangle Creek forming the majority of the northern boundary of the Site. A minor portion of the Site (Lot 2 in DP 249393) has frontage to the Hume Highway and is accessed from Medhurst Road.

The Upper Canal is a State Heritage Item that traverses the Site from South to North and there are a series of electrical transmission line and gas pipeline easements that traverse the central park of the Site from North to South. The Site sits to the south and west of the Mt Gilead Homestead complex that is a State Heritage Item and is contained within Lot 1 in DP 1218887.



## 3 Utilities Infrastructure

### 3.1 Potable Water Servicing

#### 3.1.1 Potable Water Servicing Short List

There are a number of servicing strategies available to provide potable water services to the Gilead development, with the following options considered to be appropriate:

1. Install an initial development stage connection to the planned elevated potable water reservoir located on Lendlease owned land, east of Appin Road. This reservoir is expected to have spare capacity taking into consideration the ultimate Figtree Hill development (also by Lendlease). The Figtree Hill reservoir is serviced by a trunk main connection to the Rosemeadow Water Supply Zone.  
The remaining ultimate Gilead development demands could then be met through one of the remaining options below;
2. Connect to the existing DN1200 Trility Pipeline to supply part of or all of the Gilead development;
3. Construct a potable water reservoir to the north of Gilead, with a connection to the Rosemeadow Water Supply Zone, to supply all or part of the Gilead development; and/or
4. Construct a lead-in watermain from the Appin Water Supply Zone to the Gilead development to supply part or all of the Gilead development.

#### 3.1.2 Potable Water Servicing

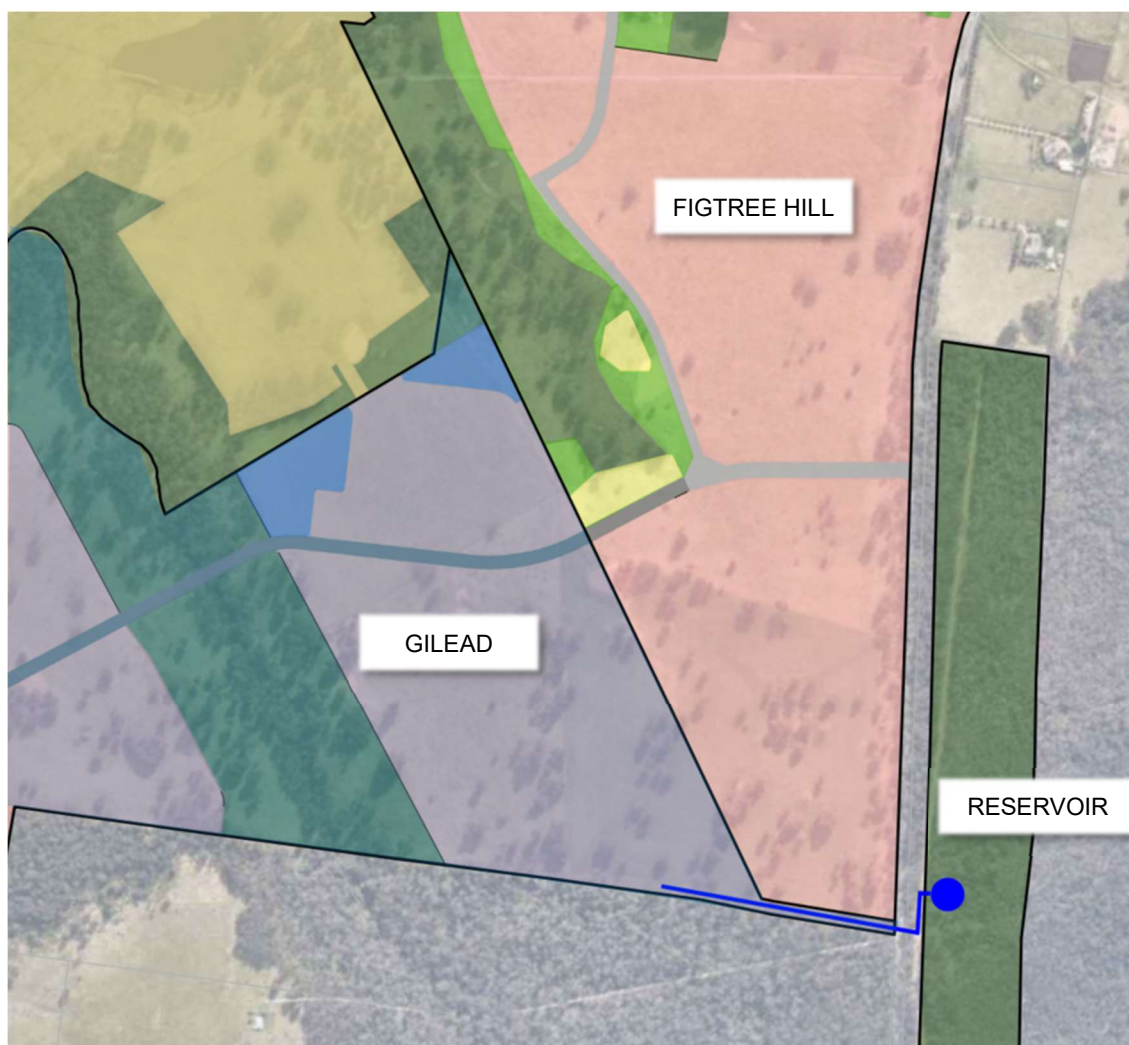
##### 3.1.2.1 Option 1 – Connect to Figtree Hill Potable Water Reservoir

Option 1 is the preferred option and comprises an early development stage connection to Sydney Water's potable water network. It includes supply for the eastern portion of the development (approx. 600 residential dwellings) to the potable water reservoir planned to be constructed to the east of Appin Road. Refer to Figure 2 for the proposed location of the potable water reservoir.

