S4

SEARs Infrastructure Requirements Report – HV Route Supplementary Assessment

NEXTDC

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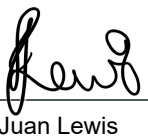
Author signature		Approver signature	
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1 Preface

1.1 Executive Summary

This supplementary report to the S4 SEARs Infrastructure Report has been prepared by Aurecon on behalf of NEXTDC Limited to accompany a detailed State Significant Development Application (SSDA) for the S4 data centre development at 16 Johnston Crescent, Horsley Park.

This report provides information regarding the dual 330kV feeders supplied from Transgrid's Sydney West Transmission Substation to support the proposed data centre development. The bulk supply point will be upgraded with two additional switching bays to accommodate these feeders. This report concludes that the proposed data centre development is suitable and warrants approval subject to the implementation of the following mitigation measures.

- Utility Crossing Designs as approved by Various utilities
- Acoustic and Vibration measures are put in place during construction to limit noise and vibration
- Air Quality impacts because of construction dust are mitigated and managed

Following the implementation of the above mitigation measures, the remaining impacts are appropriate.

1.2 Abbreviations and Glossary

HV	High voltage (330 kV)
kV	Kilo Volt
kW	Kilo watts
LV	Low voltage (415 V)
MV	Medium voltage (33kV)
MVA	Mega Volt Ampere
MW	Mega Watt
UG	Underground
no.	Number of

2 Introduction

2.1 Purpose of this supplementary report

This supplementary report to the S4 SEARs Infrastructure Report has been prepared by Aurecon on behalf of NEXTDC Limited to accompany a detailed State Significant Development Application (SSDA) for the S4 data centre development at 16 Johnston Crescent, Horsley Park.

The application seeks consent for construction and operation of a data centre development and includes site preparation works, bulk earthworks and infrastructure, and construction of the buildings, ancillary facilities, and associated works. This supplementary report covers the associated works related to the provision of the two 330 kV feeders to the Lot 305 Substation.

The key features of the supplementary works are as follows:

- Civil preparation works.
- Staged construction of 2.6km long backfilled trenches for the 2 off 330kV feeders from Sydney West Transmission Substation. This design and construction will be facilitated through Lumea, a subsidiary company of Transgrid.
- Staged construction of 2-4 joint bays, per feeder, where sections of cable would be joined together, located approximately every 600-800 metres along the transmission cable route; with link boxes and sensor boxes associated with each joint bay to allow cable testing and maintenance
- Construction of a new secondary systems building at Sydney West. This is envisaged as a modular prefabricated building to be placed on an existing laydown area. This design and construction will be facilitated through Lumea, a subsidiary company of Transgrid.
- Two new 330kV switch bays at Sydney West. This design and construction will be facilitated through Lumea, a subsidiary company of Transgrid.
- Extension of existing substation bench to include moving of the existing fence line and the access road. This design and construction will be facilitated through Lumea, a subsidiary company of Transgrid.

This report will outline the technical impacts of the proposal on the existing public utilities within the route. To satisfy the Secretary's Environmental Assessment Requirements (SEARs), this report contains the following information:

- Overview of existing utility services within the proposal boundary, including necessary protection measures.
- Description of infrastructure staging and delivery.
- Summary of any consultations undertaken with each service provider.

2.2 The Supplementary Works

The data centre is located at 16 Johnston Crescent, Horsley Park, within the Fairfield LGA, and is legally described as Lot 305 in DP1275011

Figure 2-1 shows the aerial alignment of the dual 330kV HV feeder route. The feeders will run from the two switch bays at Transgrid Sydney West Substation at 200 Old Wallgrove Road, Eastern Creek (Lot 2 in DP1226705), primarily within the road reserve, before entering Lot 305. Lot 2 contains the substation as well as open vegetated areas within the northern, southern and western portions of the site. As Transgrid (via Lumea) is delivering the works, impacts to their infrastructure are understood and accepted.

