

Utilities Infrastructure Servicing Report

Riverstone Stage 3



Prepared for
Department of Planning and Environment

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Document Information

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Executive Summary

Enspire Solutions Pty Ltd (Enspire) has been engaged by the Department of Planning and Environment (DPE), to prepare a Utilities Infrastructure Report to support the rezoning of Riverstone East Stage 3 (the Site).

This report investigates and summarises the existing infrastructure surrounding the Site, the gap in infrastructure to service the expected development, and discusses potential servicing strategies for each of the utilities. This report also describes the future actions required to adequately service the Site and makes recommendations to further investigate the status and availability of each utility in relation to future development.

Table 1 below summarises key findings presented throughout the report.

Table 1 – Utilities Summary

Utility	Authority	Existing Infrastructure	Proposed Strategy	Priority
Wastewater	Sydney Water	Riverstone Wastewater Treatment Plant; Rouse Hill Water Recycling Plant; trunk drainage along site boundary	Sydney Water projecting capacity by FY2028-29 to align with demand due to rezoning	High
Potable Water	Sydney Water	Sydney Water Reservoir; water mains running along site boundary and across site	Sydney Water projecting capacity by FY2028-29 to align with demand due to rezoning	High
Recycled Water	Sydney Water	Rouse Hill Water Recycling Plant; limited recycled water drainage infrastructure	The implementation of recycled water is yet to be confirmed	Moderate
Electrical (330kV)	TransGrid	Overhead powerline traversing the Site east-to-west	Powerlines + associated easement to be rezoned RE1 and SP2. Not expected to impact servicing.	Low
Electrical (132kV)	Endeavour Energy	Overhead powerline traversing the Site north-to-south	Powerlines + associated easement to be rezoned for development, option to relocate underground with approval from Endeavour Energy. Not expected to impact servicing.	Moderate
Electrical (underground)	Endeavour Energy	11kV feeder infrastructure along site boundary	New Zone Substation planned to provide electrical supply for the development	Moderate
Natural Gas	Jemena	High pressure gas main running east across site	Implementation of medium pressure main	Low
Telecommunications	NBN	Riverstone NBN Exchange	Adequate coverage for NBN to be rolled out progressively	Low

Existing Utilities present within the Stage 3 site boundary and adjacent areas as of September 2023.



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1 Project Background

1.1 Overview

Enspire Solutions Pty Ltd (Enspire) has been engaged by the Department of Planning and Environment (DPE) to prepare a Utilities Infrastructure Servicing Plan to support the rezoning of Riverstone East Stage 3 Precinct (the Site).

The Site has been identified for future homes and jobs growth as path of Sydney's North West Growth Area (NWGA). Stages 1 and 2 were rezoned to support residential development in 2016, with the roll-out of housing and requisite infrastructure ongoing at the time of this report. Stage 3 is to be rezoned to continue the development of the area.

This report investigates and summarises the existing infrastructure surrounding the Site and comments on potential servicing strategies for each utility required to support the rezoning. This report also outlines the future actions required to adequately service the proposed future developments and makes recommendations to further investigate the status and availability of each utility in the Site.

1.2 Site Characteristics

The Site is located within the Blacktown Local Government Area (LGA), and as shown in Figure 1, is the third and final stage within the Riverstone East precinct. It covers approximately 378 hectares of partially developed land, of which the DPE intends 125 hectares to be rezoned for development.

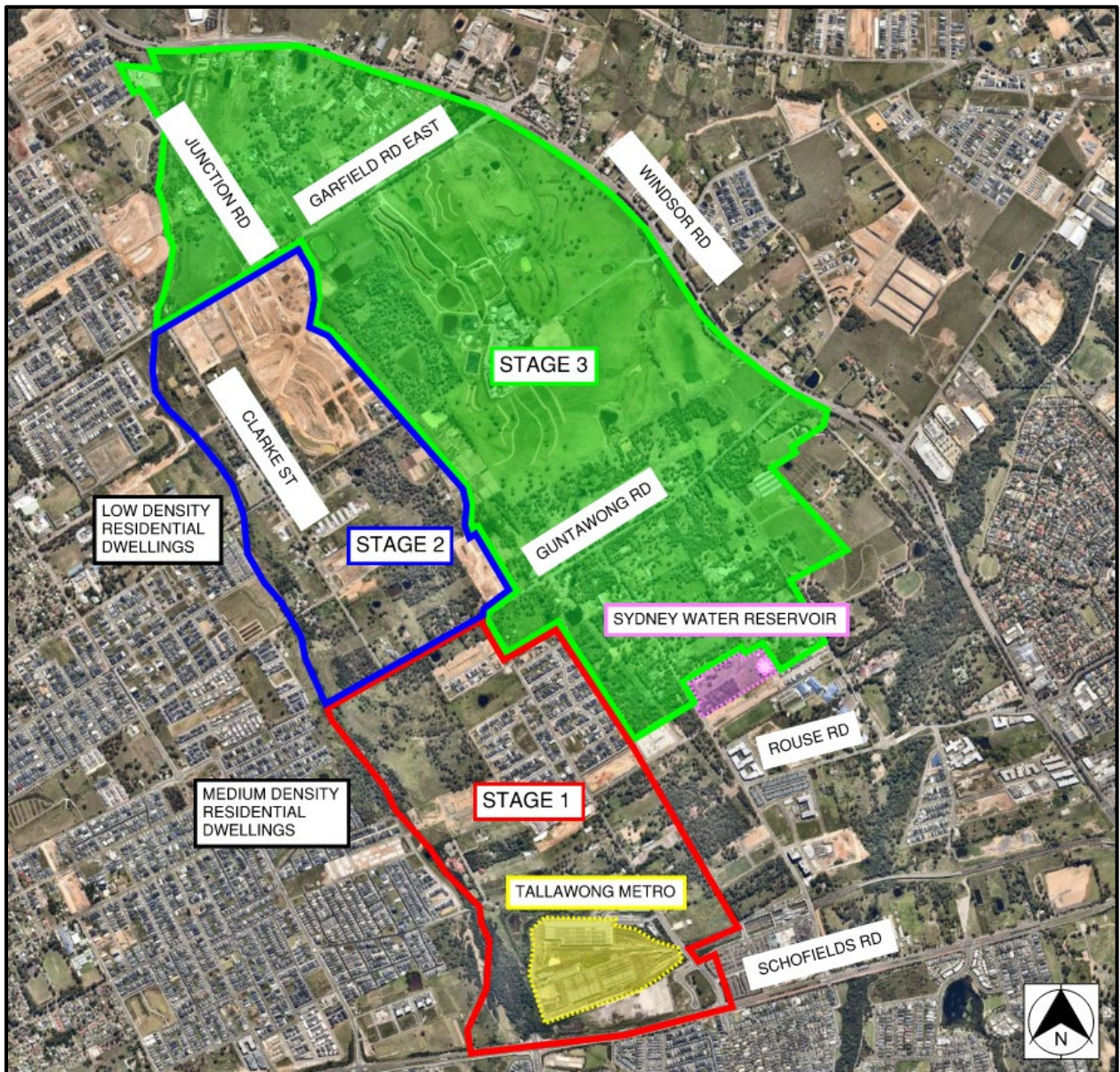


Figure 1 – Site Aerial

Source: Nearmap dated 19 March 2023.

Stage 3 is bound by Windsor Road along the east, and bound by Stages 1 and 2 to the west. Additional low and medium residential developments lie along the north-west boundary and major infrastructure, including Tallawong Metro station and stabling yard, and a Sydney Water reservoir complete the southern boundary.

Stages 1 and 2 are currently being developed and will conjointly provide approximately 3,500 new residential homes upon completion. The DPE advised that Stage 3 is estimated to service approximately 2,800-3,210 new residential homes. The current draft Indicative Layout Plan (ILP) expresses a yield of 3,147 new residential homes of varying sizes.

1.3 Proposed Development

The Site is to be developed generally in accordance with the ILP, shown in Figure 2 and Appendix A.

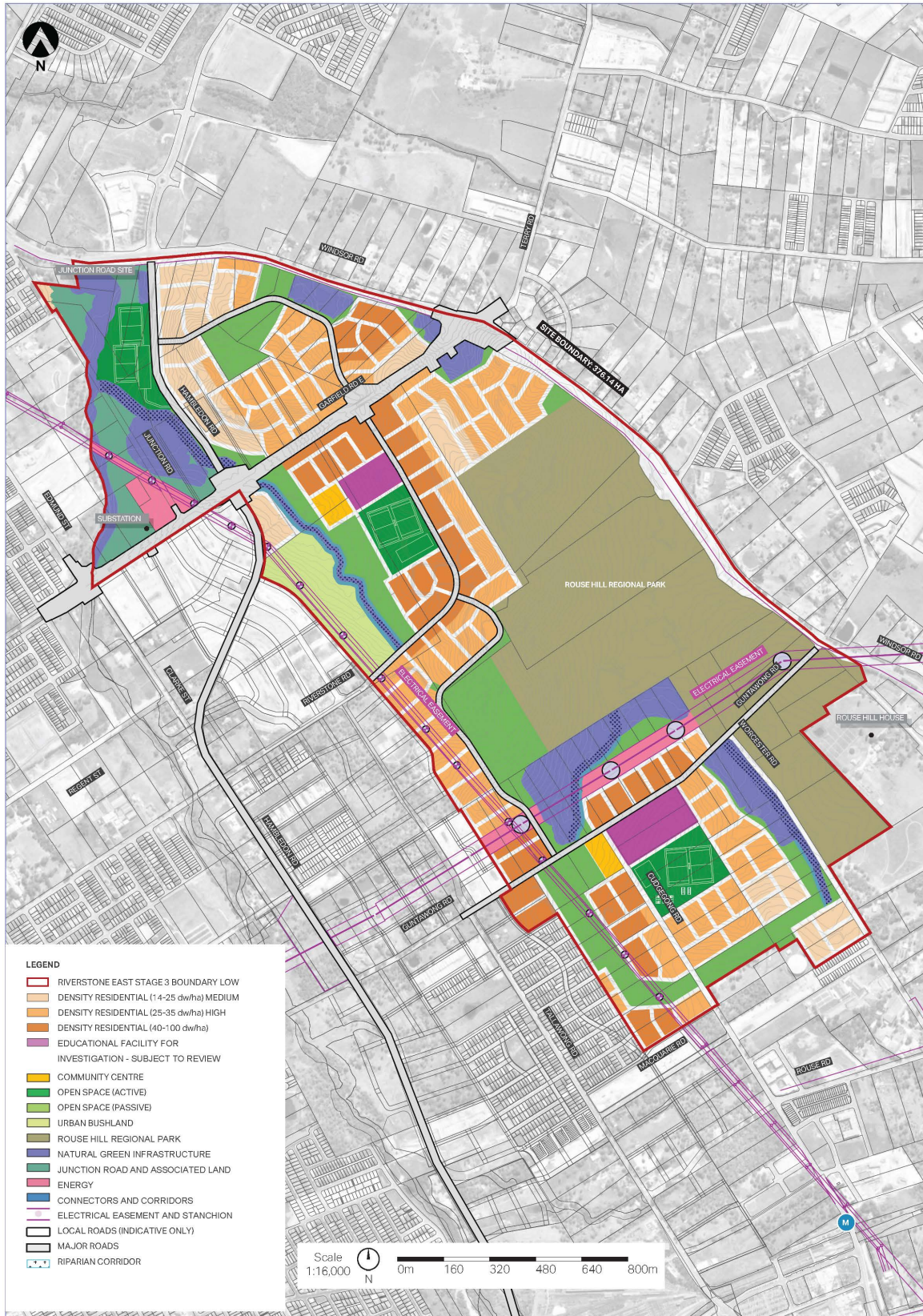


Figure 2 – Indicative Layout Plan (ILP)

Source: Hatch Roberts Day, 1 September 2023.



Information about the intended land use of the Site is quantified in Table 2. Key land usage includes nearly one third of the Site dedicated to residential development and two thirds of the Site dedicated to community facilities, open spaces, and regional parklands.

Table 2 – Riverstone East Stage 3 ILP

	Gross Land Uses	Gross Area (m2)	%
Land Use Category		3,786,144	100.0
Gross Developable Area		1,250,954	33.0
Land Uses: Residential	Net Developable Area	885,675	23.4
	Local Roads	365,279	9.6
Totals		1,250,954	33.0
Undevelopable Area		2,535,190	67.0
Land Uses: Non-Residential	Schools	61,358	1.6
	Community Facilities	20,747	0.5
	Rouse Hill Regional Park	965,338	25.5
	Energy	73,673	1.9
	Junction Road associated Lands	90,799	2.4
	Connectors and Corridors	23,012	0.6
	Natural Green Infrastructure	315,416	8.3
	Active Open Space	157,008	4.1
	Passive Open Space	365,103	9.6
	Urban Bushland	86,621	2.3
	Major Roads and Ancillaries	376,115	9.9
Totals		2,535,190	67.0

Source: Hatch Roberts Day, 1 September 2023; values have been rounded and may reflect minor rounding errors.

Table 3 – Lot Size and Population Projection (Lot Size Mix)

Dwelling Sizes	700m2	600m2	450m2	350m2	200m2	Apartments	Totals
Dwelling/Ha	14.29	16.67	22.22	28.57	50.00	100.00	
Percentage (%)	5.00	5.00	10.00	50.00	25.00	5.00	100.00
Avg Dw/Ha	35.56						
Avg Lot Size	281.25						
Developable Area (Ha)	4.43	4.43	8.85	44.26	22.13	4.43	88.51
Yield	63	74	197	1264	1106	443	3147
Resident/dwelling	3.80	3.50	3.50	3.50	2.90	2.50	
Population	240	258	688	4425	3208	1106	9925

Source: Hatch Roberts Day, 1 September 2023; values have been rounded and may reflect minor rounding errors.



1.4 Data Review

1.4.1 Site Inspection

A Site inspection was conducted by Enspire on 16th March 2023 to determine and review the existing conditions of the Site. The overhead infrastructure was sighted, however; most of the existing utilities infrastructure was located underground and therefore was not able to be inspected.

1.4.2 Before You Dig Australia and Desktop Assessment

Enspire has undertaken a Before You Dig Australia (BYDA) investigation to identify existing inground utilities. Enspire has also compiled available online data from various utility supplier portals to verify the existence, capacity, and infrastructure of inground utilities in and around the Site.

The mapped utilities are included in Appendix B and are represented diagrammatically in Figure 3.

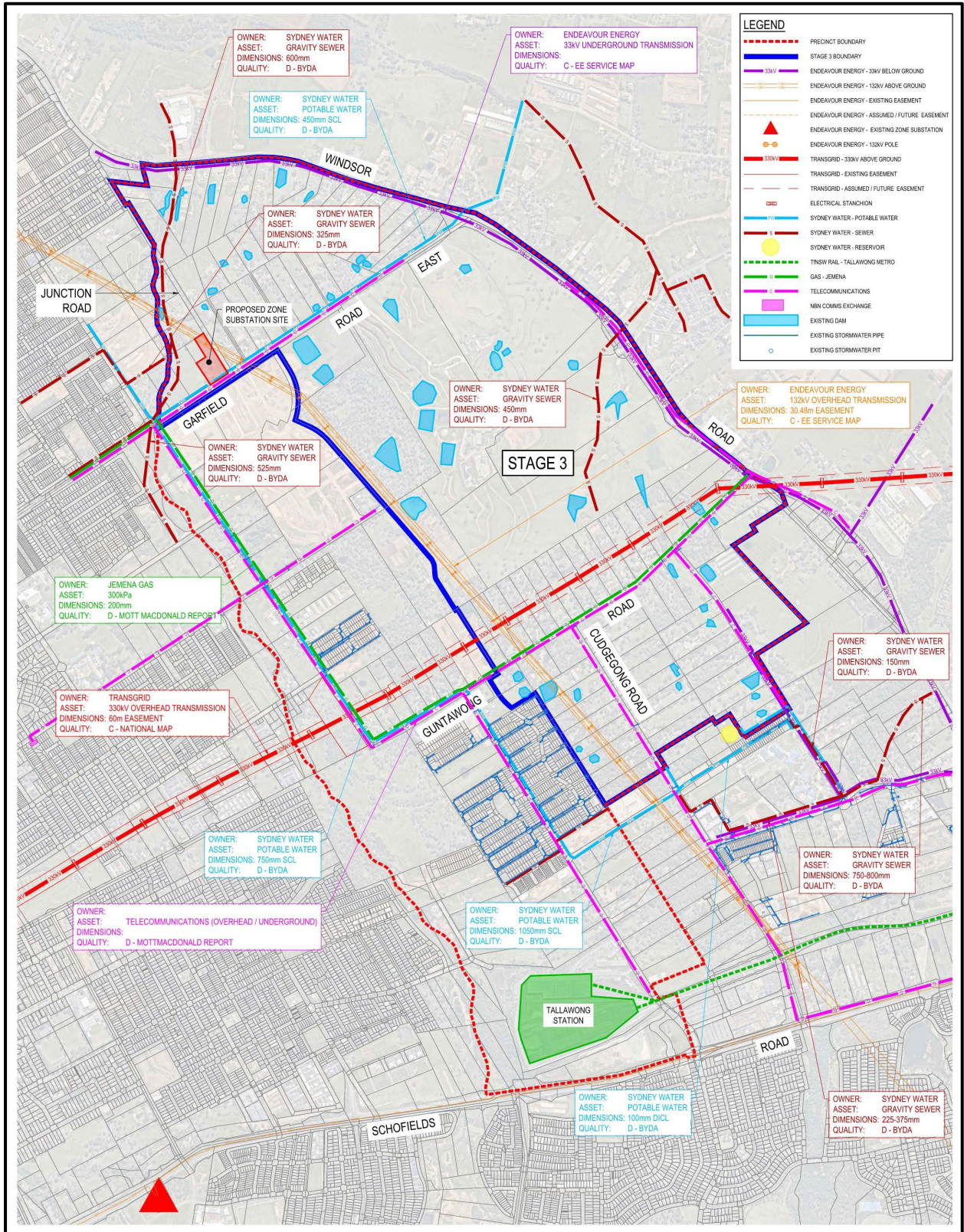


Figure 3 – Existing Utilities Infrastructure Map

Source: Nearmap dated 19 March 2023; BYDA 01 June 2023.



1.4.3 Previous Infrastructure Reports

The following reports have been reviewed to contribute to the utilities and infrastructure assessment for the Site.