The Figtree Hill reservoir is serviced by the Rosemeadow reservoir, via a trunk main that runs from the north along Glendower Street. A booster pumping station is also planned to be installed at the northern end of the Figtree Hill development to ensure sufficient pressure in the network to feed and fill the Figtree Hill potable water reservoir.

The Figtree Hill potable water reservoir has been designed to provide capacity to service 2,100 residential dwellings. It is proposed to extend the trunk water main running from the Figtree Hill reservoir and provide a connection to the easternmost portion of the Gilead development. Once the spare capacity in this reservoir has been utilised, the balance of the Gilead development would be serviced through the delivery Options 2, 3 or 4 as outlined in Sections 3.1.2.2 to 3.1.2.4 below.

Alternatively, investigation into the increase in sizing of the Figtree Hill reservoir can be undertaken to service the ultimate development of the combined Figtree Hill and Gilead developments. It is proposed that the location of this upsized reservoir remains in the same position, to the east of Appin Road.



**Figure 2: Potable Water Option 1 - Connection to Figtree Hill Potable Water Reservoir**

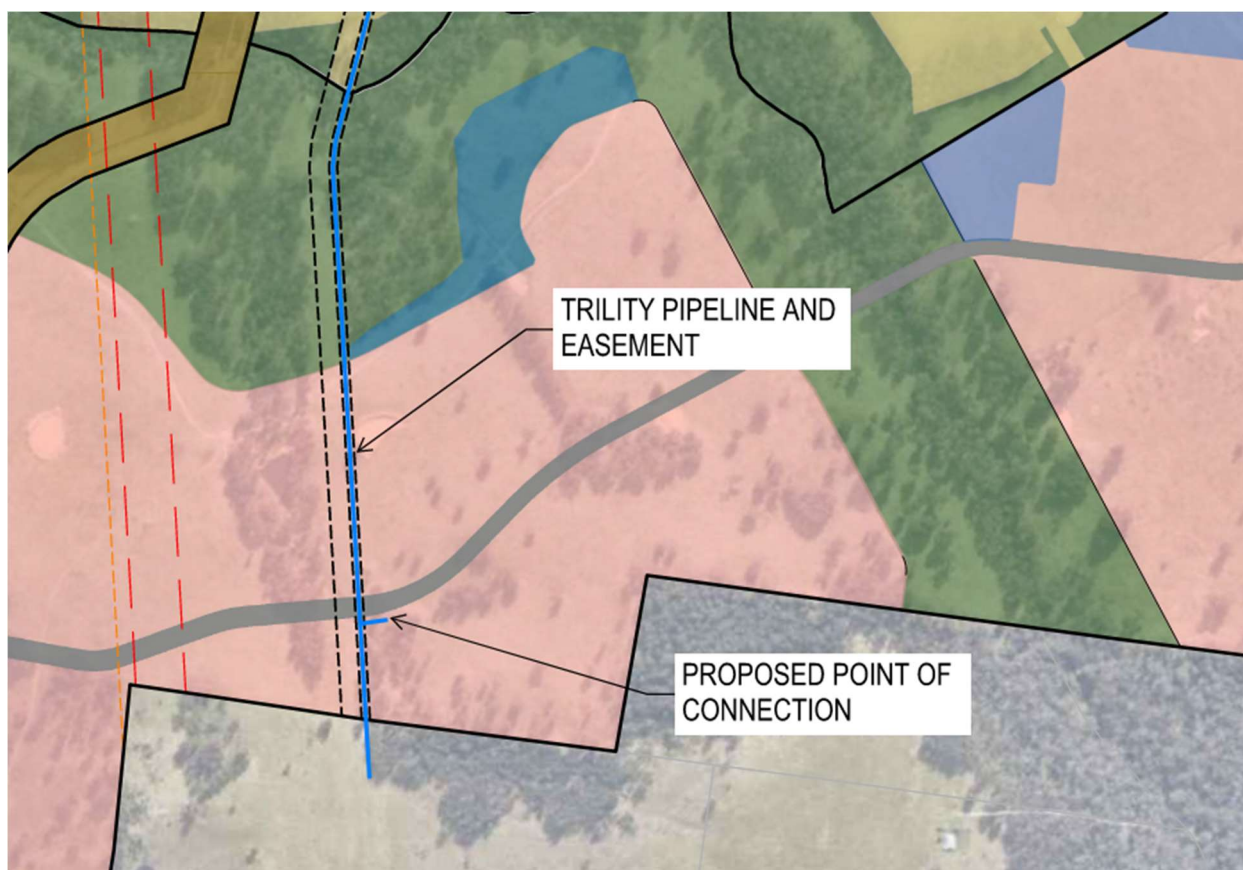
### **3.1.2.2 Option 2 – Trility Pipeline**

The Trility owned DN1200 potable water pipeline from the Macarthur Water Treatment Plant is located in an existing easement which traverses south to north through the western portion of the Gilead development. The Trility system feeds into the Sydney Water trunk network at Sugarloaf, to the north of Rosemeadow and is the ultimate bulk water source for the Rosemeadow Water Supply Zone.