Figure 2-2 indicates the General Arrangement for the works in the Sydney West Transmission Substation. The Secondary Systems Building (SSB) will be a prefabricated modular building to be placed on an existing laydown area. The current access road and bench will be extended to the northeast corner to make way for the two additional switch bays. It us understood that these civil works fall in the property boundary.

Figure 2-1 Site Impact Footprint

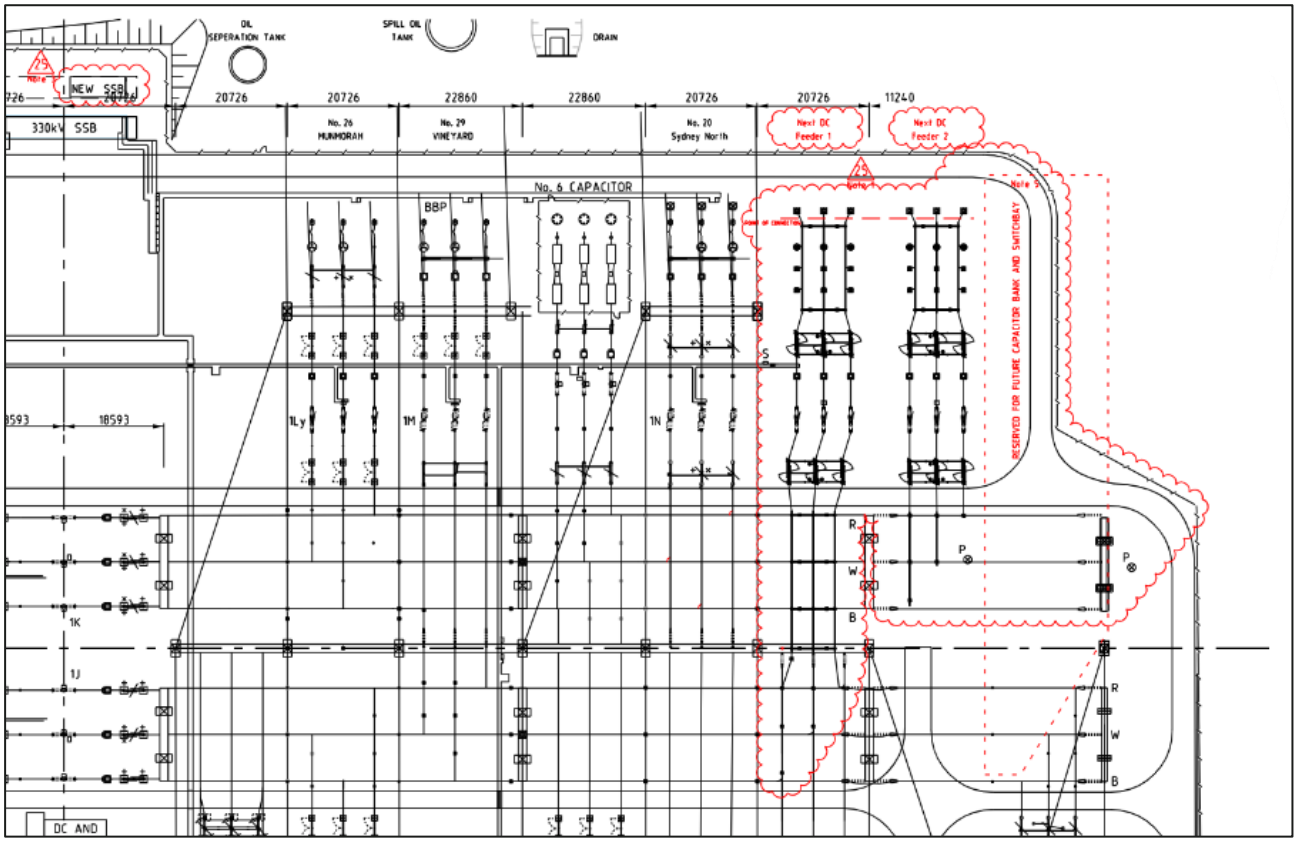


Figure 2-2 - General Arrangement at Sydney West Transmission Substation

3 Policy and Planning Context

This chapter presents the relevant regulation, legislation, and policy governing the management of public utilities as it relates to the proposal.