Table 4 – Previous Reports

Report Title	Prepared By	Date	Comments
Growth Servicing Plan 2022-2027	Sydney Water	June 2022	The Site is identified as being in the Strategic Planning phase for both potable water and wastewater.
Infrastructure Precinct Planning Report	Mott MacDonald	March 2015	Identified planned upgrades for the entire Riverstone East Precinct. Also identified an early activation precinct.
Riverstone and Alex Avenue Precincts, Primary Utilities Strategy and Delivery Plan	Hyder Consulting	May 2008	Identified stage sequencing of infrastructure. Superseded by the 2015 Mott MacDonald report.

Source: Hyder Consulting May 2008; Mott MacDonald March 2015; Sydney Water June 2022.

1.4.4 Staging and Timing Strategy

The anticipated development timelines for the Site are as follows:

- FY2025-26 – expected rezoning of land parcels;
- FY2027-28 – expected initial development applications approved; and
- FY2028-29 – expected first houses completed.

Extended timelines may be warranted due to the fragmented nature of land ownership.

1.4.5 Meetings with Relevant Authorities

An Enquiry by Design (EbD) workshop was held across 30th May to 1st June 2023.

The following inception meetings were held:

- Endeavour Energy, 21st April 2023
- Sydney Water, 27th April 2023
- NBN Co., 4th May 2023

The following investigative meetings were held:

- Sydney Water, 14th June 2023
- Endeavour Energy, 21st June 2023

Minutes of the meetings are included in Appendix C, Appendix D and Appendix G. The key outcomes have been incorporated in the design and review of this Utilities Infrastructure Servicing Plan.

1.4.5.1 Sydney Water Key Outcomes

Sydney Water has officially acknowledged the reduction of surplus servicing capacity for the Site. This reduction is primarily attributed to the heightened yield levels resulting from adjacent developments, surpassing the originally planned capacity outlined in the Growth Servicing Plan.

Consequently, the realisation of the Site development necessitates the construction of new water infrastructure or the enhancement of existing infrastructure to accommodate both potable water and wastewater requirements.



Sydney Water has committed to formulating a preferred strategy by 2025 with planned capacity upgrades expected to align with the indicative timeline for the initial completion of housing products in FY2028-29.

1.4.5.2 Sydney Water Commentary on the Site

After a formalised review of the ILP and staging plan for the Site, and following the investigative meeting, Sydney Water provided the following feedback, summarised below:

Recent increased in connections in surrounding areas, changes to planning forecasts, and accelerated rezoning, have altered the previous plans for the Site. Previously, it was projected to have 2,300 dwellings with completion by FY2032.

Regarding water servicing, the current Water Supply Zones (WSZs) have reached capacity, limiting growth potential. Network amplification and planning studies are required before substantial growth can occur.

Wastewater servicing has capacity constraints. It is likely that sewage pumping station SP1154 will require an upgrade to service the Site. A planning study will determine the preferred option, with completion of the study expected in February 2025.

Recycled water servicing is under investigation, and potential infrastructure contributions are being assessed, with results expected by December 2024.

In summary, upgrades for both potable water and wastewater are projected for commissioning in FY2028-2029, subject to further reviews and resolutions of funding arrangements. These upgrades are intended to accommodate the plans for the Site.

The comprehensive feedback is provided in Appendix D.

1.4.5.3 Endeavour Energy Key Outcomes

Endeavour Energy confirmed it could service the Site and had begun steps to acquire land for a new zone substation within the development. It was advised that the Site development should be implemented in stages, allowing Endeavour Energy to gradually increase supply for the Site.

Endeavour Energy also confirmed that the 132kV overhead powerline would be available to be relocated underground. However, it has no current funding mechanism and consequently, any upgrades or relocation would need to be entirely developer driven. The 132kV overhead powerline, whether left in place, or relocated, are not expected to impact servicing of the site.

One crucial aspect that affects the feasibility for undergrounding the service is the unique carrying capacity of the overhead lines (495mVA). The implementation of a typical underground feeder cable with a capacity of 220mVA necessitates the use of three (3) cables per overhead line, resulting in a total of six (6) cables required to replace the existing two (2) overhead cables. Endeavour Energy stated the two circuits are to be separated by a 3-metre distance, lie wholly within a 10-metre easement, and may potentially be placed under roads.



2 Wastewater

2.1 Existing Wastewater Infrastructure

The Site is in the operational jurisdiction of Sydney Water for wastewater infrastructure and lies just north of the Rouse Hill catchment area for wastewater drainage. The treatment plants listed below form part of Sydney Water's North West Treatment Hub (NWT) which is currently undergoing upgrades in order to service the large scale of developments occurring in the region. Further consultation will be required to align the current upgrade strategy with the Riverstone East Stage 3 rezoning.

A detailed summary of the existing trunk wastewater infrastructure in and adjacent to the Site is included below and shown in Figure 4:

1. Riverstone Wastewater Treatment Plant located at 108 Bandon Rd, Vineyard;
 1. DN1200mm RC gravity sewer main running along the Eastern Creek;
 2. DN560mm PE gravity sewer main running along Riverstone Pde, along Otago St, along O'Connell St, and along Bandon Rd;
 3. DN900mm GRP gravity sewer main running parallel with Windsor Rd to Boundary Rd
 4. DN600mm GRP gravity sewer main running from Boundary Rd where it then splits towards Carmel Village Shopping Centre and enters the Site;
 5. DN525mm gravity sewer main running along the north-west Site boundary;
 6. DN525mm gravity sewer main running from the north-west Site boundary to Regent St;
 7. DN600mm GRP and PP gravity sewer main running from Boundary Rd to Terry Rd; and
 8. DN450mm GRP and PP gravity sewer main running from Terry Road to Lot 10 with the Site.
2. Rouse Hill Recycling Plant located at Mile End Rd, Rouse Hill;
 9. DN900mm RC gravity sewer main running along the Second Ponds Creek to Rouse Rd;
 10. DN300mm PVC gravity sewer main running along Rouse Rd to Cudgegong Rd; and
 11. DN150mm PVC gravity sewer main running along Worcester Rd.



Figure 4 – Existing Wastewater Infrastructure

Source: Nearnmap dated 19 March 2023; BYDA 01 June 2023.

2.2 Proposed Wastewater Servicing Strategy

Sydney Water has produced its Growth Servicing Plan (GSP) 2022-2027 which describes the existing and future infrastructure for the NWGA. As indicated in Figure 5, Riverstone East Stage 3 is in the Strategic Planning stage and there is currently limited existing capacity to service the planned developments.

Sydney Water has confirmed that new wastewater infrastructure will be required to appropriately service the intended developments within the Site.

As of writing this report, Sydney Water committed to formulating a preferred strategy by 2025 with a plan to implement wastewater infrastructure upgrades necessary to support the Site's development before FY2028-29. This timeline is contingent upon obtaining funding approval and undergoing additional review processes.

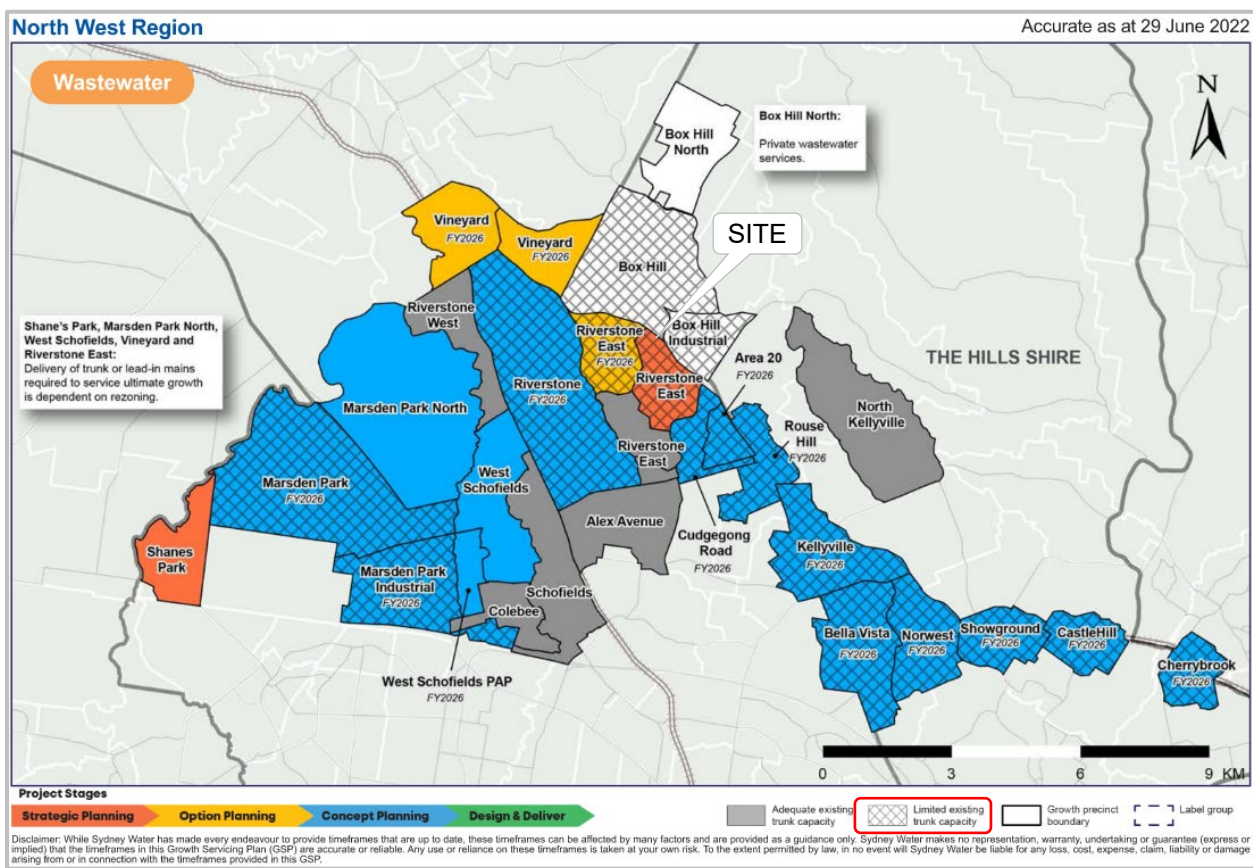


Figure 5 – North West Region: Wastewater

Source: Sydney Water Growth Servicing Plan; accurate as of 29 June 2022.

More information can be found at: [Sydney Water Growth Servicing Plan 2022-2027](#)¹

2.3 Sydney Water Infrastructure Contributions for Wastewater

Sydney Water is planning to reintroduce infrastructure contributions for drinking water, wastewater, and stormwater services to recuperate the expenses associated with providing infrastructure to new developments.

Sydney Water has stated the intention of the contributions are to provide certainty about timeframes for developer applications, analysis processes, and the delivery of growth servicing infrastructure. Sydney Water is working with the development industry and intends to register the contributions with the Independent Pricing and Regulatory Tribunal (IPART) by August 2023.

The gradual reintroduction of infrastructure contributions will commence July 1, 2024. Presently, the pricing structure is derived from the Draft Development Servicing Plans and remains subject to potential changes contingent upon public exhibition submissions and annual indexation. Comprehensive details of these plans are available at: [Sydney Water – Infrastructure Contributions](#)².

¹ <https://www.sydneywater.com.au/content/dam/sydneywater/documents/growth-servicing-plan.pdf>

² <https://www.sydneywatertalk.com.au/infrastructure-contributions>



The Site, shown in Figure 6 and Figure 9, is prescribed a per Equivalent Tenement (ET) rate for wastewater and potable water contributions, as of the date of this report.

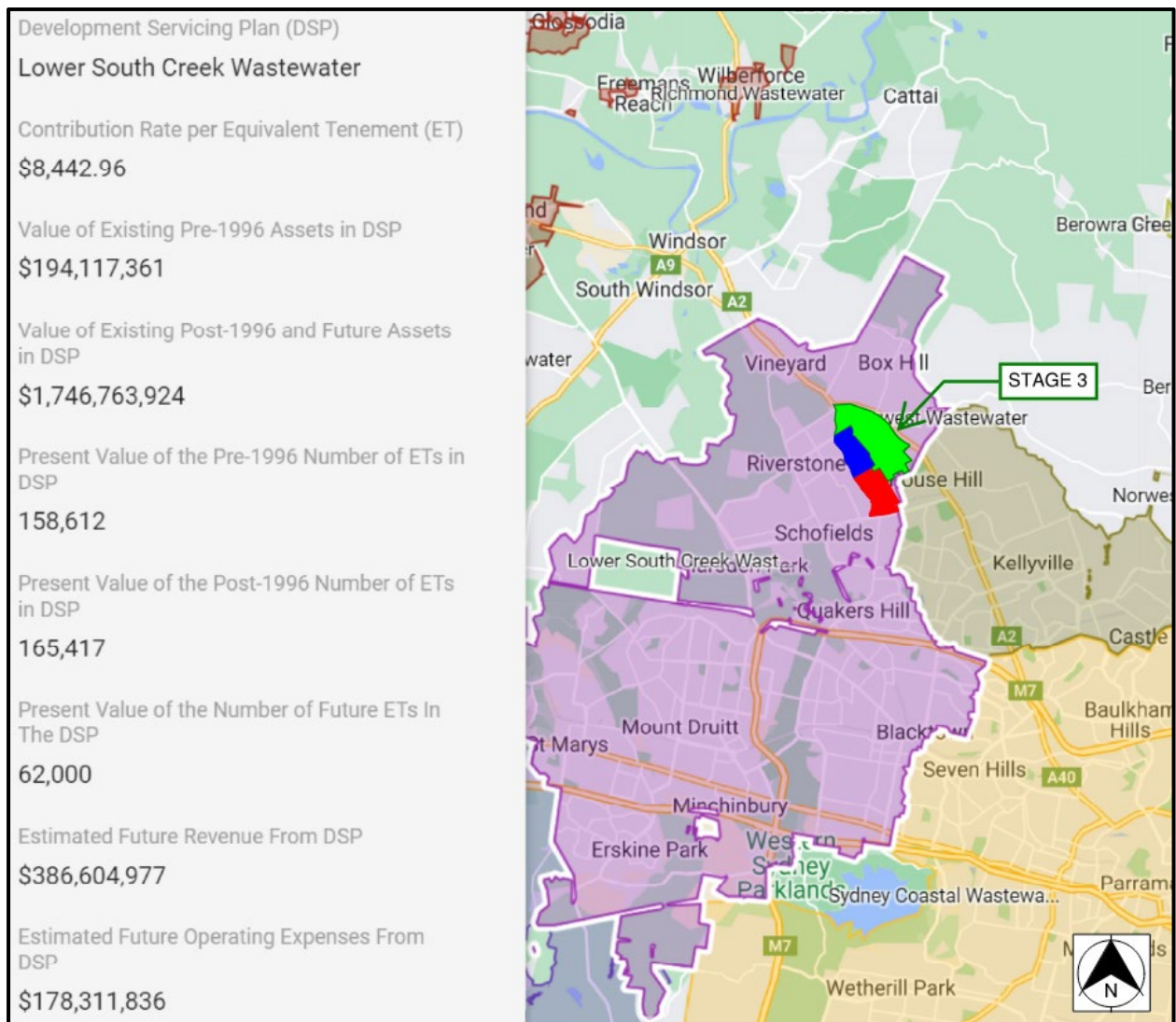


Figure 6 – Sydney Water Wastewater Infrastructure Contributions DSP

Source: Sydney Water – Wastewater Infrastructure contribution map, 12/09/2023.

2.4 Recommended Future Actions

Following the investigative meeting, Sydney Water confirmed that capacity for the Site is yet to be resolved with strategic planning underway.

Organisations contemplating development within the Site prior to FY2028-29 may wish to consider investigating private wastewater servicing options, noting that potable water capacity may not be available until FY2028-29. For further details, please consult Section 3 Potable Water.

Organisations intending to develop are encouraged to engage directly with Sydney Water and provide comprehensive details of planned developments. This collaborative approach ensures Sydney Water remains informed of project specifics and enables it to proactively assess demand requirements to inform its strategic planning for the Site.



3 Potable Water

3.1 Existing Potable Water Infrastructure

The Site is in the operational jurisdiction of Sydney Water for potable water infrastructure.

A summary of the existing potable water infrastructure in the vicinity of the Site is included below and shown in Figure 7.

1. Sydney Water Reservoir accessed from Windeyer St, Rouse Hill;
 1. DN1050mm SCL and 600 DICL water mains running along Cudgegong Rd to Macquarie Rd;
 2. DN1050mm SCL and 450 DICL water mains running along Macquarie Rd;
 3. DN750mm DICL water main running along Tallawong Rd;
 4. DN750mm DICL water main running along Guntawong Rd to Clarke St;
 5. DN750mm DICL water main running along Clarke St;
 6. DN450mm DICL and 560 PE water main running along Garfield Rd E;
 7. DN450mm DICL water main running along Terry Rd;
 8. DN800mm uPVC water main running along Edmund Rd;
 9. DN1050mm RC water main running along Worcester Rd
 10. DN600mm DICL water main running along Rouse Rd;
 11. DN450mm DICL water main running north along Windsor Rd; and
 12. DN900mm SCL and 750 DICL water main running south along Windsor Rd.
2. DN300mm oPVC water main running along Nelson Rd and terminating before Windsor Rd; and
3. DN150mm oPVC water main running along Mt Carmel Dr and terminating before Windsor Rd.