Sydney Water owns the distribution system and manages connections and distribution design. Sydney Water is also responsible for determining if capacity is available. Any offtake must be approved by Sydney Water in conjunction with Trility.

If an offtake of the existing Trility pipeline was approved, an internal transfer main would be required to be constructed to feed a new potable water reservoir which would then supply via gravity the Gilead development. A water pumping station may also be required to ensure the Gilead reservoir would fill at the required rate to service the development.





**Figure 3: Potable Water Option 2 – Connection to Trility Pipeline**

Figure 3 shows the location of the existing Trility Pipeline and its associated easement and nominates an indicative location for the proposed point of connection from this water main which would be sized for the ultimate development. A potable water network would be extended from this location to service the Gilead development.

### 3.1.2.3 Option 3 – Construction of North Gilead Potable Water Reservoir

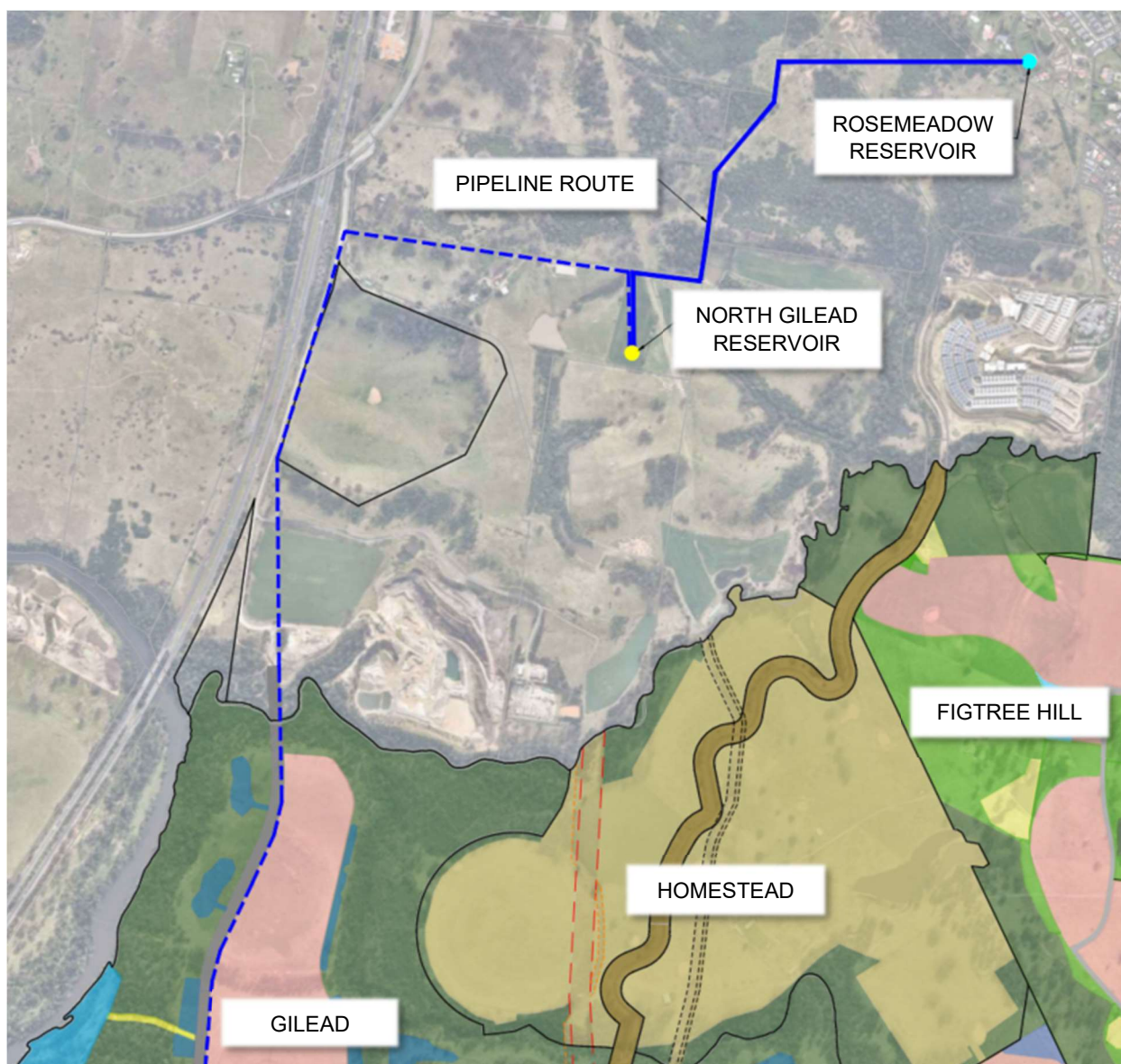
Option 3 is proposed to be delivered in conjunction with Option 1, with Option 3 providing for the balance of the Gilead development.

The potable water reservoir is proposed to be located in the North Gilead area, located on land north of the Gilead development site. To service Gilead, a 2.3ML potable water surface or elevated reservoir will be required – however, the size of this reservoir may need to be reviewed to take into consideration servicing of other developments in the North Gilead area.

It is anticipated a DN250 trunk main will be extended from the Rosemeadow reservoir to a dedicated potable water reservoir located north of the Gilead development. A water pumping station may be required to boost water pressure along the route, however this is subject to future modelling of the development servicing strategy.

