SUMMER DEMAND FORECAST

Asset Management and Operations

2023 – 2032

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Peter Langdon
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CONTENTS

1 EXECUTIVE SUMMARY

This edition of the summer forecast document has been substantially restructured compared to previous editions. A new section for load area forecasts has been added to formally document load area plans used in the development of area plans and cases for investment for new zone substations. The detailed network demand forecast has been maintained as has been historically produced, as this serves a number of operational purposes.

Endeavour Energy has been experiencing growth in customer connections in many 'greenfield' developments, particularly in Western Sydney. In addition to this, Endeavour Energy is experiencing growth in both data centre connections and increased load applications from existing data centres. This is driving the need for establishment of new infrastructure to enable customers to connect. At the same time, growth in the adoption of residential and commercial rooftop solar is driving negative growth in most established 'brownfield' areas. Although system aggregate demand is often a poor indicator of spatial requirements for investment, the chart below emphasises the connections growth element of the demand forecasts compared to the baseline forecast of existing assets. The following charts provide some further clarity on the spectrum of lot releases, spot loads and data centres. Visibility of the growth spectrum decreases towards the end of the ten-year horizon.

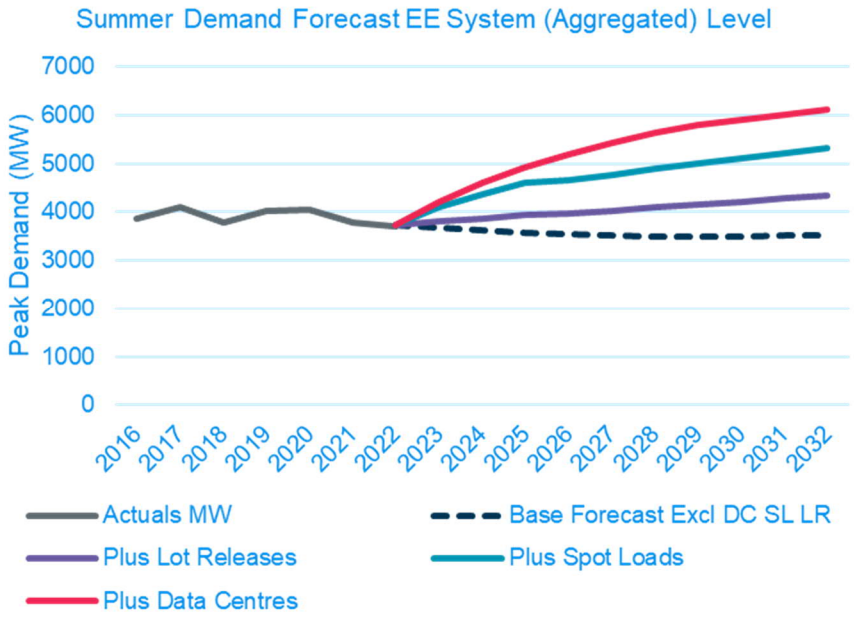


Figure 1 - System aggregate demand - distinguishing between baseline negative growth and types of new connections