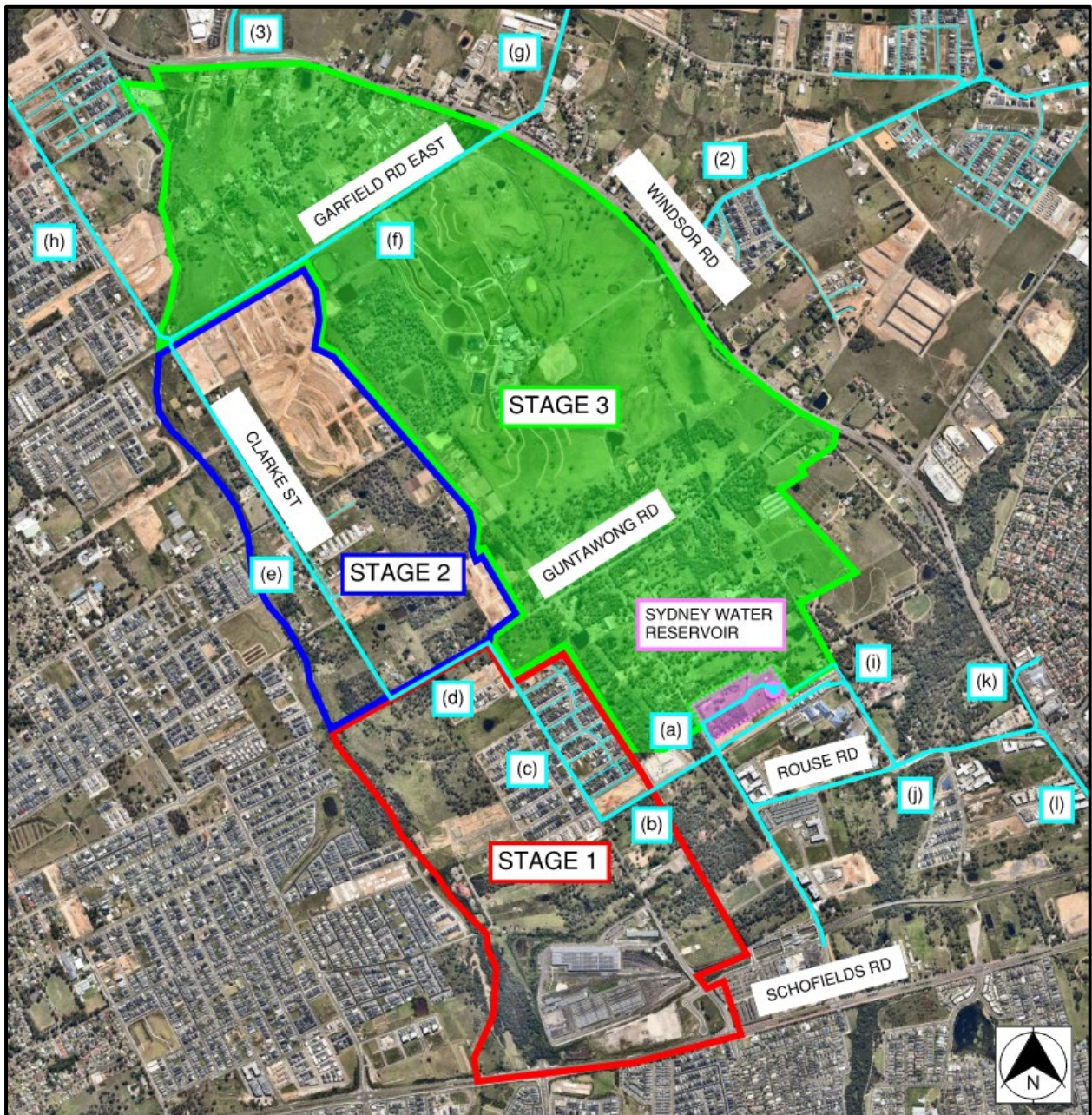


Figure 7 – Existing Potable Water Infrastructure

Source: Nearmap dated 19 March 2023; BYDA 01 June 2023.

3.2 Proposed Potable Water Servicing Strategy

According to the Sydney Water GSP 2022-2027, Riverstone East Stage 3 is in the Strategic Planning stage, as indicated in Figure 8.

Sydney Water has confirmed that new potable water infrastructure will be required to appropriately service the intended developments within the Site.

As of writing this report, Sydney Water committed to formulating a preferred strategy by 2025 with a plan to implement potable water infrastructure upgrades necessary to support the Site's



development before FY2028-29. This timeline is contingent upon obtaining funding approval and undergoing additional review processes.

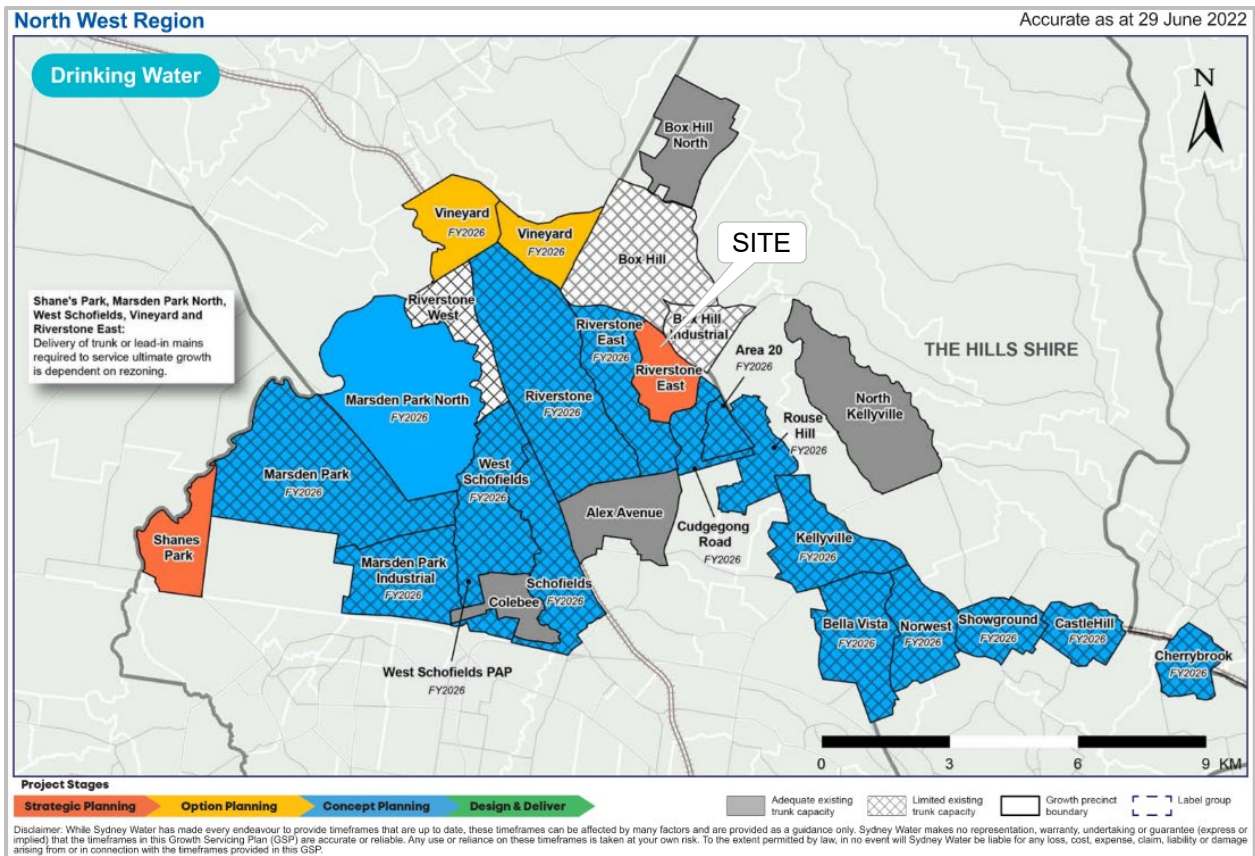


Figure 8 – North West Region: Potable Water

Source: Sydney Water Growth Servicing Plan; accurate as of 29 June 2022.

More information can be found at: [Sydney Water Growth Servicing Plan 2022-2027](#)³

3.3 Sydney Water Infrastructure Contributions for Potable Water

Sydney Water is planning to reintroduce infrastructure contributions for drinking water, wastewater, and stormwater services to recuperate the expenses associated with providing infrastructure to new developments.

Sydney Water has stated the intention of the contributions are to provide certainty about timeframes for developer applications, analysis processes, and the delivery of growth servicing infrastructure. Sydney Water is working with the development industry and intends to register the contributions with the IPART by August 2023.

The gradual reintroduction of infrastructure contributions will commence July 1, 2024. Presently, the pricing structure is derived from the Draft Development Servicing Plans and remains subject to potential changes contingent upon public exhibition submissions and annual indexation. Comprehensive details of these plans are available at: [Sydney Water – Infrastructure Contributions](#)⁴.

³ <https://www.sydneywater.com.au/content/dam/sydneywater/documents/growth-servicing-plan.pdf>

⁴ <https://www.sydneywatertalk.com.au/infrastructure-contributions>



The Site, shown in Figure 6 and Figure 9, is prescribed a per Equivalent Tenement (ET) rate for wastewater and potable water contributions, as of the date of this report.

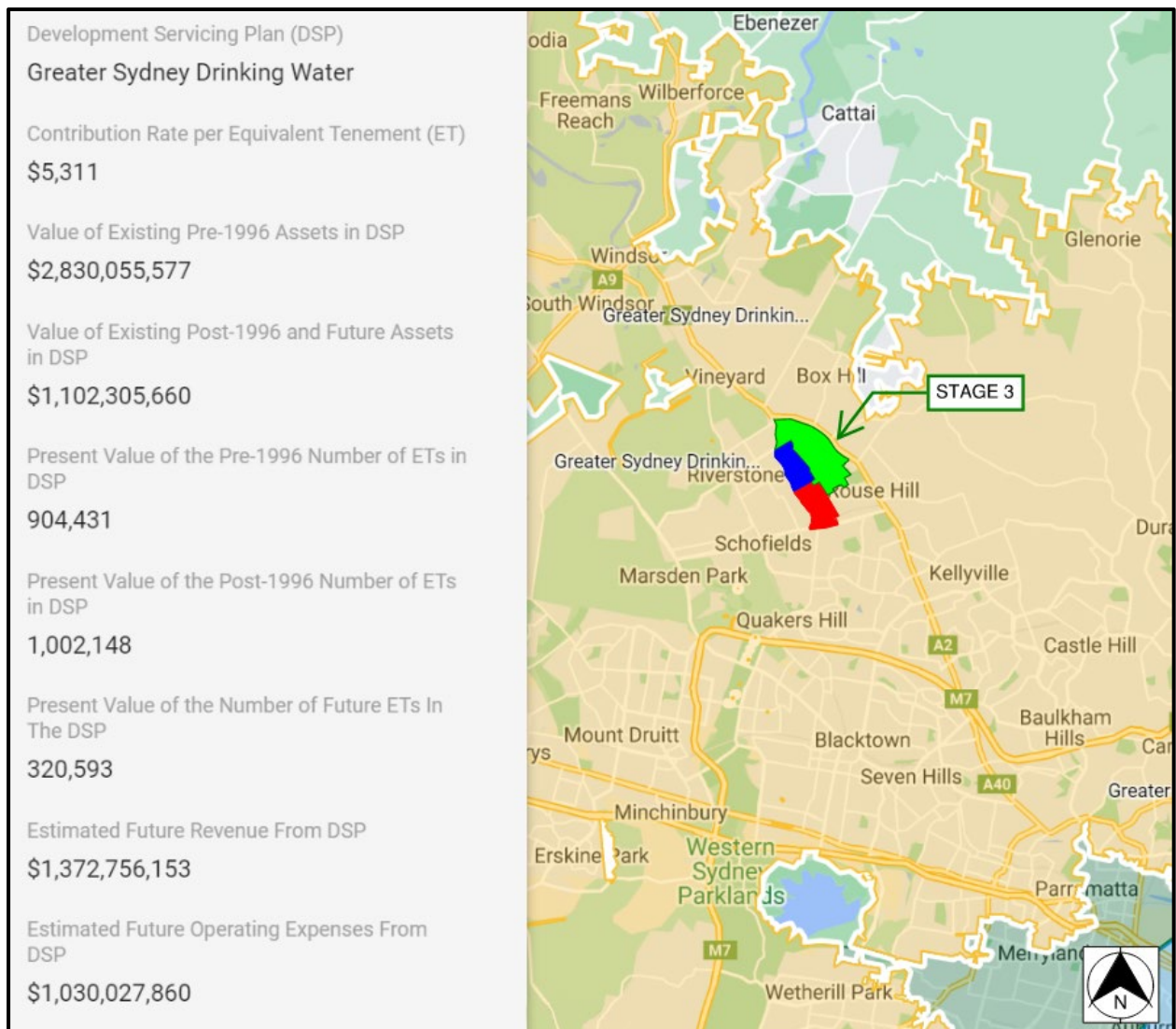


Figure 9 – Sydney Water Potable Water Infrastructure Contribution DSP

Source: Sydney Water – Wastewater Infrastructure contribution map.

3.4 Recommended Future Actions

Following the investigative meeting, Sydney Water confirmed that capacity for the Site is yet to be resolved with strategic planning underway.

Entities intending to develop are encouraged to engage directly with Sydney Water and provide comprehensive details of planned developments. This collaborative approach ensures Sydney Water remains informed of project specifics and enables it to proactively assess demand requirements to inform its strategic planning for the Site.



4 Recycled Water

4.1 Existing Recycled Water Infrastructure

The Site lies near the Rouse Hill Reservoir which services an adjacent region. Refer to Figure 10.

During the investigative meeting held on the 14th of June 2023, a key aspect of the discussion with Sydney Water revolved around the feasibility of incorporating recycled water for the Site. Sydney Water provided advice indicating that while the delivery of recycled water servicing cannot be guaranteed, it highly endorses its utilisation. However, due to the absence of a specific current or future mandate to implement recycled water, combined with the absence of assurances regarding its implementation, the responsibility for considering this option falls upon the developer.

The water cycle management strategy prepared by Rhelm has considered the reuse of treated stormwater for the purpose of irrigation, drought resilience and usage within open spaces.

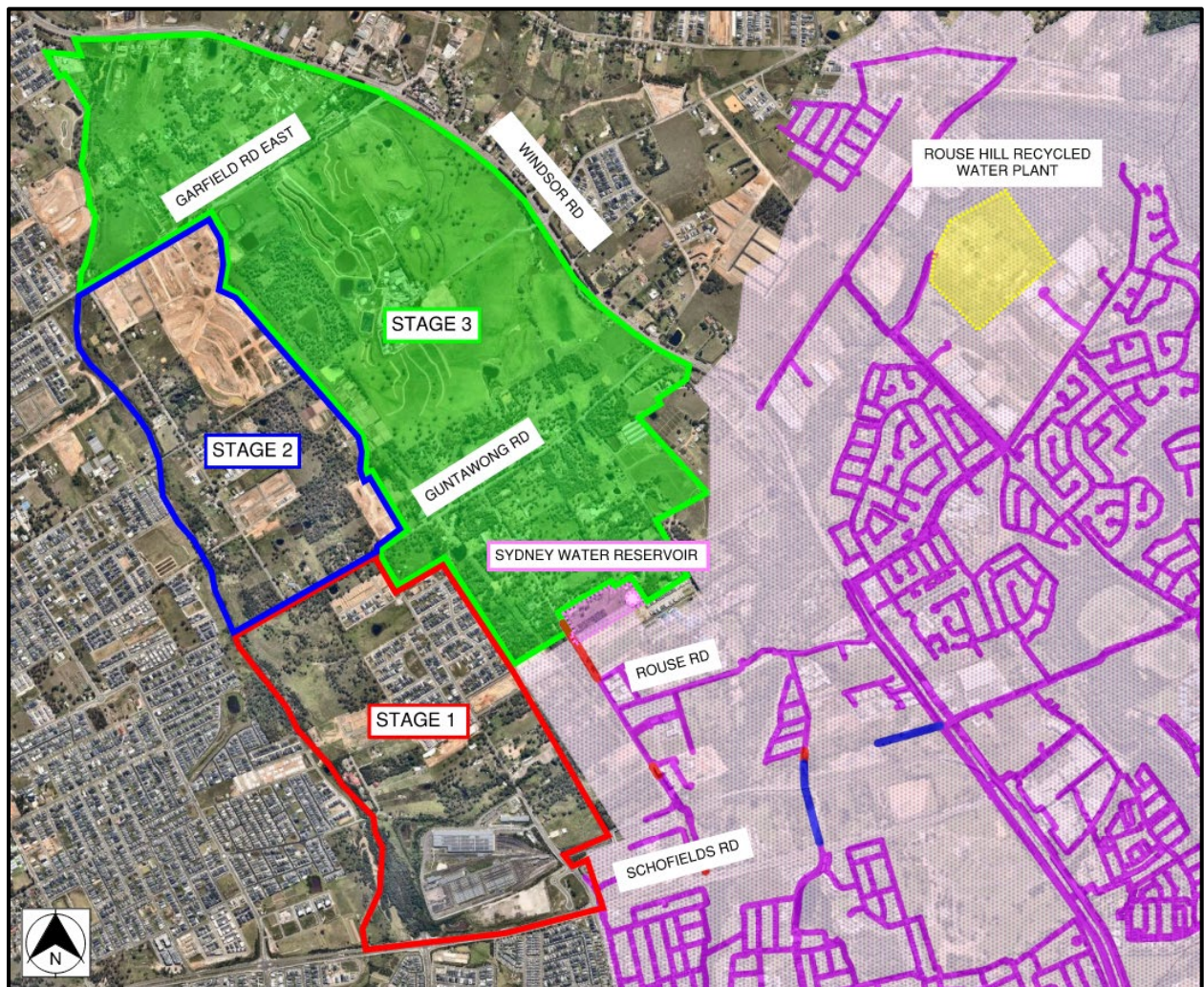


Figure 10 – Rouse Hill Existing Recycled Watermain Network

Source: Rouse Hill recycled water services; Development Servicing Plan 2021 – Figure 4.



5 Electrical

5.1 Existing Electrical Infrastructure

The Site is in the franchise jurisdiction of Endeavour Energy for electrical supply infrastructure.

A summary of existing electrical infrastructure in the vicinity of the Site is included below and shown in Figure 11.

1. Zone substations in the local area include:
 1. Riverstone ZS – North-west of the Site, situated along Railway Terrace;
 2. Schofield ZS – South-west of the Site, situated along Schofields Road; and
 3. Mungerie Park ZS – South-east of the Site, situated along Commercial Road.
2. Existing 330kV overhead transmission line owned by TransGrid, travelling east-to-west through the site just above Guntawong Road, and has a 60.96m wide easement;
3. Existing 132kV overhead transmission line owned by Endeavour Energy, travelling north-to-south through the site, has a 30.48m wide easement, and terminates at the Rouse Hill Switch Station; and
4. Existing 33kV underground sub-transmission line, travelling along Windsor Road and Schofields Road.



Figure 11 – Existing Electrical Infrastructure

Source: Nearmap dated 19 March 2023; BYDA 01 June 2023; Endeavour Energy Connection Opportunity Map 01 June 2023.



5.2 Proposed Electrical Servicing Strategy

It has been confirmed by Endeavour Energy that the existing surrounding electrical infrastructure has capacity to service the Site, with plans to install an additional zone substation to cater for the planned growth of the region. Endeavour Energy has acquired land for this additional zone substation, located at 263 Garfield Road East. A heat map provided by Endeavour Energy also shows surplus capacity for the entire Site as shown in Figure 12.

Additional resilience infrastructure will also be included and is detailed in Section 8 – Resilience.