Figure 4 nominates an indicative location for the proposed North Gilead reservoir which would be sized for the ultimate development. A potable water network would be extended from this reservoir to service the Gilead development.





**Figure 4: Potable Water Option 3 - Construction of Gilead Potable Water Reservoir**

#### **3.1.2.4 Option 4 – Connect to Appin Water Supply Zone**

Option 4 is proposed to be delivered in conjunction with Option 1, with Option 4 providing for the balance of the Gilead development once Option 1 has been implemented.

A potable water surface or elevated reservoir would be required to be constructed to the southeast of the Gilead site to service the development via gravity. It is proposed that Sydney Water give consideration to the upsizing of the Figtree Hill reservoir, proposed to be located to the east of Appin Road (refer Figure 2) to service both the Figtree Hill and Gilead developments.

It is anticipated a DN250 trunk main would be extended along Appin Road from the Appin Water Supply Zone reservoir to a dedicated potable water reservoir located within the Gilead development. A water pumping station may also be required to pump to the surface or elevated reservoir, which will ensure the reservoir will fill at the required rate to service the development with the required 3.4kL/day of potable water supply plus the additional potable water supply required to service the Figtree Hill development.



Figure 2 nominates an indicative location for a proposed Gilead reservoir which would be sized for the ultimate development. A potable water network would be extended from this reservoir to service the development.

This option is subject to existing landowner agreement and an assessment of the impact on existing vegetation along Appin Road.

## 3.2 Wastewater Servicing

### 3.2.1 Wastewater Servicing Short List

There are two viable methods to provide wastewater services to the Gilead development, with the following options considered to be appropriate:

1. Install an initial development stage connection via a gravity trunk sewer main to Pumping Station SPS1206, currently being delivered by Lendlease in conjunction with Sydney Water. Sewage flows to transfer to Glenfield Sewage Treatment Plant via pressure rising main. Spare capacity in the Figtree Hill SPS to be utilised after taking into consideration the ultimate Figtree Hill development; and/or
2. Make a second connection via gravity trunk sewer main to connect to the Bow Bowing carrier. Sewage flows to transfer to Glenfield Sewage Treatment Plant.

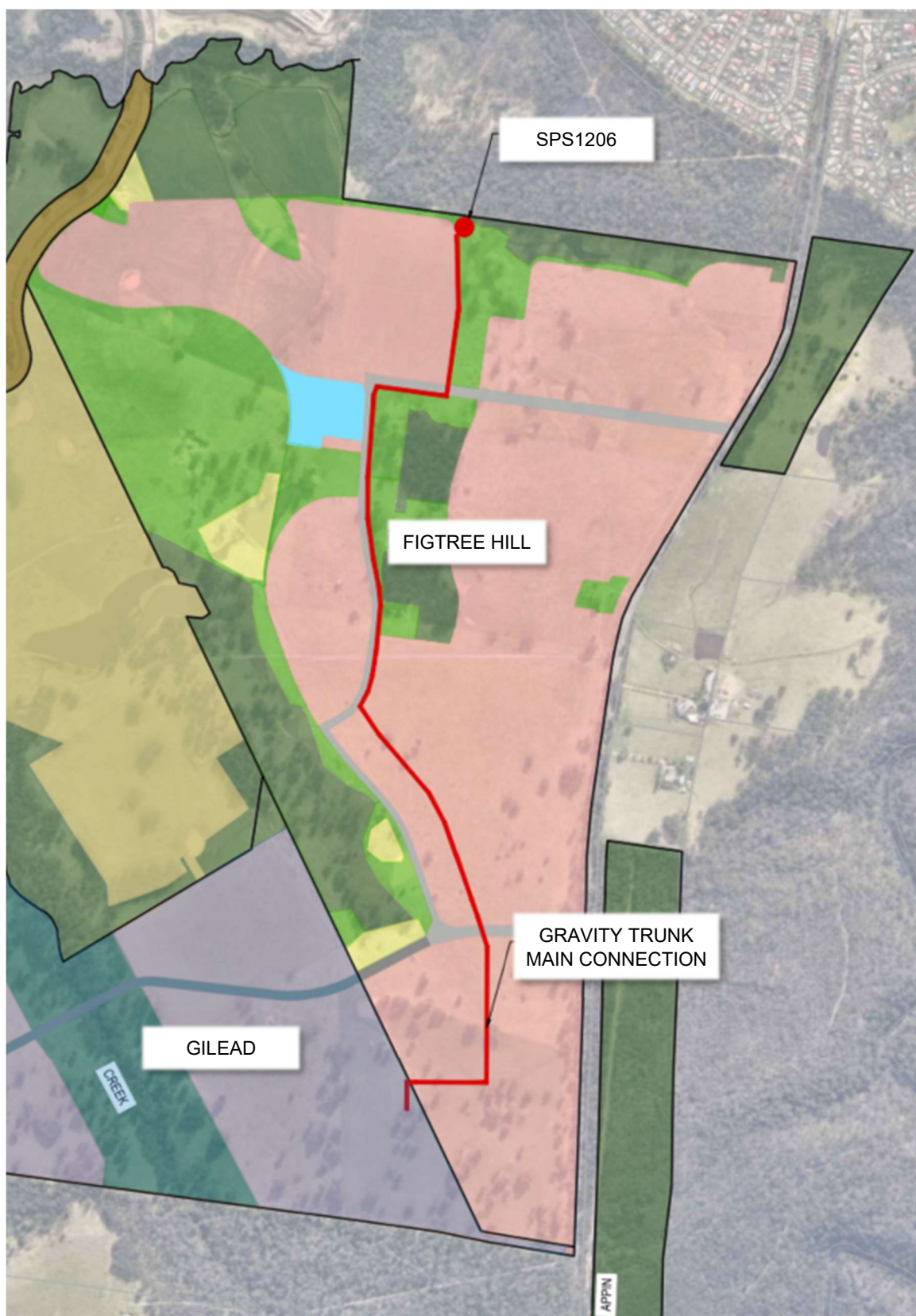
#### 3.2.1.1 Option 1 – Connect to SPS1206 through Figtree Hill Development