3.1 Legislative Context

3.1.1 Commonwealth Legislation

- Telecommunications Act 1997
- Security of Critical Infrastructure Act 2018

3.1.2 New South Wales Legislation

- State Environmental Planning Policy (Transport and Infrastructure) 2021
- Protection of the Environment Operations Act 1997
- Electricity Supply Act 1995
- Gas Supply Act 1996
- Water Management Act 2000

3.1.3 Guidelines

- Building over and adjacent to pipe assets, Sydney Water 2015
- Fire Safety guideline, access for fire brigade vehicles and firefighters, Fire and Rescue NSW (FRNSW) v05.01, November 2020

4 Methodology

This Chapter outlines the methodology used to define the baseline and undertake the environmental assessment of potential impacts of the proposal on public utilities including definition of the study area used as the basis of the assessment.

4.1 Study Area

The assessment area will be limited to the route identified, the surrounding roads and the Sydney West Transmission Substation property.

4.2 Method of Assessment

To address the project SEARs as well as any points raised by the public utilities, the following methodology was used.

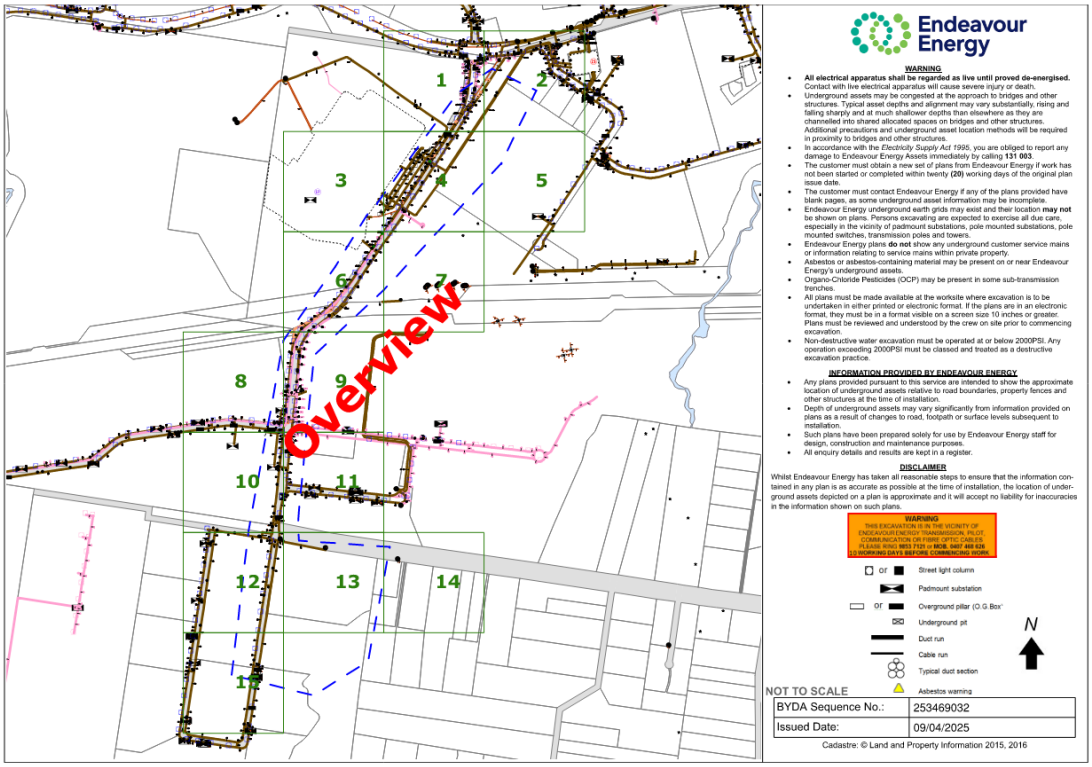
- Collate and review the latest Before You Dig Australia (BYDA) information, as well as any other publicly available utility data.
- Assess proposed route layout against any public utility infrastructure within the proposal route and identify any necessary diversion or protection works.