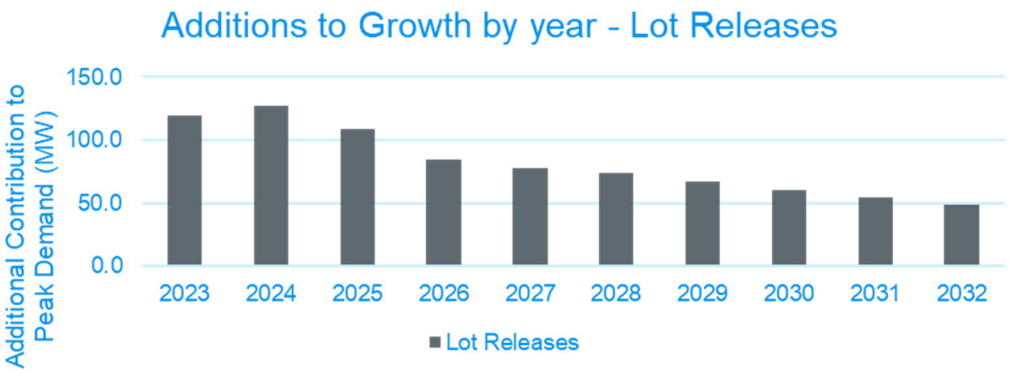


Figure 2 - Additional growth - Lot Releases

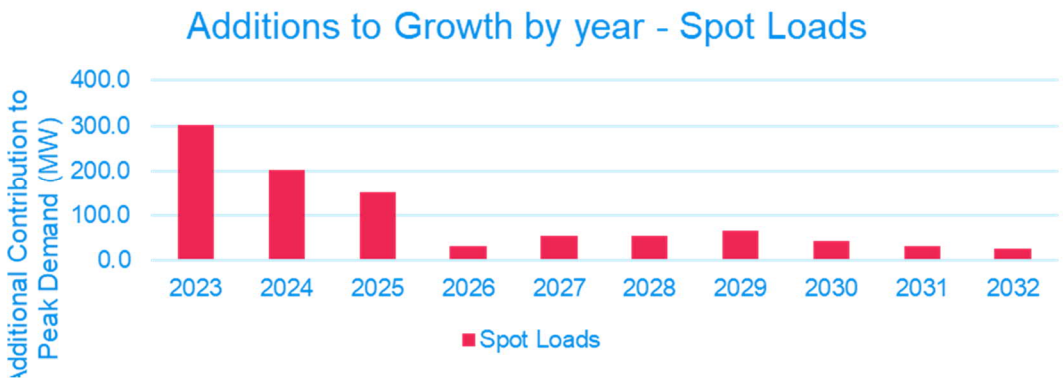


Figure 3 - Additional Growth - Spot Loads

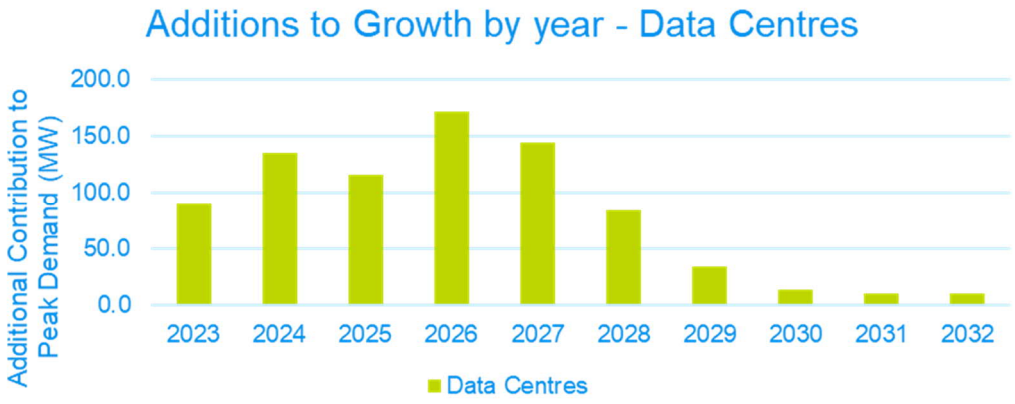


Figure 4 - Additional Growth - Data Centres

For the detailed network demand foreast, a forecast of expected summer maximum demands for the ten-year period of 2022/2023 to 2031/2032 has been developed for Endeavour Energy's zone substations and sub-transmission substations. These forecasts are produced for each zone substation and includes details of the demand drivers. The zone substation forecasts are aggregated to develop the sub-transmission substation forecasts which are then further aggregated to generate bulk supply point and total Endeavour Energy aggregated diversified forecasts. The detailed network demand forecasts in this document are presented after the impacts of post modelling adjustments (Photovoltaics and batteries, Electric Vehicles and chargers, and the Energy efficiency Savings Scheme) have been taken into account. The contributions PMA adjustments make to each zone

substation is tabulated in Appendix 2. The following chart (Figure 5) outlines the aggregate peak PMA impacts or contributions at the zone substation level occurring at different times of the day, regardless of when zone substation peaks occurred. Figure 6, on the other hand illustrates the aggregate contributions at zone substation level at 6pm when zone substation peaks are most likely to occur.