Option 1 is the preferred option and comprises an upfront connection to Sydney Water's wastewater network, connecting the eastern portion of the development of approx. 600 residential dwellings to the planned Figtree Hill sewage pumping station (SPS1206). This pumping station, located on the Figtree Hill development also being delivered by Lendlease, is planned to commence construction in July 2022. Refer to Figure 5 for the location of the sewage pumping station. Lendlease has entered into a Commercial Agreement with Sydney Water for the delivery of wastewater infrastructure to service the Figtree Hill project.

SPS1206 has been designed to provide capacity to service 2,100 residential dwellings. It is proposed to extend the trunk gravity main running through Figtree Hill from north to south, to collect sewage flows from the eastern precinct of the Gilead development and convey these flows north to SPS1206.

Ultimately SPS1206 connects via associated pressure and sewer gravity mains to transfer the sewage to the Glenfield Sewage Treatment Plant.

The balance of the Gilead development would be serviced through the delivery of Options 2 as outlined in Section 3.2.1.2 below.



**Figure 5: Wastewater Option 1 - Connection to SPS1206 in Figtree Hill**





### **3.2.1.2 Option 2 – Connect via Bow Bowing Carrier to Glenfield STP**

Option 2 is proposed to be delivered in conjunction with Option 1, with Option 2 providing for the balance of the Gilead development

Initial discussions with Sydney Water and investigations completed to date suggest there is capacity in the Glenfield Sewage Treatment Plant to treat all the proposed Gilead development. Once the spare capacity available in SPS1206 has been utilised, it is proposed to convey sewage flows from the balance of the Gilead project and discharge to the Glenfield Sewage Treatment Plant via a DN375 connection to the Bow Bowing Carrier.

In addition, several internal sewage pumping stations and a gravity sewer main network will be constructed to collect and convey sewage flows. Each sewage pumping station will be sized for the catchment it services. As an alternative to gravity sewerage, investigations into an internal pressure sewer system are being considered and the ultimate servicing strategy will be subject to detailed whole of life cost assessments.

Figure 6 nominates an indicative location for the most downstream internal sewage pumping station which will be sized for the ultimate development. The trunk network will be extended from Lot 2 DP 1218887 to connect to the Bow Bowing carrier to service the development. Other developers along the route may contribute to the funding of this trunk main connection and/or be serviced by this connection.



**Figure 6: Wastewater Option 2 - Connection to Bow Bowing Carrier**



### 3.3 Electrical Servicing

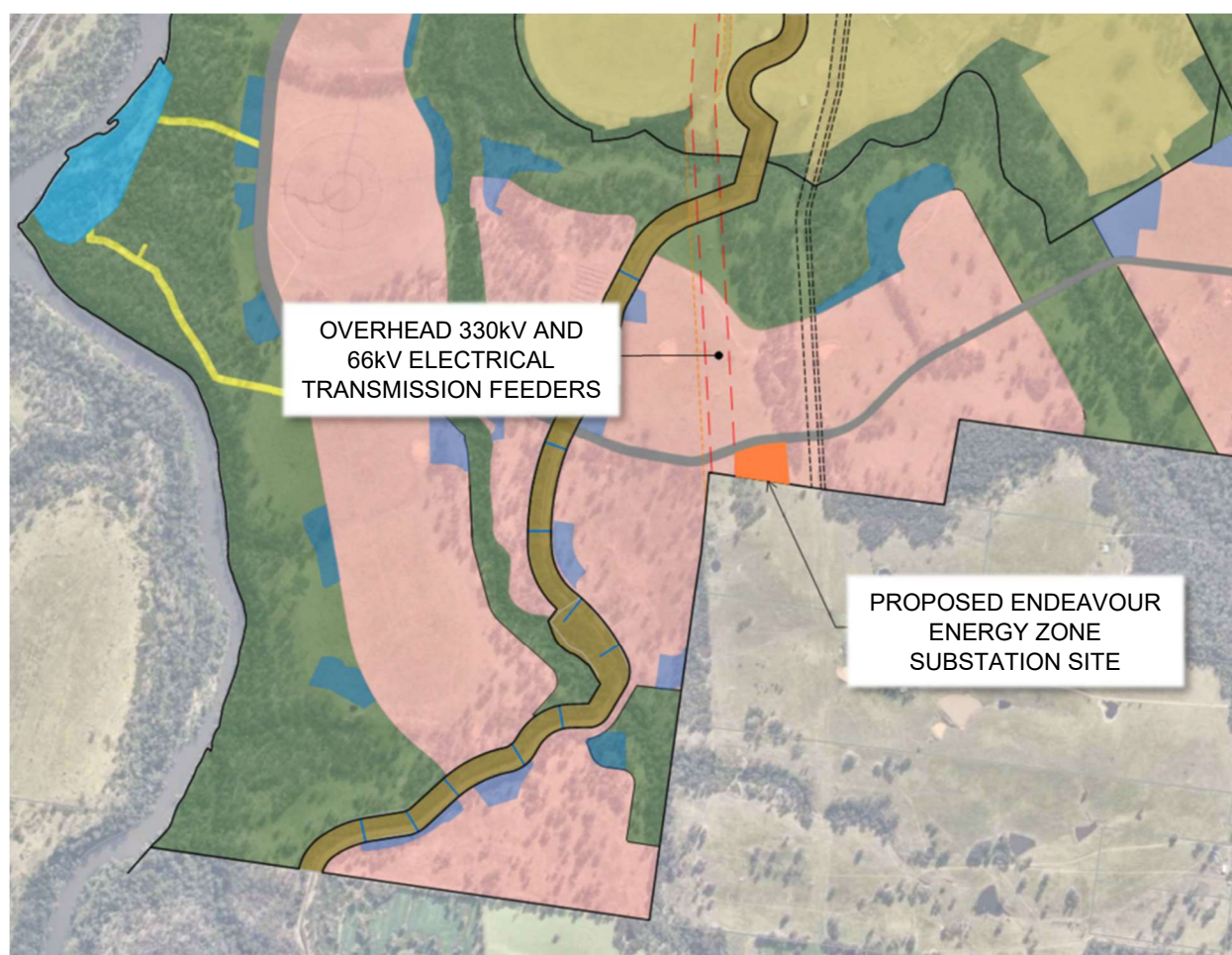
The subject site is currently not serviced with electrical services.