5 Existing Environment

5.1 Electrical Services

Within the proposed route there are extensive existing electrical services present based on BYD information from Endeavour Energy (refer to screenshot below). The strategy for delivery has Lumea (as a subsidiary of Transgrid) doing the design and construction of the route.

Figure 5-1 Coversheet of Endeavour Energy DBYD plan showing local assets



Engagement with Endeavour Energy has been initiated to allow for appropriate clearances. As Transgrid is doing the design and construction of the route, it is expected that the process will be completed before any construction commences.

As all the works within the Sydney West Transmission Substation will be procured and managed by Transgrid, through Lumea, it is assumed that impact on Transgrid's infrastructure will be catered to.

The project site (Lot 305) is located approximately 2km south of the Sydney West 330kV transmission substation. The surrounding Transgrid network operates at 330kV with outgoing feeders from the transmission substation. HV infrastructure is shown in figure below.

Figure 5-2 Aerial view showing HV Transmission Networks in proximity to the site

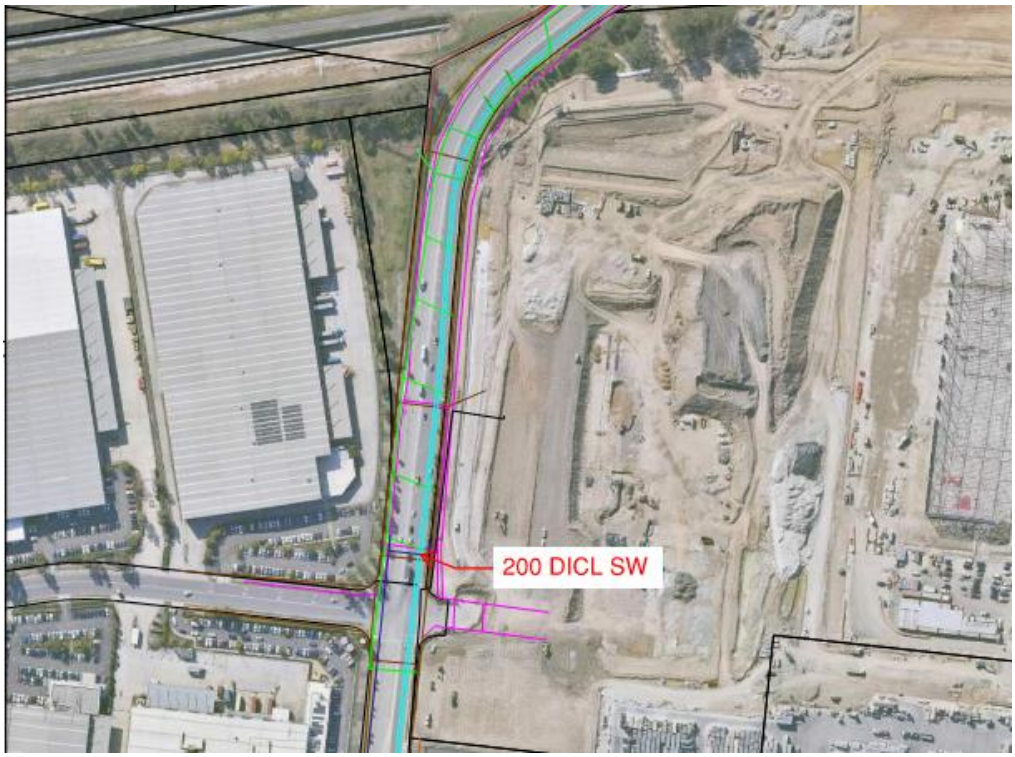
Transgrid transmission network (Source: S4 Site Appraisal Due Diligence Capacity Feasibility and Risk Report Rev 2, 15 Jun 21)

- Feeder 30 is Overhead line from Sydney West to Liverpool Transmission Substation
- Feeder 1F & 1C Overhead line from Sydney West to Holroyd Transmission Substation
- Sydney West Transmission Substation is Bulk Supply point for Endeavour Energy.