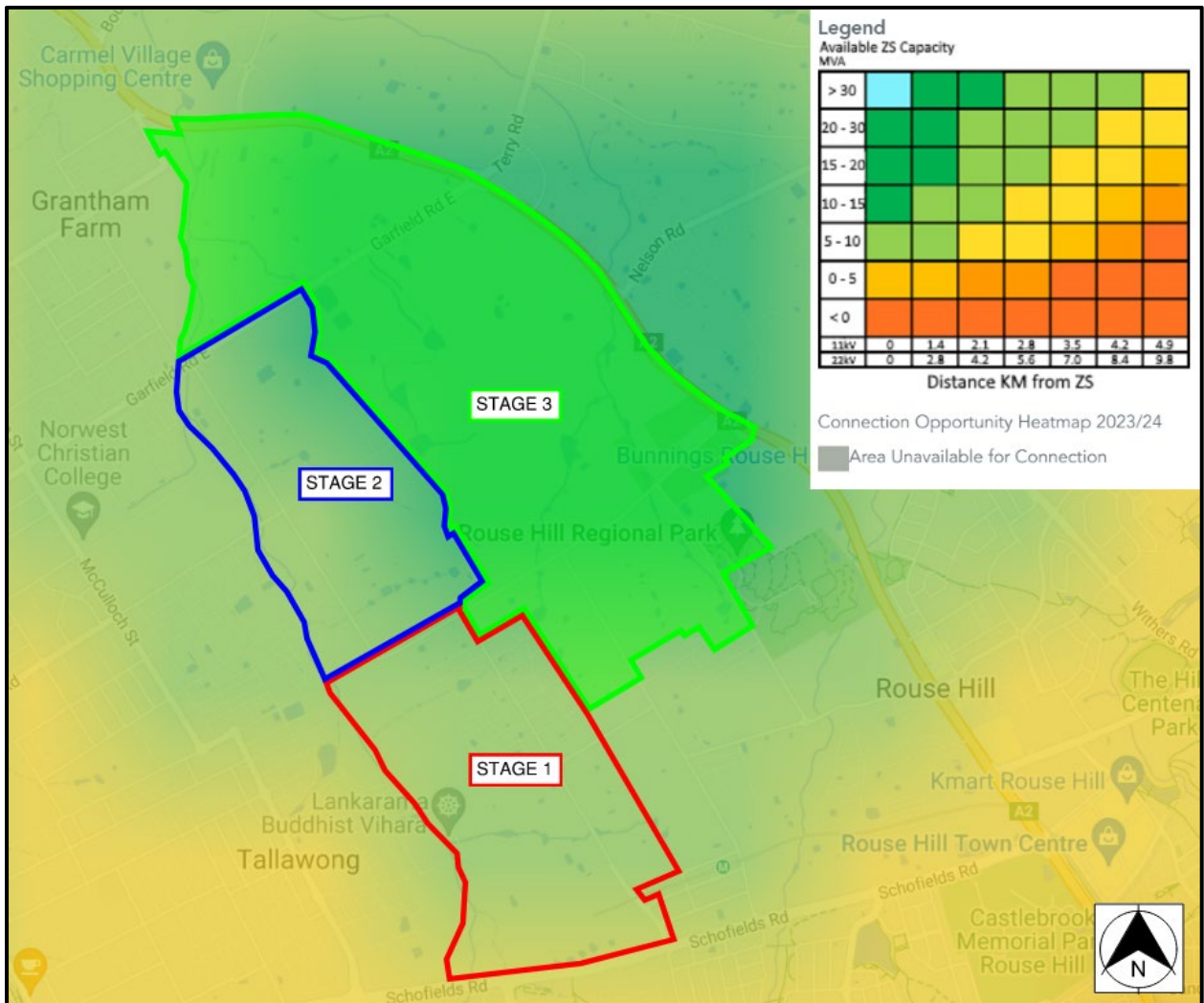


Figure 12 – Electrical Capacity Heatmap

Source: Endeavour Energy Connection Opportunity Heatmap 2023/24.

More information can be found at: [Endeavour Energy – Connections](https://dapr.endeavourenergy.com.au/connections/)⁵.

⁵ <https://dapr.endeavourenergy.com.au/connections/>



5.2.1 TransGrid 330kV Overhead Powerlines

TransGrid's 330kV powerline infrastructure, traversing the Site east-to-west, and its associated 60.96m wide easement, is planned to be rezoned RE1 and SP2 Infrastructure.

The TransGrid Modification Team was consulted via email for commentary, included in Appendix E, and they confirmed that undergrounding the 330kV powerline was not feasible due to the limited distance involved. Moreover, modifying the alignment of the transmission line was deemed a significant undertaking that would be the responsibility of the developer. They advised to correspond with the Easement and Development team to explore potential construction options within the easement area.

TransGrid's Easement Guidelines allows for open spaces such as fields, cycleways, and walkways, contingent on various conditions. Any roads, tracks, cycleways, and fencing crossing the easement thoroughfare require TransGrid's approval.

Similarly, sporting, and recreational facilities such as tennis courts, basketball courts, playground and exercise equipment are allowed provided the exclusion zone is maintained, no structures are greater than 4.3m in height and metallic structures are suitably earthed.

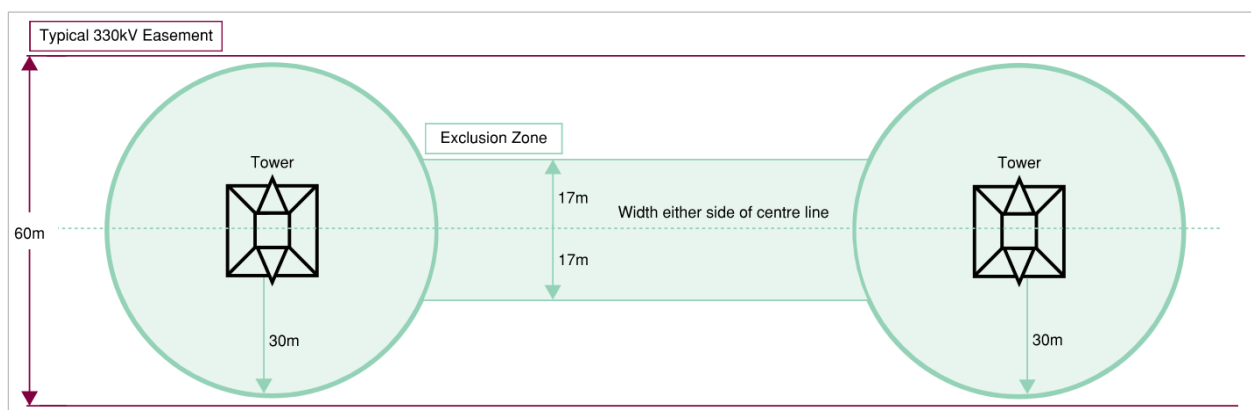


Figure 13 – TransGrid 330kV easement guidelines

Source: TransGrid Easement Guidelines | Living and working with electricity transmission lines

More information can be found at: [TransGrid Easement Guidelines | Living and working with electricity transmission lines](https://www.transgrid.com.au/media/3tkdd5lr/easement-guidelines.pdf)⁶.

5.2.2 Endeavour Energy 132kV Overhead Powerlines

The easement corridor for Endeavor Energy's 132kV powerline infrastructure will be rezoned as developable land (R1-3, RE1 etc.) to provide future opportunities for relocating the asset underground, within planned road corridors.

Endeavour Energy do not have plans to relocate the transmission lines underground, however, organisations intending to develop are encouraged to liaise with Endeavour Energy to determine a procedure and funding arrangement to relocate the infrastructure through Endeavour Energy's Contestable Works process.

⁶ <https://www.transgrid.com.au/media/3tkdd5lr/easement-guidelines.pdf>



The current assessment to underground the transmission lines will require three (3) cables per overhead cable (for a total of six (6)). Both circuits require a minimum spacing of 3-metres and to lie within a 10-metre easement.

5.3 On-Site Reticulation & Kiosks

The internal electrical reticulation network will be underground and situated within the verges of the public road reserve. Kiosk substations, distribution pillars, and light columns will be located above ground throughout the proposed development.

5.4 Recommended Future Actions

It is recommended that a Level 3 Accredited Service Provider (ASP) be engaged by organisations intending to develop, to lodge the appropriate applications for Endeavour Energy to provide a Supply Offer. Endeavour Energy has confirmed there is adequate electrical infrastructure, both existing and planned, to support the progressive development of the Site.

TransGrid's 330kV overhead transmission lines are intended to remain, given the substantial costs involved in realignment, relocation, or undergrounding. This is not expected to impact electrical supply for the Site.

Organisations intending to develop are encouraged to liaise with Endeavour to investigate the feasibility of relocating the above ground 132kV transmission lines underground. It is important to ensure the relocation is coordinated across approximately 500m lengths (contingent on detailed power quality check studies) of the asset, as an incremental or piecemeal approach to undergrounding may not be supported by Endeavour Energy. The status of the 132kV transmission lines are not expected to impact electrical supply for the Site.



6 Natural Gas

6.1 Existing Natural Gas Infrastructure

The Site is in the operational jurisdiction of Jemena for natural gas infrastructure.

A summary of existing natural gas infrastructure in the vicinity of the Site is included below and shown in Figure 14.

1. Existing 200mm High Pressure (1050kPa) steel gas main running along Guntawong Road and Clarke Street; and
2. Existing 200mm High Pressure (1050kPa) steel gas main running along Windsor Road to the south-east of the Site.



Figure 14 – Existing Natural Gas Infrastructure

Source: Nearmap dated 19 March 2023; BYDA 01 June 2023.

6.2 Proposed Natural Gas Servicing Strategy

As shown in Figure 14, primary connection points for the Site are readily accessible along Guntawong Road and Clarke Street.

In response to the request for supplying the Site, included in Appendix F, Jemena provided its confirmation of existing asset locations and highlighted the necessity for network augmentation to service planned development. These proposed changes include the installation of a secondary main to reduce pressure from 1050kPa to 210kPa. This 210kPa medium pressure main can then be reticulated throughout the Site.



It is important to note that prior to the approval and installation of gas servicing, a substantial 3rd party contribution is expected to be levied on developers.

6.3 Recommended Future Actions

Organisations intending to develop are recommended to liaise with Blacktown City Council and Jemena to determine the suitability and implementation of gas infrastructure. Notably, there is a transition away from natural gas towards renewable energy sources, a factor that may influence future service requirements and impact the feasibility of providing gas servicing to the Site.

Based on the existing ILP arrangement, both the school and community centre are situated in close proximity to the existing high-pressure gas main along Guntawong Road. Consequently, a Safety Management Study may be warranted to assess potential risks associated with specific land uses near both existing and proposed gas mains. Organisations with development plans are encouraged to work closely with Jemena to thoroughly understand the constraints and requirements applicable to sensitive areas.



7 Telecommunications

7.1 Existing Telecommunications Network

The Site is in the operational jurisdiction of the National Broadband Network Corporation (NBN Co) for fibre communication infrastructure.

It is also understood that the existing telecommunications network surrounding the Site is owned and managed by Telstra, Optus and TPG. Each asset owner should be contacted during works that lie within the proximity of their underground infrastructure in order to maintain and protect the telecommunication utilities from being damaged or disrupted.

A summary of existing telecommunications infrastructure in the vicinity of the Site is included below and shown in Figure 15:

1. Significant Telstra-owned pit and pipe infrastructure around and throughout the Site;
2. Optus-owned pit and pipe infrastructure around the Site, particularly along Windsor Rd; and
3. TPG-owned pit and pipe infrastructure along Cudgegong Rd and Clarke St.

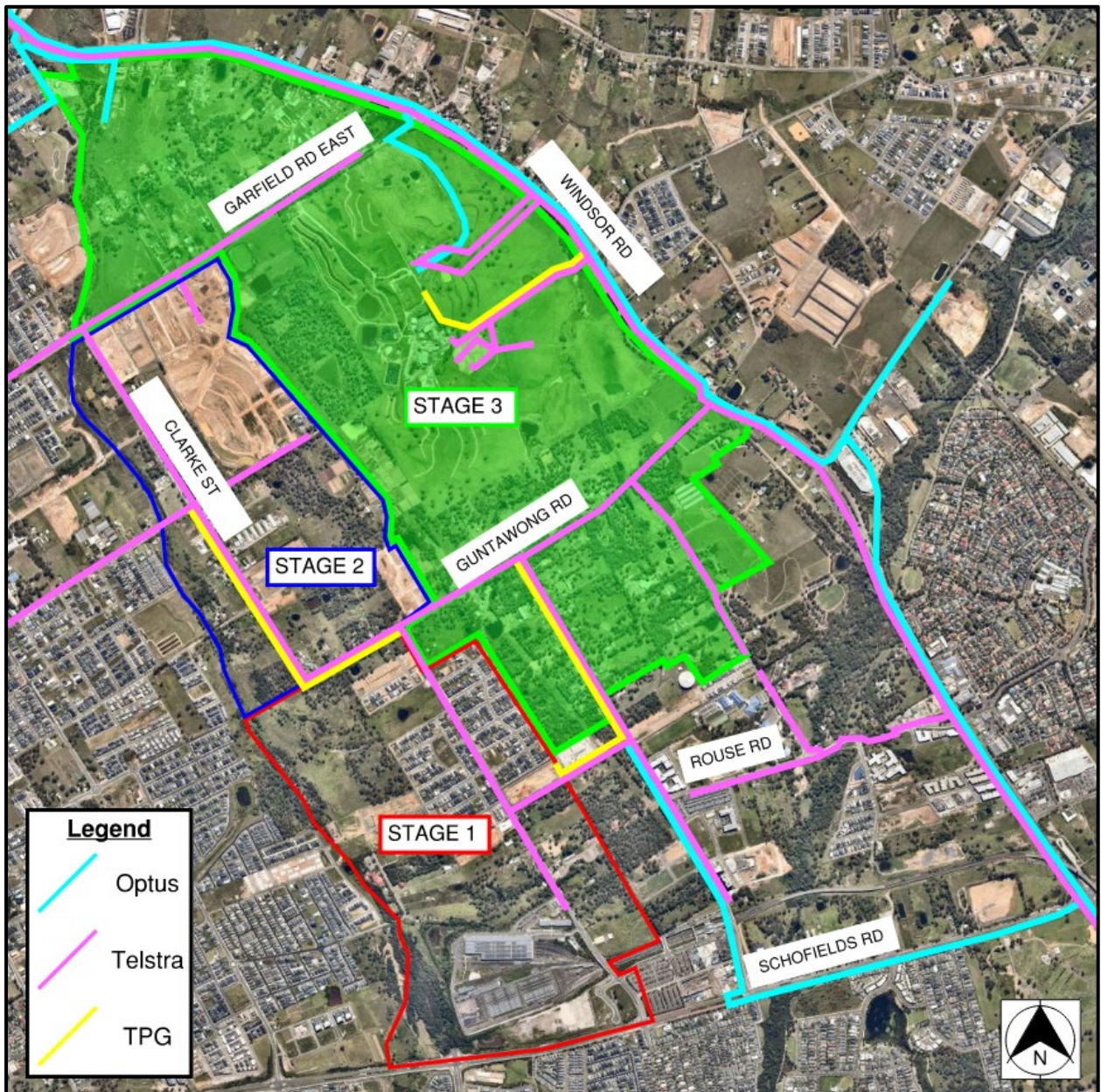


Figure 15 – Existing Telecommunications Infrastructure

Source: Nearmap dated 19 March 2023; BYDA 01 June 2023.

7.2 Proposed Telecommunications Servicing Strategy

A summary of NBN service feasibility in the vicinity of the Site is included below and shown in Figure 16. This was confirmed by a feasibility enquiry with NBN in May 2023.

In a meeting and subsequent letter, included in Appendix G, NBN confirmed the existence and location of the local Riverstone NBN Exchange facility and its ability to adequately service the future development of the Site. As such, no additional lead-in infrastructure will be required to facilitate communications servicing.

Telecommunications reticulation (pit and pipe) is required to be installed within the Site to service each proposed allotment.

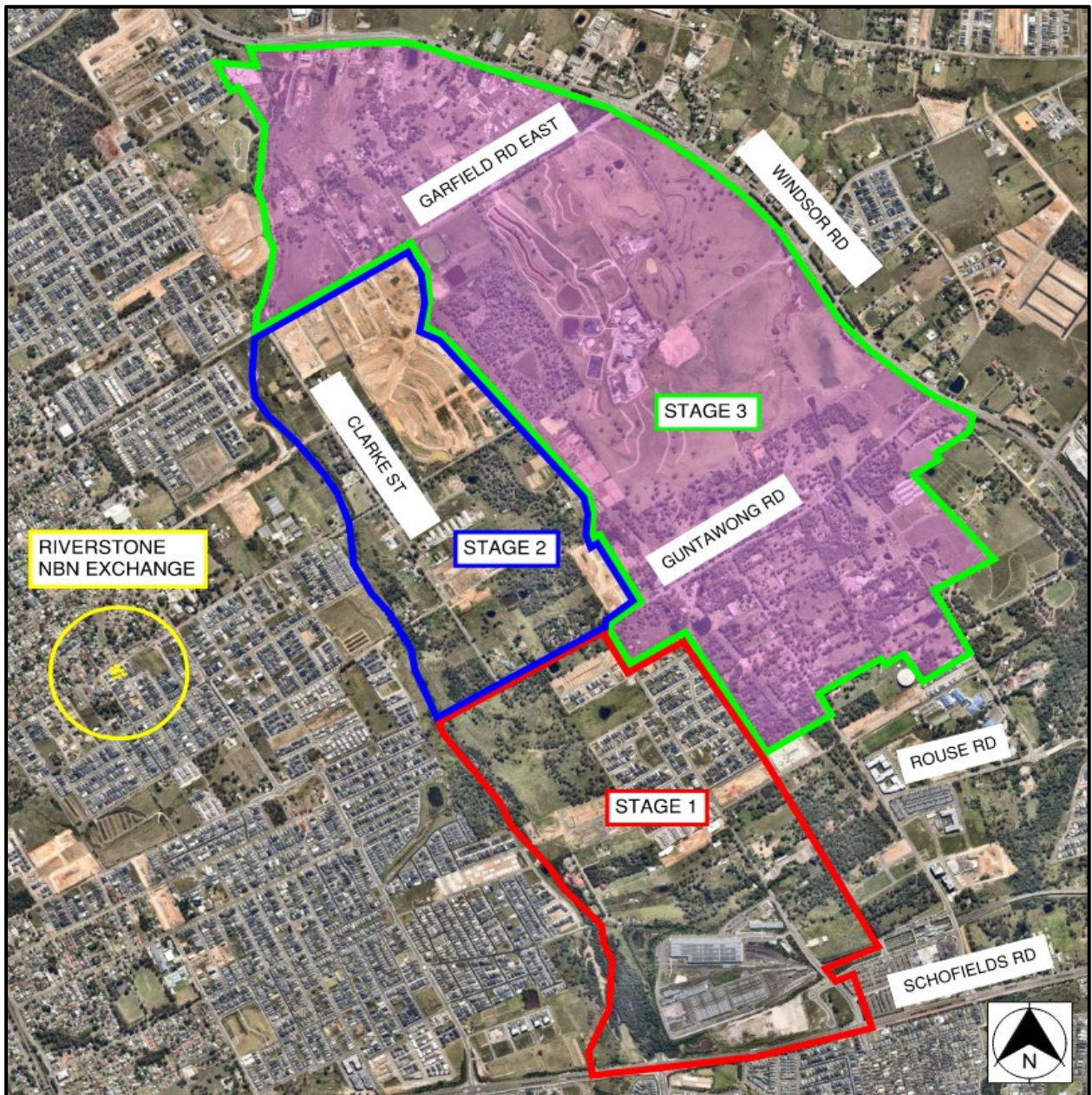


Figure 16 – NBN Serviceability Map

Source: Nearmap dated 19 March 2023; NBN Co Rollout Map 01 June 2023.