Endeavour Energy have advised that a new zone substation will be required to service the Gilead project and that the Ambarvale Zone Substation will not have any spare capacity after the adjacent Figtree Hill site is developed.

Endeavour Energy's current policy requires a 1-hectare parcel of land be allocated to Endeavour Energy for the development of a zone substation. Preference for the location of the zone substation is adjacent to the existing Endeavour Energy 66kV overhead feeders. Refer to Figure 7 below for the proposed zone substation site.

Lendlease has had preliminary discussions with Endeavour Energy in relation to an appropriate site within the Gilead project and providing road access to Endeavour Energy, along with water, sewer, power and communications service connections. Typically, it would take between 3 to 5 years from the site being made available to Endeavour Energy prior to commissioning of the new zone substation.

The option to make an upfront connection to the electrical reticulation in the Figtree Hill development will also be explored with Endeavour Energy, to make supply available prior to the commissioning of the new Zone Substation.



**Figure 7: Proposed Endeavour Energy Zone Substation Site**





Limited engagement has been had with Endeavour Energy for electrical servicing, however Lendlease will continue to engage with Endeavour Energy to confirm the servicing strategy and timing of supply availability.

### **3.4 Communications Servicing**

The site is currently not serviced with telecommunications infrastructure.

NBN Co is the wholesale provider of broadband access predominately to retail service providers though two service categories, fixed line and wireless. Therefore, the provision responsibility in the area would be upon NBN Co as the provider of last resort for fibre optic broadband.

OptiComm is the preferred optic fibre supplier for all Lendlease residential developments. OptiComm has advised that it can partner with Telstra or Optus to provide a connection to service the Gilead development.

Lendlease has an existing agreement in place with OptiComm to service the Figtree Hill development. An extension of this agreement is anticipated to service the Gilead development.



## 4 Conclusion

This report documents the preferred infrastructure servicing strategy for the proposed rezoning of the Gilead development. The strategy outlines servicing requirements for the provision of potable water, wastewater, electricity, and telecommunications for the proposed future development of the site for residential land use.

In summary, the proposed servicing strategy comprises the following augmentation works to existing infrastructure:

### **Potable Water**

A potable water connection to the Sydney Water network would comprise an initial development stage connection to the planned elevated potable water reservoir located on Lendlease owned land, east of Appin Road. This reservoir is expected to have spare capacity taking into consideration the ultimate Figtree Hill development.

Further investigation into the increase in sizing of the Figtree Hill reservoir is recommended to be undertaken to service the ultimate development of the combined Figtree Hill and Gilead developments. It is proposed that the location of this upsized reservoir remains in the same position, to the east of Appin Road.

### **Wastewater**

A wastewater connection to the Sydney Water network would comprise an initial development stage connection via a gravity trunk sewer main to Pumping Station SPS1206, currently being delivered in conjunction with Sydney Water. Sewage flows would transfer to the Glenfield Sewage Treatment Plant via pressure rising main.

The balance of the Gilead development would be serviced through a second connection via gravity trunk sewer main to connect to the Bow Bowing carrier. Sewage flows to transfer to Glenfield Sewage Treatment Plant.

### **Electricity**

Endeavour Energy advised that a new zone substation will be required to service the Gilead development and that the preference for the location of the zone substation is adjacent to the existing Endeavour Energy 66kV overhead feeders.