5.2 Water Services – Sydney Water

Based on BYD information from Sydney Water, the route crosses a 200 DICL and a 200 oPVC potable water main aling Old Wallgrove Road, a 450mm DICL potable water trunk main along the Burley Road and a 150 CICL potable water main at the North-West corner of the project site. The image below indicates the location of the existing Sydney Water asset.

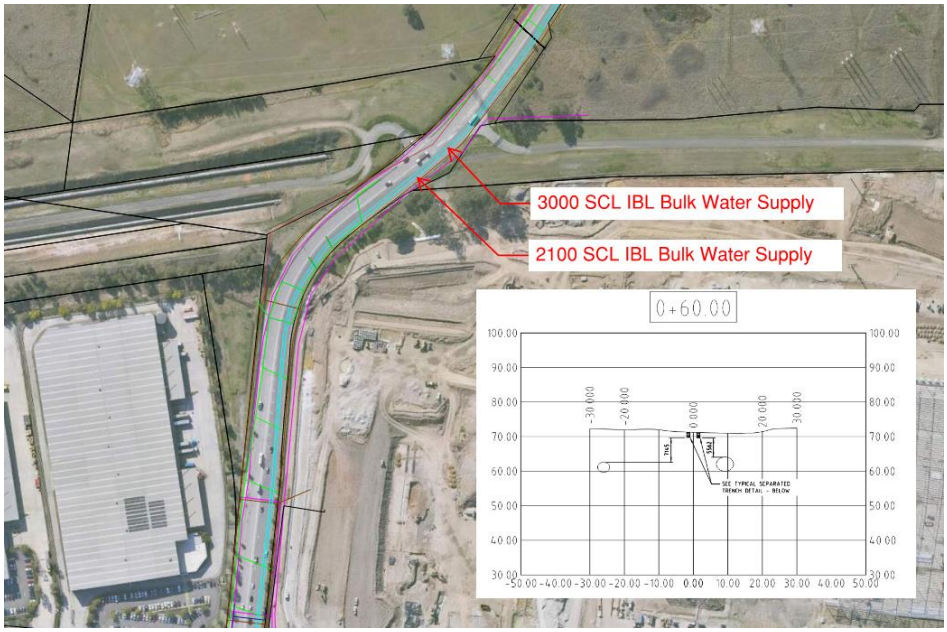
Figure 5-3 Water assets crossings along the route



5.3 Water Services – WaterNSW

Based on BYD information from Sydney Water, the route crosses a 3000mm and 2500mm Dia SCL IBL pipelines that serve as a connection between Warragamba and Prospect reservoirs. In principle agreement has been reached with WaterNSW regarding the crossing and as the crossings are more than 5.5m below the surface, the impact is considered minimal as long as the zone of influence and vibration management is applied during design and construction.

Figure 5-4 - Bulk Water Supply Crossing



5.4 Sewer Services – Sydney Water

Note: Refer to Sydney Water Report

Based on BYD information from Sydney Water, the route crosses a 375mm GRP concrete encased and a 225mm PP concrete encased sewer main. The image below indicates the existing Sydney Water Sewer asset.