More information can be found at: [NBN Co Rollout Map](#)⁷.

7.3 Recommended Future Actions

Entities intending to develop are encouraged to collaborate with NBN, or other preferred suppliers, by providing the status of the project, yield, and construction program, to establish a progressive rollout plan in line with the Site's development. While service eligibility has been positively indicated, it is highly recommended to expedite the lodging of applications to ensure timely processing.

⁷ <https://www.nbnco.com.au/learn/rollout-map>



8 Resilience

8.1 Battery Technology

During the inception meeting with Endeavour Energy, various ideas were discussed to increase electrical independence and grid resilience. These discussions centred around the integration of rooftop solar panels and storage batteries, as a response to the increasing popularity of these emerging technologies.

The rise in demand for rooftop solar energy necessitates a shift in the supply model, thereby influencing forecasts and other electrical requirements. Strategic infrastructure planning will be required to effectively adapt to these changes.

Solar power is considered a green-friendly and a renewable energy source which reduces the networks reliance on less renewable sources of energy. Another notable advantage of solar energy lies in its ability to generate both on-demand electricity and surplus energy. This surplus can be stored and utilised during peak electrical consumption, providing a valuable mechanism to balance supply and demand. To capitalise on this potential effectively, Endeavour Energy is actively engaged in investigating and testing battery technology at both the zone substation and padmount substation level.

Organisations intending to develop are encouraged to liaise with Endeavour Energy during the early stages of design development to determine the most appropriate and optimal solution for its specific requirements.

8.2 Electric Vehicle Charging

The NSW Government is currently implementing the NSW Electric Vehicle Strategy (EVS), which aims to support and promote the widespread adoption of electric vehicles. This strategy includes provisions for co-funding fast charging stations throughout the state to facilitate electric vehicle (EV) usage.

Over the next four years, a comprehensive EV charging infrastructure plan is scheduled throughout NSW. The NSW Government has pledged \$199 million to collaborate with private operators in the statewide installation of EV charging infrastructure. Some key features of this initiative encompass the establishment of charging stations:

- At 5km intervals along Sydney's major commuter corridors;
- Approximately every 100km along major highways within NSW;
- Within 5km radius of residential zones; and
- In close proximity to or within commuter car parks and other TfNSW owned land.

Blacktown City Council is presently engaged in developing an EV Charging Infrastructure Policy, which will exclusively apply to public land. The anticipated policy incorporates several initiatives, including:

- Mandatory inclusions of an EV Ready Connection in multi-unit residential parking, with at least one such connection per dwelling;
- Mandatory inclusions of a Shared EV connection in all car share spaces and spaces designated for visitors;
- Obligations for commercial building parking facilities to furnish one (1) Shared EV connection for every ten (10) commercial car spaces, distributed to ensure equitable access; and



- Requirements for clear identification of EV infrastructure on developer application plans.

Presently, there exists no dedicated plan for installing EV infrastructure within the broader Site area, as it is assumed that such provisions will be catered to within private properties or developments.



9 Conclusion

This Utilities Infrastructure Report identifies the existing infrastructure surrounding the Site and proposes potential connection opportunities and utility upgrades. The information presented in this report is based on the available information at the time of this investigation. Further amendments will likely be made as a result of surrounding developments and engagement with the authorities.

All key infrastructure information, opportunities, and requirements are summarised as follows:

Wastewater:

- Existing infrastructure includes the Riverstone Wastewater Treatment Plant and Rouse Hill Water Recycling Plant, as well as some trunk drainage around the Site;
- Capacity to service development of the Site is not yet confirmed;
- Infrastructure contributions for the Site = \$8,443 per ET;
- Sydney Water GSP indicates the Site is in the Strategic Planning phase for additional infrastructure development;
- Sydney Water has committed to developing a Preferred Strategy by 2025; and
- Sydney Water has targeted upgrades to be commissioned in FY2028-29.

Potable Water:

- Existing infrastructure includes the Sydney Water Reservoir, as well as some water mains around and across the Site;
- Current infrastructure is **not** sufficient to service the proposed development;
- Infrastructure contributions for the Site = \$5,311 per ET;
- Sydney Water GSP indicates the Site is in the Strategic Planning phase for additional infrastructure development;
- Sydney Water has committed to developing a Preferred Strategy by 2025; and
- Sydney Water has targeted upgrades to be commissioned in FY2028-29.
- Recycled Water:
 - Limited existing infrastructure for the purposes of recycled water;
 - Sydney Water GSP does not suggest any current consideration for recycled water infrastructure for the Site; and
 - There is no current mandate for recycled water.

Electrical:

- Existing TransGrid 330kV overhead powerlines to remain in place, the asset and easement corridor to be rezoned as either RE1 or SP2;
- A new zone substation is planned within the Site;
- Existing Endeavour Energy 132kV overhead powerlines to be subject to Contestable Works, the asset and easement corridor to be rezoned as R1-3/RE1 to encourage developers to relocate the asset underground;
- Existing Endeavour Energy 11kV underground transmission lines around and across the Site;
- It is suggested that Endeavour Energy is consulted to prepare a Contestable Works schedule to facilitate the movement of its assets; and
- It is suggested that Endeavour Energy is consulted to plan the implementation of resilient electrical infrastructure.

Natural Gas:

- Existing infrastructure includes a Jemena high pressure gas main that crosses the Site; and



- It is suggested that Jemena is consulted to further understand the applicable 3rd party contributions it intends to levy against developers for the Site.

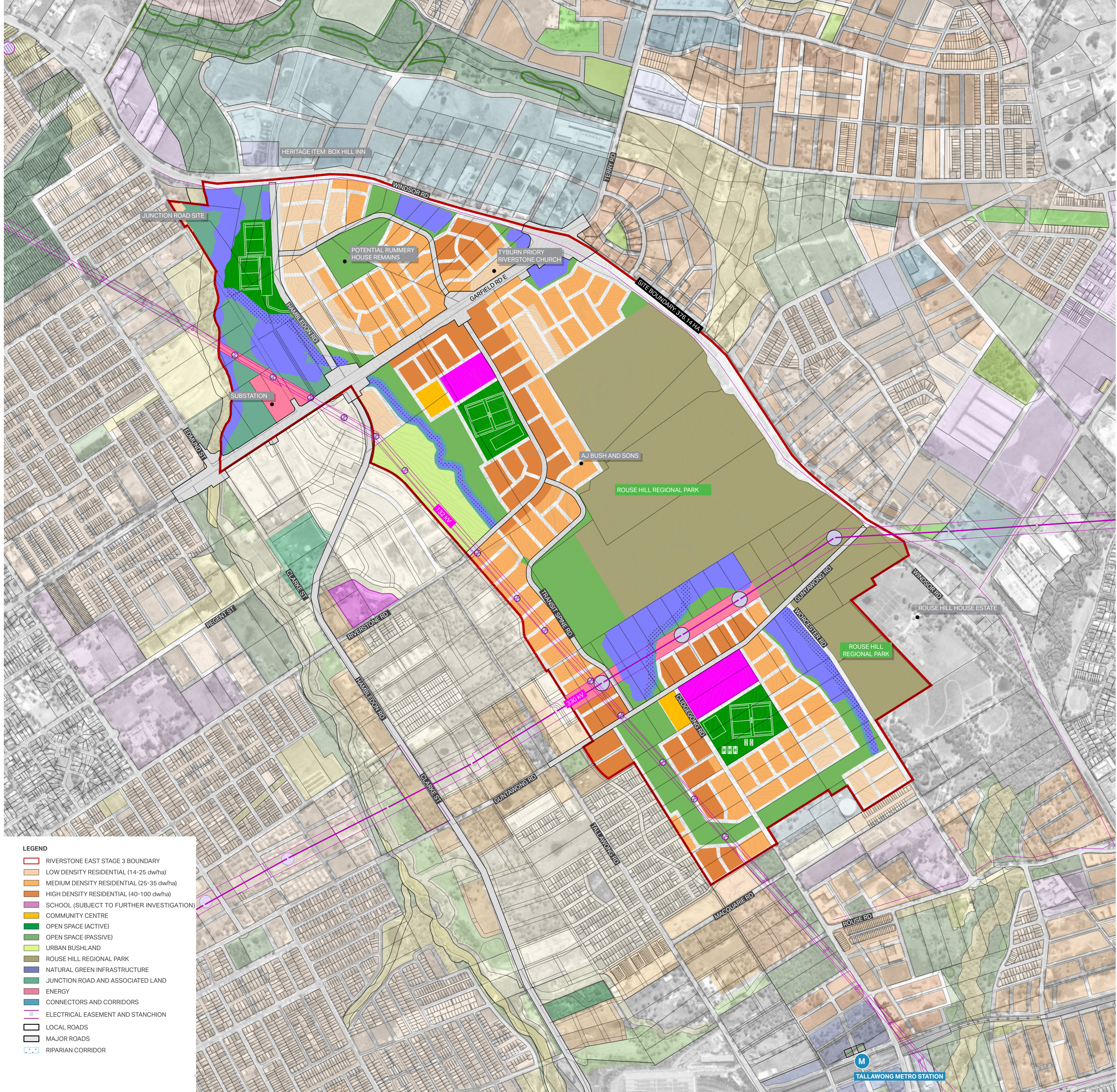
Telecommunications:

- Existing infrastructure includes assets from Telstra, Optus and TPG as well as the NBN Co. along most roadways within the Site;
- Riverstone NBN Exchange is available to service the proposed development;
- Other telecommunication utilities to be protected and upgraded as the Site develops; and
- It is suggested that all major telecommunication providers are consulted to prepare a program of service rollouts as development is planned.

All information is considered up to date at the time of this report unless otherwise specified.



Appendix A Indicative Layout Plan



- LEGEND**
- RIVERSTONE EAST STAGE 3 BOUNDARY
 - LOW DENSITY RESIDENTIAL (14-25 dw/ha)
 - MEDIUM DENSITY RESIDENTIAL (25-35 dw/ha)
 - HIGH DENSITY RESIDENTIAL (40-100 dw/ha)
 - SCHOOL (SUBJECT TO FURTHER INVESTIGATION)
 - COMMUNITY CENTRE
 - OPEN SPACE (ACTIVE)
 - OPEN SPACE (PASSIVE)
 - URBAN BUSHLAND
 - ROUSE HILL REGIONAL PARK
 - NATURAL GREEN INFRASTRUCTURE
 - JUNCTION ROAD AND ASSOCIATED LAND
 - ENERGY
 - CONNECTORS AND CORRIDORS
 - ELECTRICAL EASEMENT AND STANCHION
 - LOCAL ROADS
 - MAJOR ROADS
 - RIPARIAN CORRIDOR

Riverstone East Stage 3 ILP	Gross Land Uses	Gross Area [m2]	Gross Area [ha]	%
Land Use Category		3,786,143.56	378.61	100.0%
Gross Developable Area		1,250,954.35	125.10	33.0%
Undevelopable Area		2,535,189.21	253.52	67.0%
Land Uses: Non Residential	Schools	61,357.54	6.14	1.6%
	Community facilities	20,747.16	2.07	0.5%
	Rouse Hill Regional Park	965,338.26	96.53	25.5%
	Energy	73,673.27	7.37	1.9%
	Junction Road associated lands	90,798.75	9.08	2.4%
	Connectors and Corridors	23,012.03	2.30	0.6%
	Natural Green Infrastructure	315,415.79	31.54	8.3%
	Active Open Space	157,007.99	15.70	4.1%
	Passive Open Space	365,102.51	36.51	9.6%
	Urban Bushland	86,621.05	8.66	2.3%
	Major Roads and Other stuff	376,114.87	37.61	9.9%
	Totals	2,535,189.21	253.52	67.0%

Net Land Uses	Net Factor	Net Area
Net Developable Area	33.0%	125.10
Local Roads	70.8%	88.51
	29.2%	36.59

Open Space	
Council's Projection	
X ha / 1000 residents	2.83
Required Open Space Under Council Assumptions	28.09

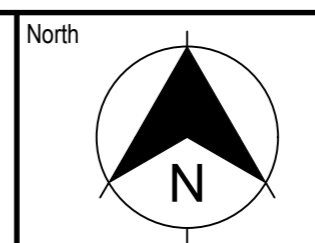
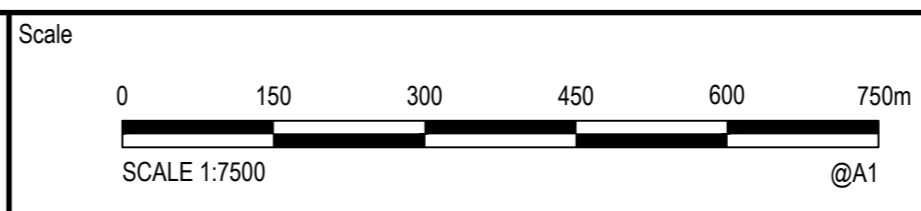
Sporting Field Requirements			
Type	Playing Fields (Soccer Pitch)	Netball/Basketball Court	Tennis Court
Capacity	1/1,850 residents	1/3,500 residents	1/4500 residents
Total	5	3	2
Parking Requirement	50 per soccer pitch	15 per court	5 per court
Parking Total	250	45	10

Density Mix				
Density	Low Density	Medium Density	High Density	Totals
Dwellings / Ha	14-25 dw/ha	25-35 dw/ha	40-100 dw/ha	
Percentage	20%	50%	30%	100%
Lot size range	400-700 sqm	300-400 sqm	100-250 sqm	
Developable Area [ha]	17.70	44.26	26.55	88.51
Yield	334	1264	1549	3147

Lot Size and Population Projection							
Lot Size Mix Breakdown							
Dwelling Types	Large Lots	Large Lots	Traditional Lots (400-500sqm)	Small Lots (300-399sqm)	Compact Lots (150-250)	Apartments	Totals
Lot Size Sqm	700	600	450	350	200	100	
Dwellings / Ha	14.29	16.67	22.22	28.57	50.00	100.00	
Percentage	5.0%	5.0%	10.00%	50.00%	25.00%	5.00%	100%
Avg Dw/Ha			35.56				
Avg Lot Size			281.25				
Developable Area [ha]	4.43	4.43	8.85	44.26	22.13	4.43	88.51
Yield	63	74	197	1264	1106	443	3147
	Population						
Resident / dwelling	3.80	3.50	3.50	3.50	2.90	2.50	3.15
Population	240	258	688	4425	3208	1106	9925



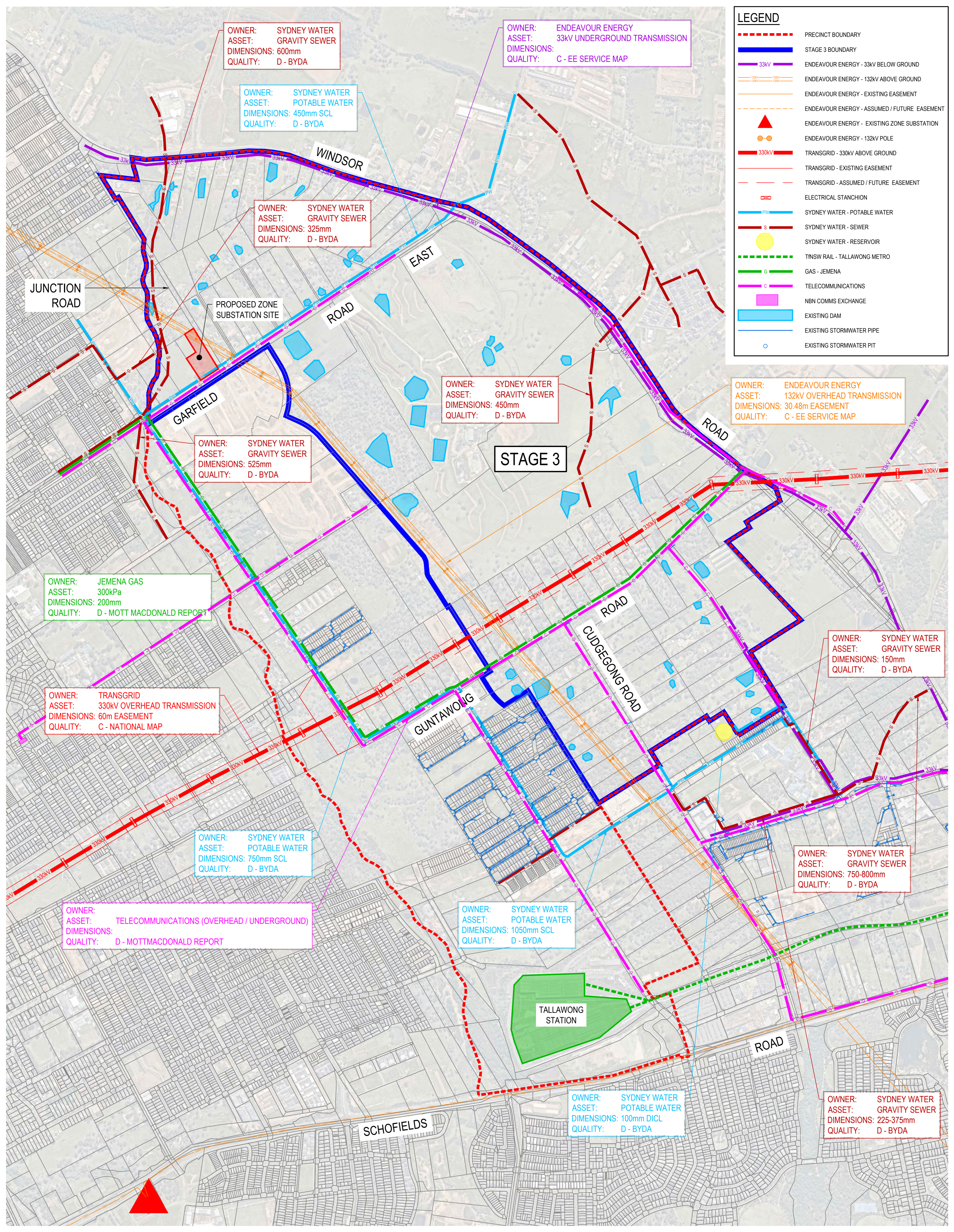
Appendix B Existing Utilities & BYDA



Enspire Solutions Pty Ltd
 Level 4, 153 Walker Street, North Sydney NSW 2060
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 Phone: 02 9922 6135
 enpiresolutions.com.au