### **Telecommunications**

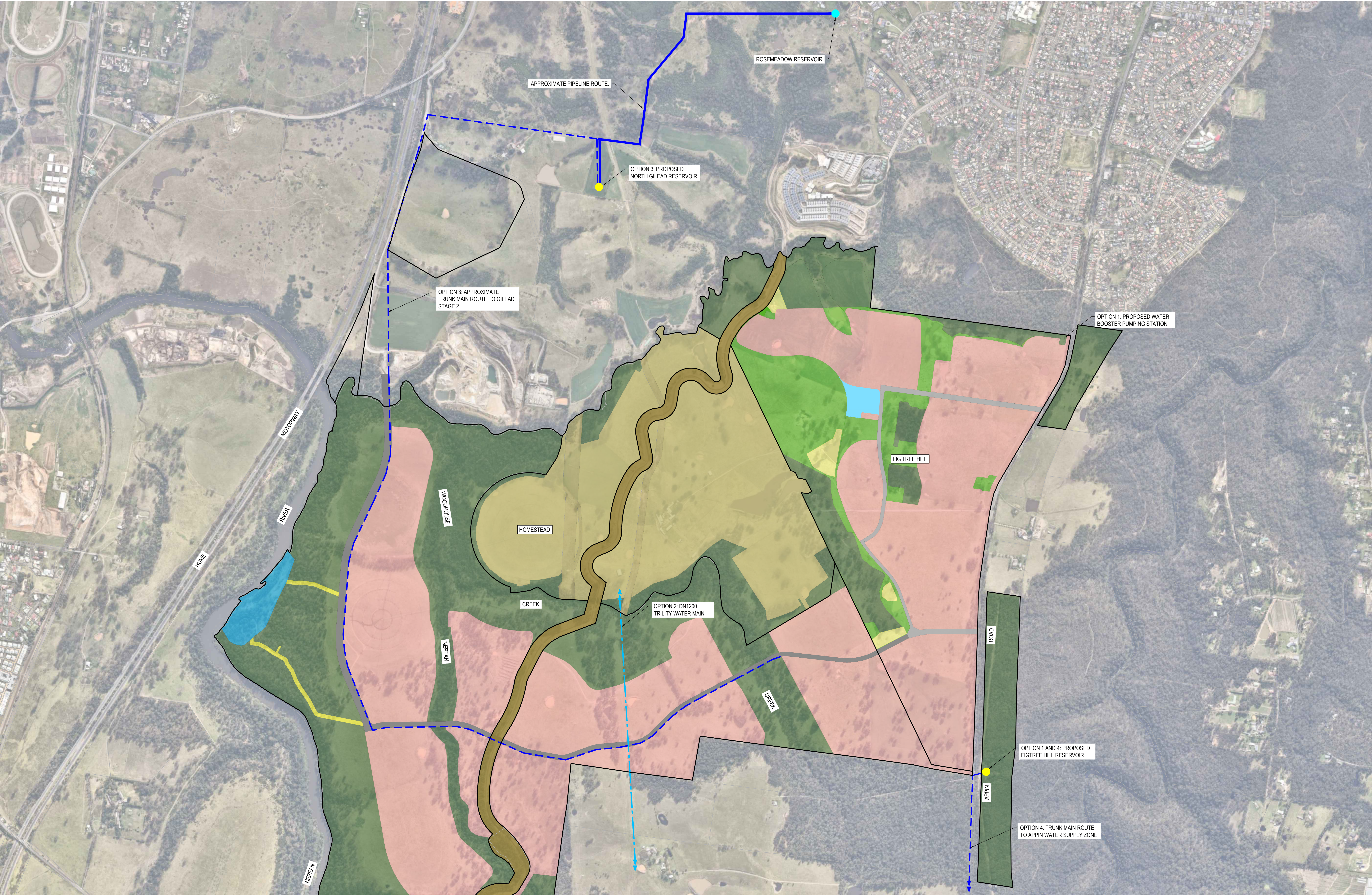
OptiComm is the preferred optic fibre supplier for all Lendlease residential developments. OptiComm has advised that it can partner with Telstra or Optus to provide a connection to service the Gilead project.



Appendix A

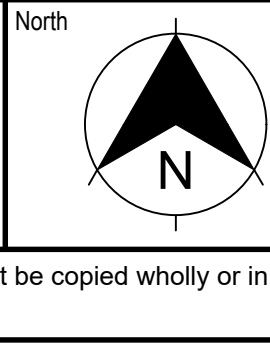
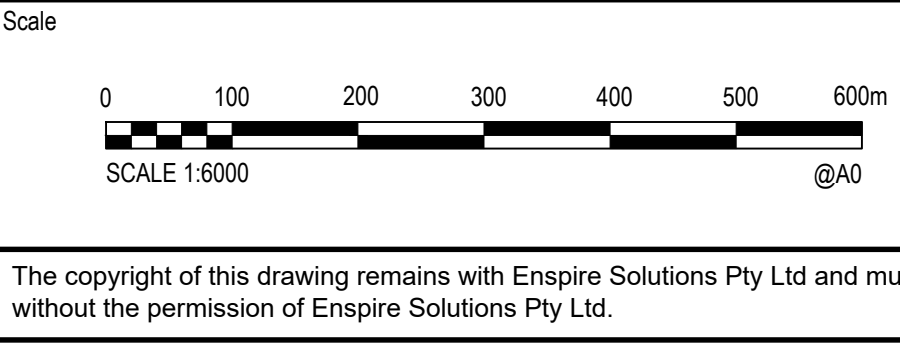
Potable Water Servicing Options