Figure 5-5 Sewer Assets in proximity to the site

5.5 Gas Services

DBYD information received from Jemena shows a high-pressure gas pipeline (1050kPa) running along the Northern boundary of the LOT305 site (future Burley Road extension). Jemena deems this as a secondary mains and hence does not require a Pipeline Hazard Assessment as per AS 2885. The utility has requested an Electrical Hazard Assessment as per AS4853 that will be developed during the detail design of the crossing.

Figure 5-6 - Jemena assets along the crossings

5.6 Existing Stormwater Assets

There are multiple stormwater crossings along the route. Engagement with Blacktown Council is ongoing with regards to crossings.

5.7 Traffic Signals

Refer to the Traffic Report for information regarding Traffic Signals.

6 Assessment of Potential Construction Impacts

6.1 Electricity

There will be impact to local electrical crossings on the route. Measures to avoid impact and damage to electrical services will be developed during detail design and implemented according to utility requirements and coordinated with the relevant construction teams

6.2 Water Supply

There will be impact to local water supply crossings on the route. Measures to avoid impact and damage to these services will be developed during detail design and implemented according to utility requirements and coordinated with the relevant construction teams

6.3 Sewerage

There will be impact to local sewer crossings on the route. Measures to avoid impact and damage to these services will be developed during detail design and implemented according to utility requirements and coordinated with the relevant construction teams

6.4 Telecommunications

There will be impact to local telecommunications crossings on the route. Measures to avoid impact and damage to these services will be developed during detail design and implemented according to utility requirements and coordinated with the relevant construction teams

6.5 Gas

There will be impact to local gas crossings on the route. Measures to avoid impact and damage to these services will be developed during detail design and implemented according to utility requirements and coordinated with the relevant construction teams

As part of construction, the contractor will need to follow Jemena procedures for working in proximity to high pressure gas mains. The contractor will be responsible for the following:

- Preparing a suitable plan in accordance with the Jemena guideline “Designing, Constructing and operating assets near Jemena gas pipelines” (GAS-960-GL-PL-001),
- Submissions and obtaining the necessary approvals from Jemena.
- Arranging for a pipeline operator from Jemena to be present as required by the proposed plan and approvals.

7 Summary of Residual Impacts

This section provides a summary of construction risks and operational risks, both pre-mitigation as well as residual following implementation of the management measures described in earlier sections. These are summarised in the table below.

Potential Adverse Impact	Relevant Management Measures	Potential Residual Impact	Commentary around management of residual impacts
Construction			
Spills/ leakages from on-site storage of effluent during early construction phases.	On-site storage tanks such as septic tanks will be in accordance with the relevant Australian Standards	Low risk of spillage during waste loading to tanker.	Contractor to use a licensed and certified waste disposal company, as well as providing relevant SWMS for filling operations. Storage tanks to be regularly inspected during operation for damages that may cause leakage.
Damage to high pressure gas line adjacent to site	Contractor to prepare a plan in accordance with Jemena procedures for working near pipelines, and have it approved by Jemena. Contractor will arrange spotters with Jemena as necessary during construction.	Low risk of damage to pipeline by construction works.	Contractor to ensure the Jemena approved plan is followed during construction to minimise residual risk.
Damage to critical infrastructure	Use of utility approved processes and procedures to ensure damage to existing assets are to be mitigated	Low risk of damage to assets by construction works	Specialist engineering assessments to be developed before construction commences to align with utility requirements
Construction Noise exceeds the noise management level	Construction Noise Management plan to be followed to ensure that levels are not exceeded.	Low risk of exceeded noise levels due to construction period	Contractor to ensure compliance to the Construction Noise Management Plan.
Operation			
None identified			

8 References

- Australian Rainfall and Runoff, 2016. Australian Rainfall and Runoff.
- Environmental Protection Authority, 1997. Managing Urban Stormwater:
- Council Handbook.
- NSW Government, 1997. Protection of the Environment Operations Act.
- NSW Government, 2021. State Environmental Planning Policy (Transport and Infrastructure).
- NSW Government, 2009. State Environmental Planning Policy (Western Sydney Employment Area).

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