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LEGEND	
	PRECINCT BOUNDARY
	STAGE 3 BOUNDARY
	ENDEAVOUR ENERGY - 33kV BELOW GROUND
	ENDEAVOUR ENERGY - 132kV ABOVE GROUND
	ENDEAVOUR ENERGY - EXISTING EASEMENT
	ENDEAVOUR ENERGY - ASSUMED / FUTURE EASEMENT
	ENDEAVOUR ENERGY - EXISTING ZONE SUBSTATION
	ENDEAVOUR ENERGY - 132kV POLE
	TRANSGRID - 330kV ABOVE GROUND
	TRANSGRID - EXISTING EASEMENT
	TRANSGRID - ASSUMED / FUTURE EASEMENT
	ELECTRICAL STANCHION
	SYDNEY WATER - POTABLE WATER
	SYDNEY WATER - SEWER
	SYDNEY WATER - RESERVOIR
	TNSW RAIL - TALLAWONG METRO
	GAS - JEMENA
	TELECOMMUNICATIONS
	NBN COMMS EXCHANGE
	EXISTING DAM
	EXISTING STORMWATER PIPE
	EXISTING STORMWATER PIT



OWNER: SYDNEY WATER
 ASSET: GRAVITY SEWER
 DIMENSIONS: 600mm
 QUALITY: D - BYDA

OWNER: SYDNEY WATER
 ASSET: POTABLE WATER
 DIMENSIONS: 450mm SCL
 QUALITY: D - BYDA

OWNER: ENDEAVOUR ENERGY
 ASSET: 33kV UNDERGROUND TRANSMISSION
 DIMENSIONS:
 QUALITY: C - EE SERVICE MAP

OWNER: SYDNEY WATER
 ASSET: GRAVITY SEWER
 DIMENSIONS: 325mm
 QUALITY: D - BYDA

OWNER: SYDNEY WATER
 ASSET: GRAVITY SEWER
 DIMENSIONS: 450mm
 QUALITY: D - BYDA

OWNER: ENDEAVOUR ENERGY
 ASSET: 132kV OVERHEAD TRANSMISSION
 DIMENSIONS: 30.48m EASEMENT
 QUALITY: C - EE SERVICE MAP

OWNER: SYDNEY WATER
 ASSET: GRAVITY SEWER
 DIMENSIONS: 525mm
 QUALITY: D - BYDA

OWNER: JEMENA GAS
 ASSET: 300kPa
 DIMENSIONS: 200mm
 QUALITY: D - MOTT MACDONALD REPORT

OWNER: TRANSGRID
 ASSET: 330kV OVERHEAD TRANSMISSION
 DIMENSIONS: 60m EASEMENT
 QUALITY: C - NATIONAL MAP

OWNER: SYDNEY WATER
 ASSET: GRAVITY SEWER
 DIMENSIONS: 150mm
 QUALITY: D - BYDA

OWNER: SYDNEY WATER
 ASSET: POTABLE WATER
 DIMENSIONS: 750mm SCL
 QUALITY: D - BYDA

OWNER: SYDNEY WATER
 ASSET: GRAVITY SEWER
 DIMENSIONS: 750-800mm
 QUALITY: D - BYDA

OWNER: TELECOMMUNICATIONS (OVERHEAD / UNDERGROUND)
 ASSET:
 DIMENSIONS:
 QUALITY: D - MOTTMACDONALD REPORT

OWNER: SYDNEY WATER
 ASSET: POTABLE WATER
 DIMENSIONS: 1050mm SCL
 QUALITY: D - BYDA

OWNER: SYDNEY WATER
 ASSET: POTABLE WATER
 DIMENSIONS: 100mm DICL
 QUALITY: D - BYDA

OWNER: SYDNEY WATER
 ASSET: GRAVITY SEWER
 DIMENSIONS: 225-375mm
 QUALITY: D - BYDA

REV	DATE	DESCRIPTION	DRN	DES	VERIF	APPD
6	11/09/2023	ISSUED FOR INFORMATION	CGU	LSA		CVE
5	29/05/2023	ISSUED FOR INFORMATION	BLA	LSA		CVE
4	24/05/2023	ISSUED FOR INFORMATION	BLA	LSA		CVE
3	11/05/2023	ISSUED FOR INFORMATION	BLA	LSA		CVE
2	5/05/2023	ISSUED FOR INFORMATION	BLA	BLA		CVE
1	1/05/2023	ISSUED FOR INFORMATION	BLA	BLA		CVE

Client	
Project	RIVERSTONE EAST STAGE 3
Title	EXISTING UTILITIES PLAN

Scale	1:7500
Date	01/05/2023
Size	A1
Datum	MGA94

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION	
Project Number/Drawing Number	SK0001-220121-00	Revision
		6

XREFS:

DATE PLOTTED: 15 September 2023 3:36 PM BY: BRENDAN LARKIN



Appendix C Endeavour Energy

Meeting Minutes

Riverstone Stage 3 Endeavour Energy Meeting Minutes # 1

Meeting Description: Riverstone Stage 3 Endeavour Energy Meeting

Meeting Date: 21 April 2023

Location: Teams

Prepared by: Cameron Vella | Enspire

Name	Organisation	Initial	In Attendance	Apologies	Distribution
Cameron Vella	Enspire	CV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gavin De Hosson	Endeavour Energy	GDH	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Louis Fernandes	Endeavour Energy	LF	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Elliott Weston	DPE	EW	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Connie Kong	Endeavour Energy	CK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Louise Collier	Rhelm	LC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Meeting Notes

Item	Description	Action	Due Date
1	CV introduced Riverstone Stage 3 with expected yield of 2300 lots.	Note	
2	CV identified existing and planned Endeavour Energy Assets in the area being: - Riverstone Zone Substation - Schofields Zone Substation - Riverstone East Zone Substation (future) - 132kV overhead	Note	
3	Endeavour Energy advised that it has considered approximately 2300 lots in the future planning of the region. It has investment plans for increasing the capacity of the existing Riverstone and Schofields (approx. 2032) Zone Substations, after which the Riverstone East Zone Substation will be established. Endeavour Energy noted these dates could move.	Note	
4	Zone substations will be augmented as supply requires. Endeavour Energy monitor planned development in the area and also actual loads. Investment in solar is changing previously forecast demands.	Note	
5	Endeavour Energy noted that the development of the planned Riverstone East Zone Substation is included in the recent Endeavour Energy submission to the Australian Energy Regulator.	Note	
6	Riverstone East Zone Substation (future): Endeavour Energy confirmed land has been acquired. Endeavour Energy to provide actual location (263 Garfield Road).	GDH LF	
7	CV questioned as whether battery technology will be incorporated into the planned zone substation. Endeavour Energy responded that new technologies are always under review and difficult to comment at this stage with regards to Riverstone.		
8	Existing overhead 132kV and potential underground of it was raised. Endeavour Energy do not have investment plans for this. At this stage, funding would need to come from elsewhere (e.g. developers). To underground the 132kV would be possible through the Contestability Framework process by an authorised service provider facilitated by the customer network branch. DPE to assess with the consultant team as to its intentions.	Note	
9	CV questioned whether the capacity of the existing network can be assessed and provided? Endeavour Energy responded that for this detail a formal process through the feasibility application process would be required. It was collectively decided this is not required at this stage.		
10	Communications protocols agreed. Email through this group now and a formal application could come later.	Note	

Riverstone East Endeavour Energy Meeting Minutes # 2

Meeting Description: Endeavour Energy Meeting

Meeting Date: 21/06/2023

Location: Online – Teams Meeting

Prepared by: Louis Samuels

Name	Organisation	Initial	In Attendance	Apologies	Distribution
Cameron Vella	Enspire	CV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Louis Samuels	Enspire	LS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gavin De Hosson	Endeavour Energy	GH	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Connie Kong	Endeavour Energy	CK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Louis Fernades	Endeavour Energy	LF	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ann Nee Lim	Endeavour Energy	AL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Elliot Weston	DPE	EW	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Louise Collier	Rhelm	LC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jason Stewart	Rhelm	JS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Standing Items

Item	Description
1	Introductions
2	Other important business not listed below
3	Enspire to outline goals for this collective team: <ul style="list-style-type: none"> - Prepare supply strategy for electricity - Provide endorsement to the Services Infrastructure Report prior to August 2023
4	Department of Planning and Environment (DPE) and Enspire to provide status update of Riverstone Stage 3 planning, including expected yield, staging, and timing
5	Endeavour Energy to comment on expected development yield, staging and timing and whether information can be supplied as to the possible HV reticulation for inclusion within the Services Infrastructure Report
6	DPE and Enspire to communicate intent for existing overhead 132kV transmission lines to be relocated underground. Purpose is to seek in principal agreement that this can occur
7	Final Questions
8	Closing

Meeting: Introductions

Item	Description	Action	Due Date
1.1	Introductions starting with Enspire, DPE, Rhelm, Endeavour Energy	Nil	

Meeting: Other Items

Item	Description	Action	Due Date
2.1	CV opened it up to everyone to add any missed items. No new items were provided.	Nil	

Meeting: Collective Team Goals

Item	Description	Action	Due Date
3.1	CV started by describing the rough timeline for utilities development ending in ministerial endorsement. - Supply strategy complete prior to early August 2023 (tentative early July) - Endorsement of report prior to August 2023		

Meeting: Riverstone Stage 3 Planning Status

Item	Description	Action	Due Date
4.1	Discussion was directed to EE and their Servicing Plan		

Meeting: Endeavour Energy Servicing Plan

Item	Description	Action	Due Date
5.1	CK noted that Riverstone East will ultimately be supplied via the Riverstone East Zone Substation which will be available 2027. The supply will be coming from this zone substation but no confirmation yet about how the feeders will be installed. Early applications for connection, prior to the establishment of Riverstone East, will be sourced from the following existing zone substations: <ul style="list-style-type: none"> • Riverstone • Schofields • Mungarie Park 		
5.2	LC noted that the site has been identified for the Riverstone East zone substation and that the area nominated for the substation is in an area that is flood affect. LC continues that Rhelm is happy to provide all information to help assist with this.		
5.3	CV asks what the approach by EE about the façade of zone substations looking like houses and others looking like typical zone substations. CK and LF confirms that the zone substation is an indoor one to make it more unnoticeable. The focus is to try and drive a value solution rather than driving it based on aesthetics.		
5.4	CV asks if EE has been part of a government contributions scheme that puts budget into developing these embellishments. LF took this on notice to follow up. EE: No, we are not part of any government related reimbursement schemes. Under the current Distributor obligation and Contestability frameworks, the augmentation works is funded in full by the proponent (with few exceptions, for example betterment).	LF	28/06/23
5.5	EW discusses the indicative ILP which has been developed since the EBD. DPE has asked for comments from all relevant subconsultants on the ILP with the intention to share with EE once everything has been finalised.		
5.6	CK asks about the table yields and how it adds up to approximately 3080 lots but the prior plans it was 2300 lots. There was also an earlier figure suggesting 5200 lots. EW noted the 5200 was a worst case scenario but we have come back from that position and that the EBD developed the 3100ish lots. Once the final CAD version has been supplied, the lot number can be locked down.	EW	05/07/23
5.7	CK goes on to ask about the staging and wants a more realistic staging so that they can plan accordingly. CV noted that the early 2026 staging plan seems relatively realistic and refer to the staging plan. EW adds that stage 2 will be the highest density development. LF clarifies that all 1000 lots won't be developed in one year. CV confirms that the development will continue at a more normal pace which will be developer driven.		
5.8	CV states, in terms of this meeting, minutes will be provided and put words around how DPE and EE are ready to go. LF confirms that they will arrange to send a letter of endorsement but asks if they could see the report prior. CV notes that everything is pending ministerial approval, but approval should be provided prior to exhibition. CV to send relevant section of report to Endeavor Energy for endorsement.	CV	20/07/23

Meeting: Existing Overhead 132kV Transmission Lines

Item	Description	Action	Due Date
6.1	CV notes that the EBD workshop discussed the design constraints around the 132kV and wants to discuss a mechanism to bring this service underground. Currently EE has no funding for this item, so it needs to be developer driven. CK has had a look at the conductor types and needs to flag it with DPE. They are non-standard conductors which carries higher capacities than other capable. They can handle 495mVA each. To underground these, they would need to handle a similar capacity. The standard underground cables can only handle 220mVA each and so therefore there will need to be a design around these in order to support a similar output. LF noted they are also open to overhead relocation. CV takes this on board noting that this will still require an easement and that these wouldn't typically be able to be aligned with the road. LF wants to take this on notice.		
6.2	LC wants to clarify the underground option and would it fit under a typical pavement detail. For overheads, would this have a similar easement size. LF noted that each cable would be replaced with up to 3 underground cables (6 in total) and that he would have to ask the design team to understand the size requirements. CV confirmed that this is important to know and to please ask this question so we can design roads around it. CK to confirm easement width under road. EE: The current easement width requirement for 2x 132kV OH feeders in this arrangement is 30m with 10m horizontal distance separate the two feeders. To underground the overheads, 2x conduit banks each composed of 3x cables per phase and a minimum 3m distance between the two circuits will lie within a 10m easement (in-depth detail study required). This easement may need to be further widened locally to allow for joining bays and earth/fibre pits. There is also a requirement that vegetation along the boundary of the easement do not have invasive root systems. Note with undergrounding, each 132kV feeder will require 3 UGOHs at the start and end, totalling 12x UGOHs in total across both feeders. Detailed EMF, LFI and earthing hazard assessments also needs to be undertaken.	CK	28/06/23
6.3	LC also had some concerns that the overhead is brand new and wonders if there is anything around that that needs to be considered (i.e. stakeholders asking is it necessary to move). She goes on to wanting a better understanding of the history.		
6.4	LC notes that there is an existing development with the adjacent land developments which has lots set aside which could be developed if the line is put underground. She wonders if EE has had any discussion with these adjacent developments. CK hasn't seen any records of conversation and will take it on notice and advise of any conversations have occurred. EE: We have not been asked by any adjacent development to consider undergrounding the HV mains. There are projects that include areas with the HV mains easement and their design has stated that they either do not impact the HV easement or that the design must not interfere with the HV mains.	CK	28/06/23
6.5	Further discussion was had about the 3-phase overhead cabling and that to bring this underground would require 8 different cables underground to support a similar output. CV appreciated the discussion and will take this on board, noting that this was a potential higher cost to underground than anticipated.		
6.6	LC asks whether it would be more efficient to underground the whole overhead section through the site in one go or if it can go back and forth between the two. LF confirms that you can step it back and forth but typically EE requires minimum distances before transitioning from overhead to underground. CK to advise the minimum distance. EE: The general rule of thumb used in the past is approximately 500m as a minimum distance. EE will need to conduct detailed Switching Surge and Lightning Withstand studies, as well as a Power Quality Check to confirm the minimum length required for the two 132kV lines given the criticality of these two feeders. Such study can be carried out if we receive a formal request for undergrounding.	CK	28/06/23
6.7	CV mentions the funding arrangement and whether EE can lobby for funding or if a contributions cost could be applied. LF notes a lot of investment driven by the airport which has exhausted EEs capital expenditure. Due to this, they cannot contribute to any project for quite some time. AL confirms that it also wouldn't		

Item	Description	Action	Due Date
	make sense to do this piece by piece, but should be down in one go in order to avoid constant outages.		
6.8	CV asks if EE has ever been part of a contribution scheme with adjusted assets. LF tentatively took this question on notice as it isn't something that has ever happened before. EE: No, we are not part of any governmental-related reimbursement schemes. Under the current Distributor obligation and Contestability framework, the augmentation works are funded in full by the proponent (with few exceptions, for example betterment).	LF	28/06/23

Meeting: Final Questions

Item	Description	Action	Due Date
7.1	CV opens to final questions. LC asks about the crossover between the EE asset and the Transgrid asset and if there would be any interfacing issues with undergrounding the assets. LF confirms that it would be a group discussion where clearances would need to be strictly adhered to. LC asks for a contact with Transgrid but has been put on notice for all participants.		

Meeting: Closing

Item	Description	Action	Due Date
8.1	Draft meeting minutes will be provided via SharePoint so that everyone has access and can provide feedback before finalisation.	LS	

Louis Samuels

From: Connie Kong <Connie.Kong@endeavourenergy.com.au>
Sent: Friday, 15 September 2023 3:00 PM
To: Louis Samuels
Cc: Cameron Vella; Louis Fernandes; Gavin De Hosson; Ann Nee Lim
Subject: RE: RE: Enspire - Riverstone East Stage 3 - Endeavour Energy Investigative Meeting - Finalised Minutes
Attachments: RE: Riverstone East Stage 3 - Endeavour Energy - Utilities Servicing - 2nd Meeting
Follow Up Flag: Follow up
Flag Status: Flagged

Hi Louis,

Cameron sent in the attached email with load growth profile back in June, total numbers of yields for Stage 3 was 3137.

Would the new number of 3147 has different load growth profile?

If growth rate is similar then the new Riverstone East ZS will be able to cater for the load when its ready. Until the new zone substation is established, supply will be via Riverstone / Schofield / Mungerie Park Zone Substation, additional augmentation works within our existing network may be required depend on the staging/timing of developments.

Regards,

Connie Kong | Capacity Planner

P 02 98537028

Level 40-42, 8 Parramatta Square, 10 Darcy Street

Parramatta NSW 2150. Dharug Country

endeavourenergy.com.au



**Endeavour
Energy**

**POWER
together**



Endeavour Energy respectfully acknowledges the Traditional Custodians on whose lands we live, work, and operate and their Elders past, present and emerging.