REV	DATE	DESCRIPTION	DRN	DES	VERIF	APPD
1	25/05/2022	ISSUED FOR INFORMATION	LMC	LMC		

Client



Project	GILEAD STAGE 2 MASTERPLANNING
Title	POTABLE WATER SERVICING OPTIONS

Scale	1:6000	Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION
Date	25/05/2022	Project Number/Drawing Number	SKET025-190086
Size	A0	Revision	1
Datum	MGA94		

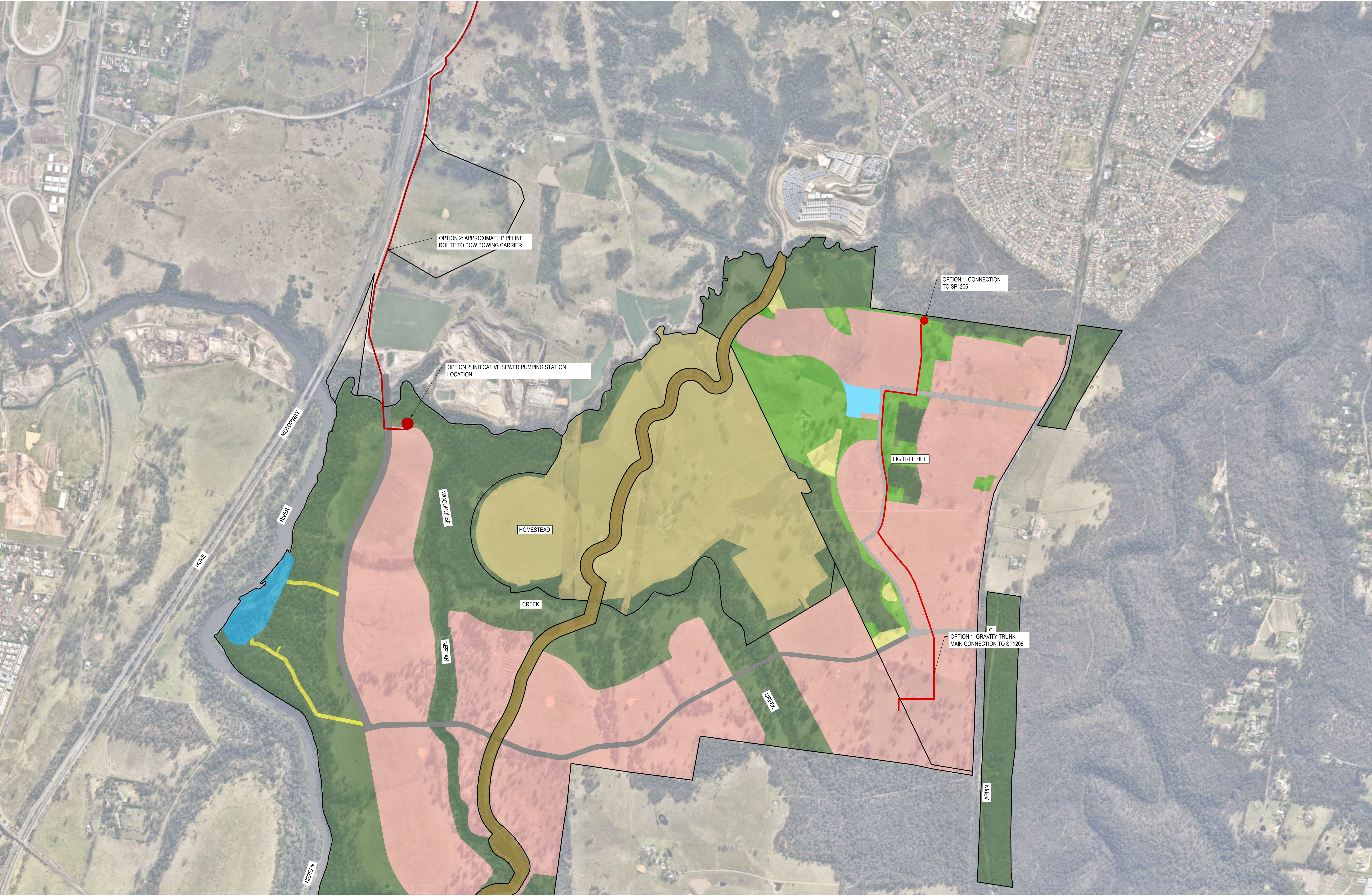




## Appendix B

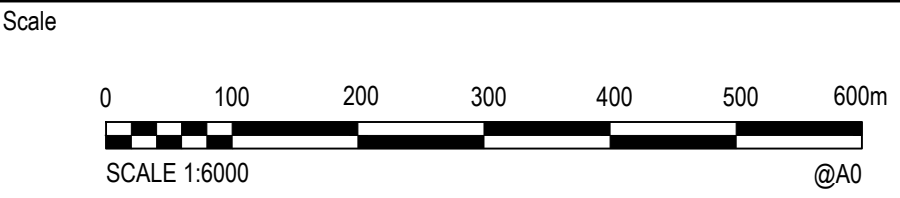
## Wastewater Servicing Options





REV	DATE	DESCRIPTION	LMC	LMC	DRN	DES	VERIF	APPD
1	25/05/2022	ISSUED FOR INFORMATION						

Client



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Project	GILEAD
Stage	STAGE 2
Masterplanning	MASTERPLANNING
Title	WASTEWATER SERVICING OPTIONS

Scale	1:6000	Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION
Date	25/05/2022	Revision	
Size	A0	Project Number/Drawing Number	SKET026-190086
Datum	MGA94	Revision	1