From: Louis Samuels <louis.samuels@enspiresolutions.com.au>
Sent: Tuesday, 12 September 2023 9:09 AM
To: Connie Kong <Connie.Kong@endeavourenergy.com.au>
Cc: Cameron Vella <cameron.vella@enspiresolutions.com.au>; Louis Fernandes <Louis.Fernandes@endeavourenergy.com.au>; Gavin De Hosson <Gavin.DeHosson@endeavourenergy.com.au>
Subject: RE: RE: Enspire - Riverstone East Stage 3 - Endeavour Energy Investigative Meeting - Finalised Minutes

Hi All,

Due to some last-minute adjustments to the ILP, the proposed lots for Riverstone East Stage 3 have increased from 2,849 new homes (approx. 8,984 people) to 3,147 new homes (approx. 9,925).

Are you able to confirm if this increase has any measurable effect in the advice you have provided to date?

I have attached copies of the minutes from the 2 meetings that were conducted.

Regards,

Louis Samuels
ASSISTANT PROJECT MANAGER



Address Level 4, 153 Walker Street, North Sydney NSW 2060

Email louis.samuels@enspiresolutions.com.au

Website www.enspiresolutions.com.au



Enspire acknowledges the Traditional Owners of the land upon which we live and work and pay our respects to their Elders past, present and emerging.



How did we do today?

We are a learning organisation and would value your feedback. Could you spare 3 minutes?

[Click here to provide feedback](#)

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Appendix D Sydney Water

Meeting Minutes

forRiverstone Stage 3 Sydney Water Meeting Minutes # 1

Meeting Description: Riverstone Stage 3 Sydney Water Meeting

Meeting Date: 28 April 2023

Location: Teams

Prepared by: Cameron Vella | Enspire

Name	Organisation	Initial	In Attendance	Apologies	Distribution
Cameron Vella	Enspire	CV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kristine Leitch	Sydney Water	KL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lyndall Salli	Sydney Water	LS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Elliott Weston	DPE	EW	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Louise Collier	Rhelm	LC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Jason Stewart	Rhelm	JS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Meeting Notes

Item	Description	Action	Due Date
1	CV introduced Riverstone Stage 3 with expected yield of 2300 lots.	Note	
2	CV identified existing and planned Sydney Water Assets in the area being: - Existing reservoir - Potable Water trunk mains (DN750 and DN450)	Note	
3	Sydney Water require staging and timing to undertake an assessment of supply. Data required: - # single dwelling, # multi dwellings, # jobs (or GFA) - Staging boundaries		
4	Sydney Water advised, without data and appropriate analysis by Sydney Water, supply arrangement reverts to the current Growth Services Plan.		
5	Communication to be via this group and to the Urban Growth email address. Subject prefix: DPE Project:		

Riverstone East Sydney Water Meeting Minutes # 2

Meeting Description: Sydney Water Meeting

Meeting Date: 14/06/2023

Location: Online – Teams Meeting

Prepared by: Louis Samuels

Name	Organisation		Present	Apologies	Absent
Cameron Vella	Enspire	CV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Louis Samuels	Enspire	LSA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kristine Leitch	Sydney Water	KL	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lyndall Salli	Sydney Water	LYS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lulu Huang	Sydney Water	LH	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Faith Tid-ang	Sydney Water	FT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Elliott Weston	DPE	EW	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Krishti Akhter	DPE	KA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evelyn Ivinson	DPE	EI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jason Stewart	Rhelm	JS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Louise Collier	Rhelm	LC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Agenda

Item	Description
1	Introductions
2	Other important business not listed below
3	Enspire to outline goals for this collective team: - Prepare supply strategy for potable water, wastewater, and possibly recycled water - Provide endorsement to the Services Infrastructure Report prior to October 2023
4	Department of Planning and Environment (DPE) and Enspire to provide status update of Riverstone Stage 3 planning, including expected development yield, staging and timing
5	SWC to provide details of how it plans to supply Riverstone Stage 3 (potable water and wastewater), and if not yet, the pathway to progress.
6	Supply of recycled water. DPE and Sydney Water (SWC) to agree on pathway to determine feasibility of expanding the Rouse Hill catchment to provide recycled water to Riverstone Stage 3. Agree on actions and responsibilities.
7	Closing

Meeting: Introductions

Item	Description	Action	Due Date
1.1	Introductions starting with Enspire, DPE, Rhelm, Sydney Water.	Nil	

Meeting: Other Items

Item	Description	Action	Due Date
2.1	CV opened it up to everyone to add any missed items. No new items were provided.	Nil	

Meeting: Collective Team Goals

Item	Description	Action	Due Date
3.1	CV started by describing the rough timeline for utilities development ending in ministerial endorsement. - Strategy complete prior to early August 2023 - Endorsement of report prior to October 2023	Nil	

Meeting: Riverstone Stage 3 Planning Status

Item	Description	Action	Due Date
4.1	EW discussed the EBD workshop about the preferred ILP. A subsequent aboriginal and cultural workshop was conducted. Roberts Day provided feedback for the ILP. An outstanding issue is Endeavour Energy infrastructure and schools' infrastructure.	Nil	
4.2	EI wants to focus on creating a plan for servicing and focus on the staging of such utility rollout.	Nil	
4.3	CV noted the indicative plan that is undergoing consultation. One of the risk areas was that SWC needs data quickly and that is the reason for the map which was presented. - CV now wants to understand the plan in relation to SWC rollout.	Nil	
6.10	CV sets an action for SWC to explore the southern stage as well as the whole development for recycled water. The Department is just looking for confidence and commitment. Otherwise, this becomes an opportunity for SWC in the future.	SWC	23/06/23

Meeting: Sydney Water Servicing Plan

Item	Description	Action	Due Date
5.1	LYS raises the issue that all surrounding precincts are that the dwelling numbers are significantly higher than the planning numbers initially provided. SWC needs to consider these increase dwellings as well as the increased yield for this precinct. LYS also notes that it becomes difficult to analysis the impact of the existing infrastructure, but it takes time. The timeframe currently provided is February 2024. Potential for accelerating may be available. CV clarifies the Feb 2024 is for the confirmation of infrastructure options. LYS responded that a preferred strategy would likely be determined in 2025. It was subsequently clarified that the Options Assessment and determination of the preferred option for the wider NWGA is anticipated in Feb 2025.	Nil	
5.2	EI asks LYS that SWC had received an email that the capacity for the area available was 2300-2500. Is there any status update for these numbers. LYS reiterates that the surrounding developments have been taking capacity from this area. EI asks if the UDP is being used for completion rates and LYS confirms this.	Nil	
5.3	CV asks if this for PW and WW? LYS confirms it is for both. CV wonders if large sewer mains are being used and FT confirms they were put into service Box Hill. LYS reiterates with Box Hill that there are a few thousand additional dwellings above what SWC had planned for.	Nil	
5.4	CV asks if the whole network is affected by this capacity issue. LYS stated the whole network needs to be assessed. She continues that SWC do have an initial understanding but needs more assessment to perform a due diligence.	Nil	
5.5	LC asks about the GSP. She states there is provision for Marsden Park North and West Schofields that are on hold. SLC questioned if their capacity could be provided across to Riverstone as a potential opportunity. LYS qualifies that she may not be able to answer due to catchment jurisdictions, but she does know that the latest planning has moved Marsden Park North and West Schofields to later connection dates. It ultimately is a balancing of the proposed staging.	Nil	
5.6	CV proposed that we reconvene after finding out if there is some way to accelerate the SWC planning as the given dates will not work for the current proposed project. LYS confirms additional conversations will be required.	CV	19/07/23

Item	Description	Action	Due Date
5.7	EW wants to know if a Staging Plan is worth it if there is no capacity. LYS says that a Staging Plan is always worth it as there may be a way to service the whole project in segments. SWC to assess if this could be an accelerated component.	SWC	23/06/23
5.8	EI just wanted to note that a density will be capped so once the target is reached (3,080) that is what you can work towards.	Nil	
5.9	LS asked if upgrades of initial infrastructure is required or if new infrastructure will be needed. LYS stated it is likely upgrading but until a study of the area is complete, it is not completely known.	Nil	
5.10	LC wanted to know if there was opportunity for a private solution. LYS responded by stating, yes WICA is available, however SWC always prefers to be the supplier.	Nil	
5.11	EI says it would be good to receive an email about the rough planning priorities as Riverstone rezoning is on a priority list for developing and when it was placed there, it was done so with the information that it could be serviced. EI just wants confirmation in writing why there is a difference and what reasons have contributed to this.	SWC	23/06/23

Meeting: Recycled Water Feasibility

Item	Description	Action	Due Date
6.1	CV noted he was approach by LYS and LH during the workshop to provide recycled water to Riverstone. He wants to know the intention and process to implement this. How do we to the point where “yes, this is happening”. He opens it up to LYS.	Nil	
6.2	<p>LYS notes that recycled water can be difficult as they have no guarantees for future development, but it is encouraged for these state-led precincts. A lot of the surrounding areas have mandated dual piping to enable the recycling of water for the future precincts. SWC strongly encourages it and LYS states this is a better opportunity due to the Site being in close proximity to the Rouse Hill Recycling Plant.</p> <p>LYS reiterates that they can’t guarantee anything, but this should at least be considered. CV qualifies that this is more of an encouragement but asks if this is factored into the analysis for PW.</p> <p>LYS agrees it is encouraged but not mandated. Since it is happening around the area, they can factor it into the business case, but needs to be allowed for at the beginning as recycled water installation is difficult once the other infrastructure is in place, it typically becomes untenable.</p>	Nil	
6.3	CV notes that the water management plan needs to factor this in as it completely changes what needs to happen (i.e. rainwater tanks) if recycled water is implemented.	Nil	
6.4	EI wanted to clarify that it is an option but no mandate, therefore the plan should move forward under the assumption that it won’t happen, with maybe an allowance to have a high-level framework for the analysis stage. She also notes it can change the flows into the catchments which has other environmental impacts.	Nil	
6.5	LC can see opportunities to have either in full or partial recycled water servicing (i.e. the anticipated parkland) but they would like to know what the expectations are quickly so they can start to factor this into their planning. It has the advantage of making the system more robust, particularly in drought, so there is an underlying interest to continue with this as a backstop strategy.	Nil	
6.6	LH mentions that the recycled water planners could be engaged to establish how much servicing that can be provided. She mentions that the high density is closer to the current supply so that might be more serviceable, and the lower density can be serviced via a different strategy.	Nil	
6.7	CV asks if we know if SWC has an excess of water that it wants to get rid of. LYS says that SWC is not desperate to get rid of, but recycled water is just a good product that can be readily rolled out once the plans have been finalised.	Nil	
6.8	EI, in terms of irrigation, asks if the report can include consideration for the Rouse Hill Park and is there limitation about where recycled can be used. LC mentions the type of requirements that recycled water can be used for (i.e. toilet flushing and irrigation) and references specific department and SWC guidelines.	Nil	

Meeting: Closing

Item	Description	Action	Due Date
7.1	Shared draft meeting minutes will be provided via SharePoint so that everyone has access and can provide feedback before finalisation.	LS	15/06/23

30 June 2023

Our Ref: 207648

Evelyn Ivinson

Principal Planner, Activation Precincts
Department of Planning and Environment
Evelyn.ivinson@planning.nsw.gov.au

RE: Sydney Water comments on Riverstone East Stage 3

Thank you for consulting with Sydney Water regarding the proposed ILP and rezoning at Riverstone East Stage 3. The outcome of the Enquiry by Design workshop held in late May/early June 2023 has identified that this precinct will allow for 3,080 dwellings with first lots in 2026. Sydney Water has reviewed the proposed ILP and staging plan, and provides the following comments.

Previous forecasts, changes and impact on servicing advice

Until the latest staging plan and proposed yield were sent to Sydney Water in June 2023, our planning has relied on previous DPE forecasts for Riverstone East stage 3 precinct from November 2022. The 2022 data forecast a lower yield of 2,300 dwellings, as well as forecasts for first dwellings to be complete in FY2032. Email correspondence from Sydney Water to DPE in February 2023 confirmed that there were both water and wastewater constraints for this site based on the November 2022 data.

Similarly, our comments on the Infrastructure Gap Analysis in May 2023 confirmed that the Mott MacDonald Infrastructure report was not endorsed by Sydney Water, and as such should not be relied on for water related servicing information. At that time, we confirmed that the capacity and serviceability of existing trunk assets need to be reviewed and confirmed in the context of wider NWGA servicing. This is especially due to the surrounding precinct yields and growth rates exceeding 2017 LUIP dwelling cap numbers and SHSF annual forecasts. (see later section)

We acknowledge that since this date, Riverstone East Stage 3 was selected as an accelerated rezoning precinct. Proposed amendments in 2023 have included an increase of 780 dwellings, and a significant change to the forecast timeframe with first lots anticipated to be complete in July 2026 rather than 2032. This substantive change presents challenges in realigning our planning and delivery program for the area.

The development servicing advice provided below, is based on the best available information in response to the recent changes and is largely consistent with previous advice. Our advice can and will vary over time with new connections, development demand and changes in the local systems (especially where an approval letter/advice is more than 12 months old). We appreciate DPE's continued engagement and updates to guide our planning.

Water Servicing

The latest staging plan and yield, sent to Sydney Water on 9 June 2023 and revised on 13 June 2023, comprises 5 stages of which the majority are within the Rouse Hill water supply zone. 'Stage 2' lies within the Parklea WSZ. The recent growth servicing study identified that these water supply zones are at capacity and offer little opportunity to support significant growth pending planning studies and network amplification.

Wastewater Servicing

The development is within the Riverstone Wastewater System and will discharge to the SP1154 pumping station via the First Ponds Creek Carrier Section 1 and Chain of Ponds Carrier.

Currently SP1154 has capacity constraints. It is proposed to upgrade the pump capacity to service the surrounding precincts. Riverstone East stage 3 development, including the increased yield identified following the Enquiry by Design workshop, can be considered as part of the SP1154 upgrade works.

A Planning study to assess the network upgrade requirements has recently commenced, with options assessment and determination of the preferred option programmed for completion in February 2025. New and any amplified network infrastructure would then need to be constructed.

Recycled Water Servicing

Sydney Water is currently investigating expanding the Rouse Hill Recycled Water system to include adjacent areas, including Riverstone East Stage 3. If recycled water servicing is provided, a Recycled Water Infrastructure Contribution (in addition to infrastructure contributions for water and wastewater) would be levied on all development. We anticipate the investigations including a cost-benefit financial assessment, including the impact of infrastructure contributions, to be complete in December 2024.

Sydney Water supports recycled water and Integrated Water Cycle Management initiatives. Developments that take on board dual piping for alternative water sources offer opportunities in helping market viability for both public or private water providers and ensure recycled water usage can be optimised.

Comments on proposed staging to specific sub-precincts

We appreciate the provision of staging plans, as these allow us to assess the potential for some lots to be serviced ahead of others in capacity constrained areas.

Following the review of the latest yield and staging plan, we have determined that there are widespread area constraints for both drinking water and wastewater and there is little if any latent capacity in the system. As such we believe limiting dwellings to a specific area would be unlikely to allow for earlier provision of servicing.

Should DPE wish to further interrogate specific areas, DPE and its consultants can enter into arrangements with us to run specific areas within our hydraulic models. We could then peer review the outcomes. Please let us know if this is of interest to DPE.

Confirmation of timeframes for the Sydney Water program

Based on the November 2022 advice and development timeframes, water and wastewater planning studies for the wider NWGA commenced. The options assessment and determination of the preferred option for both drinking water and wastewater is programmed for completion in February 2025.

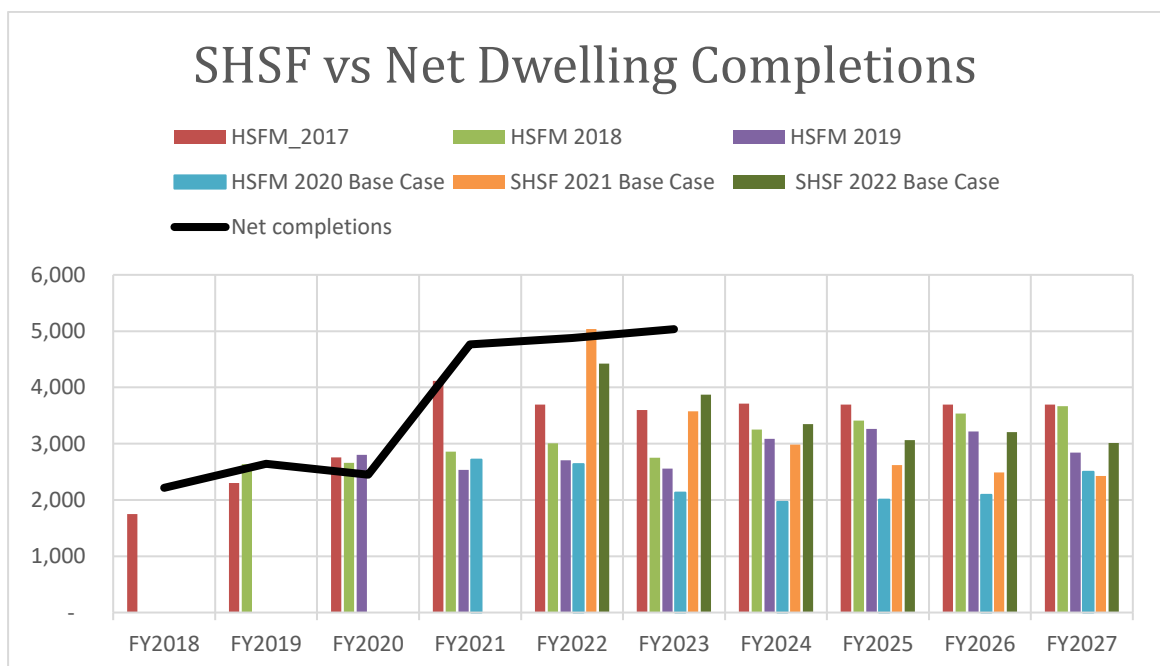
Subsequent upgrade works required for both drinking water and wastewater are targeted for commissioning in FY2028-2029. This date is subject to further reviews depending on the extent and complexity of assets required.

Once the upgrade works are complete, there would be adequate capacity to service the proposed 3,080 dwellings.

Servicing the wider NWGA

You have asked us to comment on the capability to support growth in the wider NWGA. In addressing this, it has become apparent that growth within the NWGA is exceeding both the SHSF annual forecasts, as well as the 2017 LUIIP dwelling numbers. This has led to a reduction in latent capacity and contributed to the capacity constraints in the area, including those for Riverstone East Stage 3. With respect to the data;

- From FY2021 onwards, there has been a sharp rise in completions within the NWGA area. This is shown in the below chart for the Riverstone wastewater system, but this trend is widespread within the NWGA and has had the same impact on water supply zones in the area.
- Using the HSFM2020 base case as an example, which was the latest DPE forecast used for our 2021 planning studies, there is likely to be 7,000 more dwellings completed between FY2021-FY2023 than the HSFM forecast suggested.



- It is also apparent that most precincts within the NWGA will exceed the 2017 LUIIP dwelling numbers. This has been recognised by DPE, GCC, Blacktown and The Hills Council however, to date, no formal revision of numbers have been provided. This has also impacted on the planning and servicing of the NWGA, as significant changes to planned dwelling numbers means that existing servicing strategies need to be re-assessed.
- Sydney Water met with DPE’s Land-use forecasting team on 29 June 2023, where we discussed that dwelling numbers are likely to exceed the dwelling cap numbers by 50-60%. As a result, the DPE forecasting team are planning to undertake an assessment of the area, with the intention to provide revised growth numbers for the NWGA later this year.

- Sydney Water welcomes the provision of revised numbers by DPE, and these will support the planning work being undertaken by Sydney Water outlined earlier in this letter.

Requests and further comments

To adequately plan for this precinct, Sydney Water requests that the 3,080 dwellings identified in the latest ILP and staging information be treated as a maximum dwelling number.

Sydney Water would also like to request a yearly breakdown of the growth in a format provided in the attached Growth Information form. This will ensure that your anticipated annual yield is considered in our planning works. We acknowledge that the timescales provided are indicative only and are subject to change.

Sydney Water supports government-backed growth initiatives within our area of operations. We endeavour to provide services in a timely and prudent manner that delivers cost effective water and wastewater infrastructure whilst not impacting our current customer base economically, environmentally, or unduly impacting current service levels.

We look forward to continuing to work with you on the proposed rezoning and servicing of this precinct. If you require any further information, please contact the Growth Planning Team at urbangrowth@sydneywater.com.au.

Yours sincerely,



Wayne Jackson

Manager, Growth Planning & Commercial Frameworks
City Growth and Development, Business Development Group
Sydney Water



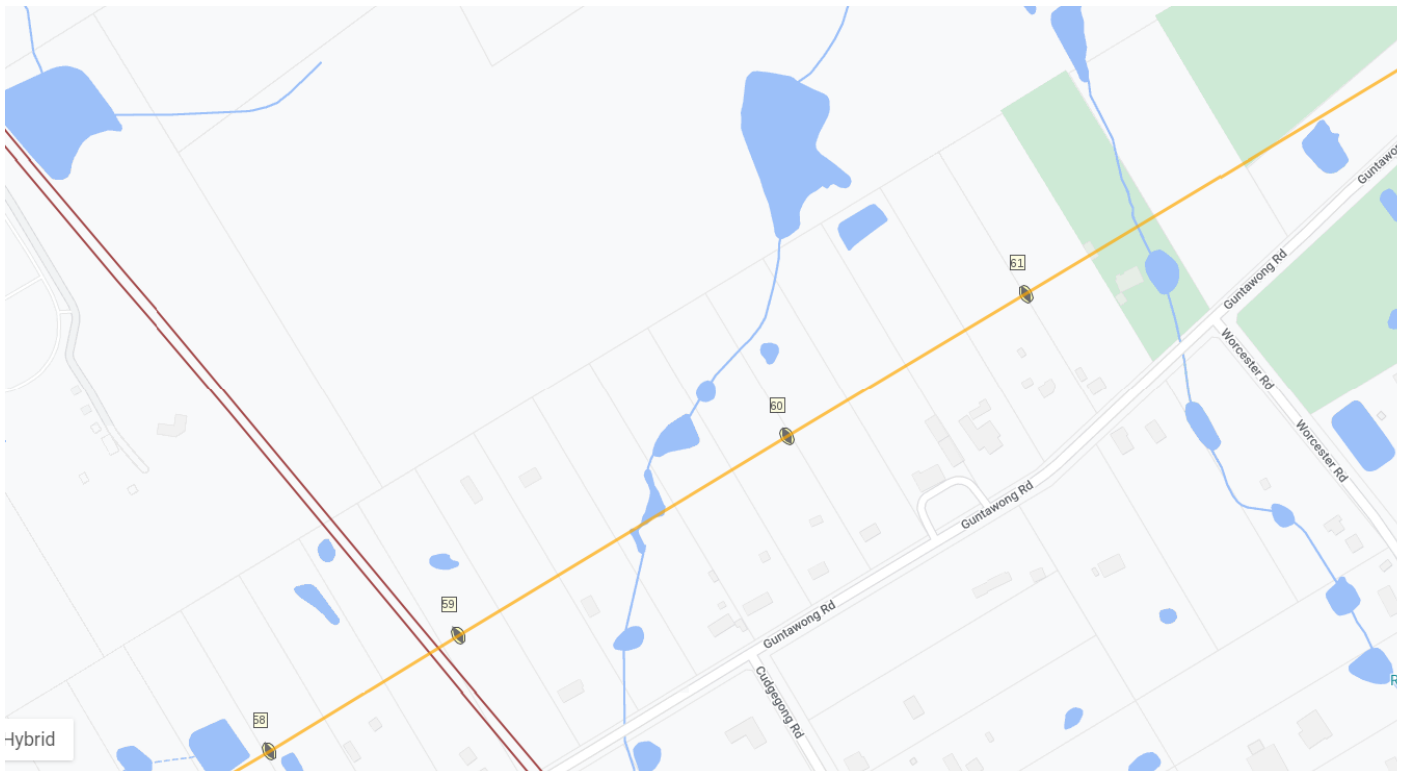
Appendix E TransGrid

Email Response

Louis Samuels

From: John Psarologos <John.Psarologos@lumea.com.au>
Sent: Monday, 17 July 2023 6:05 PM
To: Louis Samuels
Cc: Cameron Vella; Louise Collier
Subject: FW: Enspire - Riverstone East Development - Transgrid 330kV Overhead Asset Enquiry- TL 20 | Sydney West 330KV – Sydney North 330KV [Official]
Attachments: modification-enquiry-checklist-stage-1-Enspire 230705.pdf

Hi Louis, thanks for the enquiry about the potential network modification to TransGrid's 330kV transmission line (TL20 Str 558-62). Please note that undergrounding a small section of 330kV transmission line is not possible as its cost/time prohibitive, there are also requirements for extensive underground cable and transition station easements and the need for large transition stations at either end of the underground cable as well as extensive exclusion zones (outside of these cable easement/transition stations areas) to mitigate Earth Potential Rise risk.



TG Transmission Line No. 20 | Sydney West 330KV – Sydney North 330KV | Structure Span 58-62

In the meantime, it may be more feasible for your clients project to understand what can be undertaken within the existing Transgrid easement as opposed to relocating an existing high voltage transmission line. Please see link to Easement Guidelines

<https://www.transgrid.com.au/media/3tkdd5lr/easement-guidelines.pdf> If you wish to undertake a development/buildings within a Transgrid easement then please continue to liaise with the Transgrids Easement & Development team.

If this option doesn't work for your client, and you wish to pursue relocating the impacted TL to another easement (overhead-not underground) then please note that modifying TransGrid's transmission network to meet the individual needs of others is a significant task. Extensive planning, coordination, engineering and construction activities are required. The costs for all of these activities are borne by the party requesting the change including any prefeasibility consultancy work, scoping study and actual design/construction activities.

Also please note that for line modification projects, the customer is responsible for the following activities:

Project approvals including environmental and development approvals for the relocation of the transmission line (TL)

Community approvals for the relocation of the TL

Property acquisition for the new easement and new easement transferred to TransGrid.

All community and environmental liaison.

If you wish to pursue relocating the impacted TL to another easement (overhead-not underground), then we can issue and execute TransGrid's standard Modification Process Agreement (MPA) to undertake paid prefeasibility work with an initial estimate of \$30k (ex-GST) for the prefeasibility work). As part of the prefeasibility work, we will confirm that the relocation/proposed new TL route is possible, provide any technical design advice in relation to proposed new TL route/clearances and participate in any meetings. Note that TransGrid would require the following information and data as part of this network modification project-before we can commence prefeasibility:

New indicative easement route(s) for the relocated TL.

A detailed A3 sized map with site and route clearly labelled (if known). GPS coordinates, Google Earth, dxf or similar are required. Property boundaries, environmental approval project boundaries and land holder information should be included where possible.

Regards,
John

John Psarologos

Head of Energy Infrastructure

Lumea | 180 Thomas Street, Sydney, NSW, 2000

(02) 9284 3441 | 0409 945 252

John.Psarologos@lumea.com.au

lumea.com.au



Data Classification: Official

Data Classification: Official

From: Louis Samuels <louis.samuels@enspiresolutions.com.au>

Sent: Wednesday, July 5, 2023 10:32 AM

To: TransGrid Infrastructure Services <infrastructure@lumea.com.au>

Cc: Easements&Development <Easements&Development@transgrid.com.au>; Cameron Vella <cameron.vella@enspiresolutions.com.au>; Louise Collier <louise.collier@rhelm.com.au>

Subject: Enspire - Riverstone East Development - Transgrid 330kV Overhead Asset Enquiry

Hi TransGrid Modification Team,

I have been provided your details by Skye (apologies if I have misspelt your name) from the Easement & Development Team, after having a lovely phone call with her this morning. She recommended that I contact you with my queries.

In summary, we at Enspire would like to organise a meeting between TransGrid, Rhelm (our client) and the Department of Planning and Environment (stakeholder) in order to discuss potential options with realigning, undergrounding or building around a 330kV TransGrid asset within our site.

I have filled out the “modification enquiry checklist” and attached the relevant details. Please let me know if there is any additional information that I can provide.

Ideally, we would like to organise this meeting as soon as possible since we want to get an understanding of what we can and cannot do with respect to the asset. I am fully contactable either via this email or by phone [REDACTED]

I look forward to hearing from you and you have my thanks in advance.

Regards,

Louis Samuels
ASSISTANT PROJECT MANAGER



Address Level 4, 153 Walker Street, North Sydney NSW 2060

Email louis.samuels@enspiresolutions.com.au

Website www.enspiresolutions.com.au



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We are a learning organisation and would value your feedback. Could you spare 3 minutes?

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"COVID-19 UPDATE: TransGrid office personnel have transitioned to working remotely, staying home to keep our people and community safe while working to ensure that we continue to provide the support you need during these uncertain times. We appreciate staying connected is important so while face-to-face meetings have been suspended due to physical distancing requirements, we offer other ways for you to contact us, meet with us and access the people, information and resources you require." Please consider the environment before printing this e-mail.

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"COVID-19 UPDATE: TransGrid office personnel have transitioned to working remotely, staying home to keep our people and community safe while working to ensure that we continue to provide the support you need during these uncertain times. We appreciate staying connected is important so while face-to-face meetings have been suspended due to physical distancing requirements, we offer other ways for you to contact us, meet with us and access the people, information and resources you require." Please consider the environment before printing this e-mail.



Appendix F Jemena

Letter Response



27/07/2023

Jemena Gas Networks
(NSW) Ltd
ABN 87 003 004 322

Cameron Vella
Enspire
Level 4, 153 Walker Street
North Sydney
NSW 2060

Level 14
99 Walker St
North Sydney NSW 2060
PO Box 1220
North Sydney NSW 2060
T +61 2 9867 7000
F +61 2 9867 7010
www.jemena.com.au

Via email: Cameron.vella@enspiresolutions.com.au

Dear Cameron,

Riverstone Stage 3 Development Area

The Natural Gas network is located in the general vicinity of the Riverstone Stage 3 Development with Secondary Steel mains located in Garfield Road East, Clarke Street and Guntawong Road.

To supply gas to the proposed development significant network augmentation is required. These works would include the installation of a below ground Secondary Regulator Set to reduce the pressure from 1050 KPa to 210 KPa. The 210 KPa medium pressure can then be reticulated through the proposed development.

Our policy is to extend gas mains to all developments wherever possible, depending upon economic viability.

Due to the nature of this development a significant 3rd party contribution would be required prior to Jemena being able to install gas mains and connect any customers in this location.

Regards

Stephen Angel
Network Development Manager

02 9867 7034



Appendix G NBN

Meeting Minutes

Riverstone Stage 3 NBN Meeting Minutes # 1

Meeting Description: Riverstone Stage 3 NBN Meeting

Meeting Date: 04 May 2023

Location: Teams

Prepared by: Louis Samuels | Enspire

Name	Organisation	Initial	In Attendance	Apologies	Distribution
Cameron Vella	Enspire	CV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Louis Samuels	Enspire	LS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Greg Clifford	NBNco	GC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Elliot Weston	DPIE	EW	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Louise Collier	Rhelm	LC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Meeting Notes

Item	Description	Action	Due Date
1	CV introduced Riverstone Stage 3 with expected yield of 2300 lots.	Note	
2	CV confirmed major existing utilities plans are currently available (major trunks only). Granular utilities will be added and updated as part of the design process. LS to provide BYDA for NBN.	LS	
3	GC mentioned that NBN is interested in innovating and implementing various smart technologies (smart poles/smart bbqs).	Note	
4	GC confirmed they were active within Riverstone East and have capacity to service.	Note	
5	GC confirmed pricing at a per lot basis (\$600 per lot); pricing is flexible and can be made more competitive based on availabilities and scale.	Note	
6	Major NBN Riverstone exchange located near Riverstone High School. GC to confirm exact location.	GC	
7	NBN product has underground FDH housing which is cleaner and neater. Still the same service but is less susceptible to vandalism and traffic accidents.	Note	
8	This is an ongoing discussion. GC and EW were happy to go ahead. No further questions at this point in time.	Note	



7th July 2023

DPE C/- Cameron Vella
Enspire Solutions Pty Ltd

RE: NBN Telecommunications Infrastructure Feasibility – Riverstone Stage 3 (3,080 proposed lots)

Dear Cameron,

Thank you for the opportunity to discuss the above development with regards to the feasibility for **nbn** telecommunications services located in the Northwest Growth Centre.

The Telecommunications in New Developments (TIND) Policy and Statutory Infrastructure Provider (SIP) Framework ensures all Australian's can access fast broadband services regardless of where they reside. At nbn we are committed to providing world class digital connectivity across the country and are committed to providing value to property developers, prospective residents and business owners. When it comes to newly developed properties, it is critically important that broadband network infrastructure and services are arranged by the property developer as part of the property development process. When these arrangements are not made, people and businesses may move into newly developed properties and find themselves without access to applicable broadband services, in effect they may end up being "digitally stranded" for months while network deployment is arranged.

Subject to the support of government, developers and industry, nbn could support the growing connectivity needs of homes and businesses by:

- extending nbn's existing fibre footprint around the proposed area and building Fibre to the Premises (FTTP) for new developments at Riverstone Stage -3 which will give residents and businesses access to over 150 Retail Service Providers;
- providing nbn's flagship Business product, nbn™ Enterprise Ethernet, which offers symmetrical speed and priority data options ranging from 10Mbps to 10Gbps and dedicated 24x7 service support to service to meet our business customer's current and future requirements; and
- supporting smart place capability via nbn Smart Places which proposes to bring the power of the nbn network to outdoor locations, the places where people are spending more of their time and wanting to enjoy the benefits of smart devices, applications and solutions.
- creating value for Developers. Developers know and trust our brand. Building with nbn is an investment that is build today with capability far into the future.

NBN Co has a strong track record when it comes to supporting connectivity needs of new developments in Australia. Our dedicated and experienced nbn New Developments team has delivered network access to more than 1.2 million new development premises nationwide.

We would welcome the opportunity to further discuss our new development process with the chosen developer when appropriate.



Summary for Riverstone Stage -3 (3,080 proposed lots)

NBN have undertaken a preliminary Planning Assessment for this area which confirms our current live infrastructure has capacity and for any potential future capacity to service the proposal lots as advised. The Master Developer Agreement which the developer signs with **NBN** outlines the developer responsibilities which include, Pit & Pipe design & construction per stage. Each stage is inspected for compliance to **NBN** standards

Kind regards

Greg Clifford
Senior Account Manager, New Developments

M 0419 492 745

100 Mount Street, North Sydney, NSW, 2060

Louis Samuels

From: Greg Clifford <gregclifford@nbnco.com.au>
Sent: Thursday, 14 September 2023 8:25 AM
To: Louis Samuels
Cc: Cameron Vella
Subject: RE: Riverstone Stage 3 NBN Supply [Commercial - Anyone]

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Louis,

I have update the system and the increased volume has also been confirm with our Planning team that below increased numbers have been included and updated in their initial Planning assessment. Thanks Greg

Greg Clifford
Senior Account Manager, New Developments

M +61 419 492 745 | E gregclifford@nbnco.com.au
100 Mount Street, North Sydney, NSW, 2060



nbn acknowledges and pays respects to the traditional custodians of all the lands upon which we work.

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From: Louis Samuels <louis.samuels@enspiresolutions.com.au>
Sent: Tuesday, September 12, 2023 9:16 AM
To: Greg Clifford <gregclifford@nbnco.com.au>
Cc: Cameron Vella <cameron.vella@enspiresolutions.com.au>
Subject: RE: Riverstone Stage 3 NBN Supply [Commercial - Anyone]

EXTERNAL SENDER – Be cautious opening Links and Attachments

Hi Greg,

Due to some last-minute adjustments to the ILP, the proposed lots for Riverstone East Stage 3 have increased from 2,849 new homes (approx. 8,984 people) to 3,147 new homes (approx. 9,925).

Are you able to confirm if this increase has any measurable effect in the advice you have provided to date?

I have attached copies of the minutes from the meeting that was conducted and the letter of advice.

Regards,

Louis Samuels
ASSISTANT PROJECT MANAGER



Address Level 4, 153 Walker Street, North Sydney NSW 2060
Email louis.samuels@enspiresolutions.com.au
Website www.enspiresolutions.com.au



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From: Greg Clifford <gregclifford@nbnc.com.au>
Sent: Monday, July 10, 2023 11:48 AM
To: Cameron Vella <cameron.vella@enspiresolutions.com.au>
Cc: Louis Samuels <louis.samuels@enspiresolutions.com.au>; Louise Collier <louise.collier@rhelm.com.au>; Elliott Weston Weston <elliott.weston@dpie.nsw.gov.au>; Jason Stewart <jason.stewart@rhelm.com.au>; Evelyn Ivinson <Evelyn.Ivinson@planning.nsw.gov.au>
Subject: RE: Riverstone Stage 3 NBN Supply [Commercial - Anyone]

Hi Cameron,

See attached letter. Could you review and confirm the attached letter is ok or if you require any further information to be added. Thanks Greg

Greg Clifford
Senior Account Manager, New Developments

M +61 419 492 745 | E gregclifford@nbnc.com.au
100 Mount Street, North Sydney, NSW, 2060



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