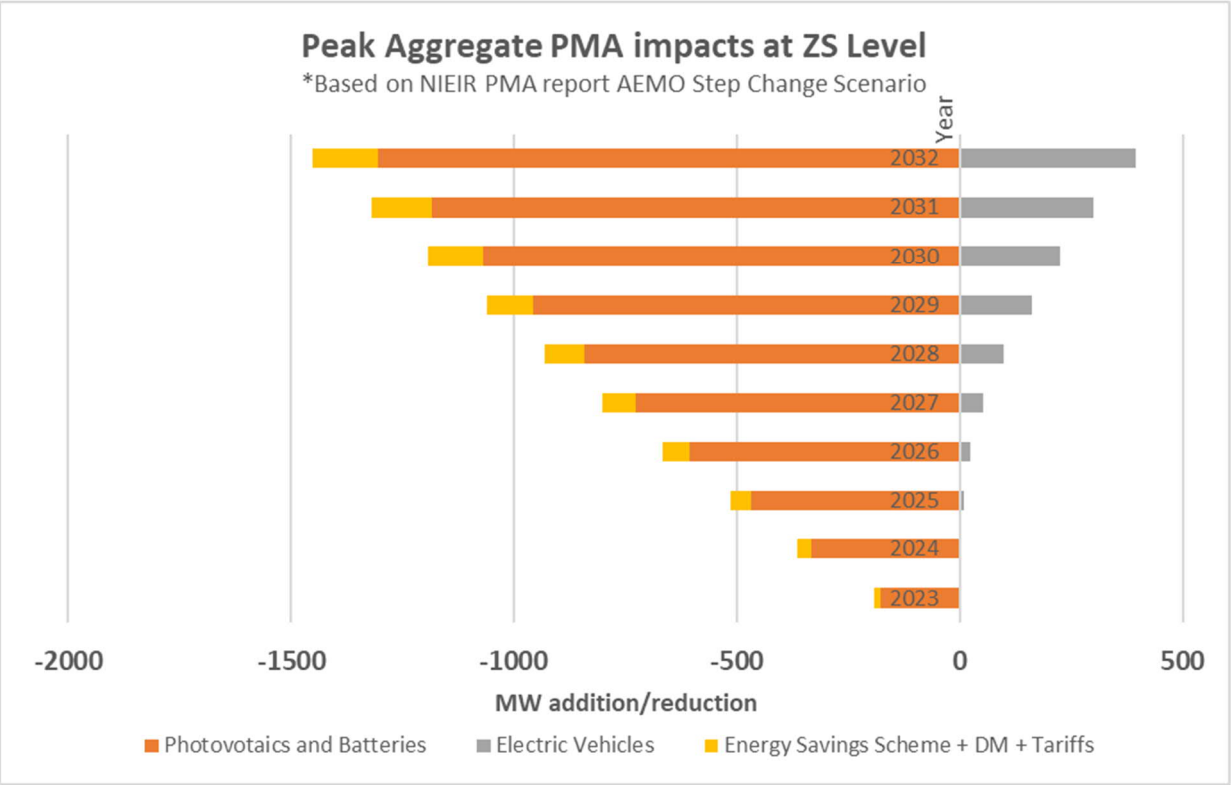


Figure 5 - Aggregate PMA impacts at ZS Level

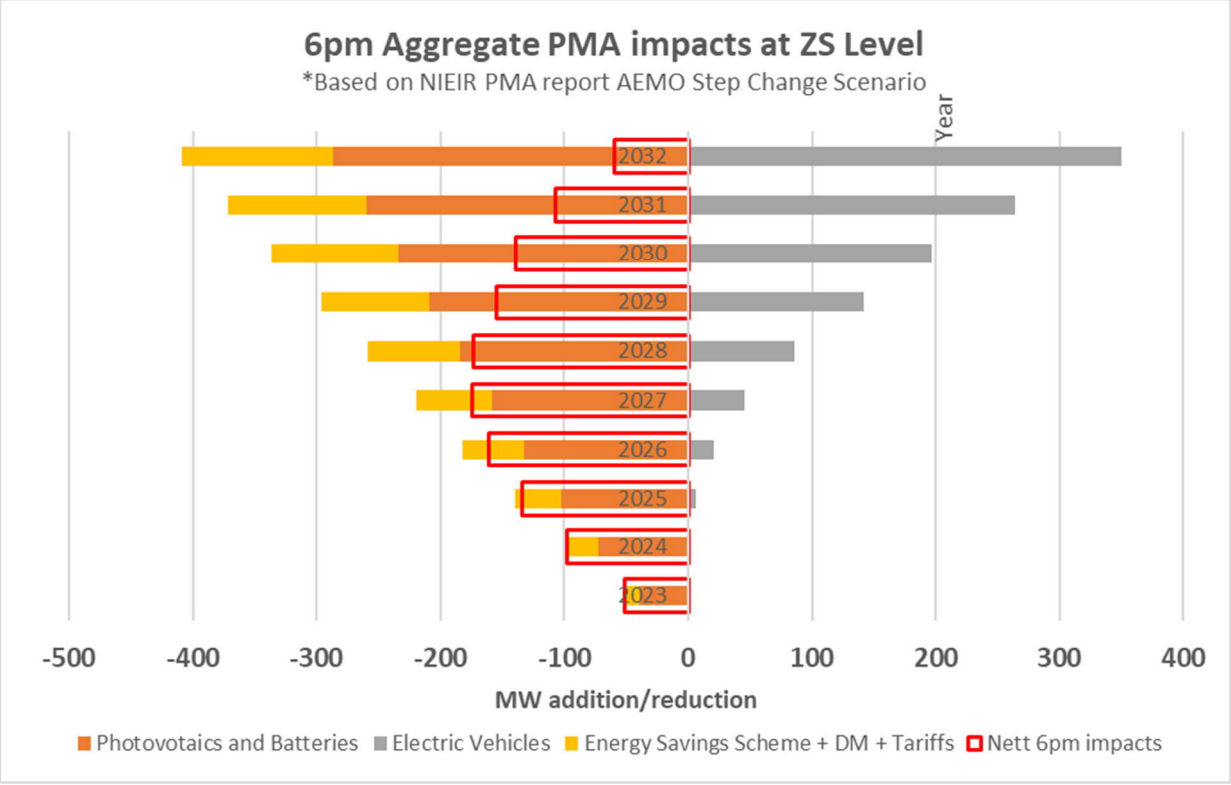


Figure 6 - Aggregate PMA impacts at 6pm

This summer demand forecast has identified a range of growth rates for the 171 Endeavour Energy zone substations. This includes proposed zone substations but not customer only substations and are summarised below:

Growth Rate Category (%)	2022 Number of Zone Sustations	2022_2031 Forecast to Exceed Firm Capacity in 10 years	2023_2032 Forecast to Exceed Firm Capacity in 10 years
Negative/or Zero growth rate	30	1	1
Growth rate between 0.1% and 2%	85	10	12
Growth rate between 2.01% and 5%	29	7	4
Growth rate greater than 5%	27[#]	17	22
TOTAL	**171**	**35**	**39**

 # Includes 5 proposed substations

A number of zone substations, particularly those with 'mature' catchment areas have an underlying negative growth trend due to a range of technology related factors such as increasing energy efficiency and adoption of solar and batteries. As discussed earlier, known technological impacts are modelled in Endeavour's forecasting methodology to incorporate updated post model adjustments (PMA) figures. This incorporates demand reduction into the zone substation forecast regardless of other external factors, and where impacts are presently significant or forecast to be significant, negative growth rates are forecast for the zone subsations concerned. Other socio-economic factors such as reducing household sizes, reducing suburb populations, and increasing price sensitivity may result in negative growth rates as well.

As can be seen there are 27 zone substations with growth rate greater than 5% per annum of which 17 (including proposed substations) are located within the greenfield development areas. There are also 28 with growth rates between 2% and 5% of which are brownfield development areas.

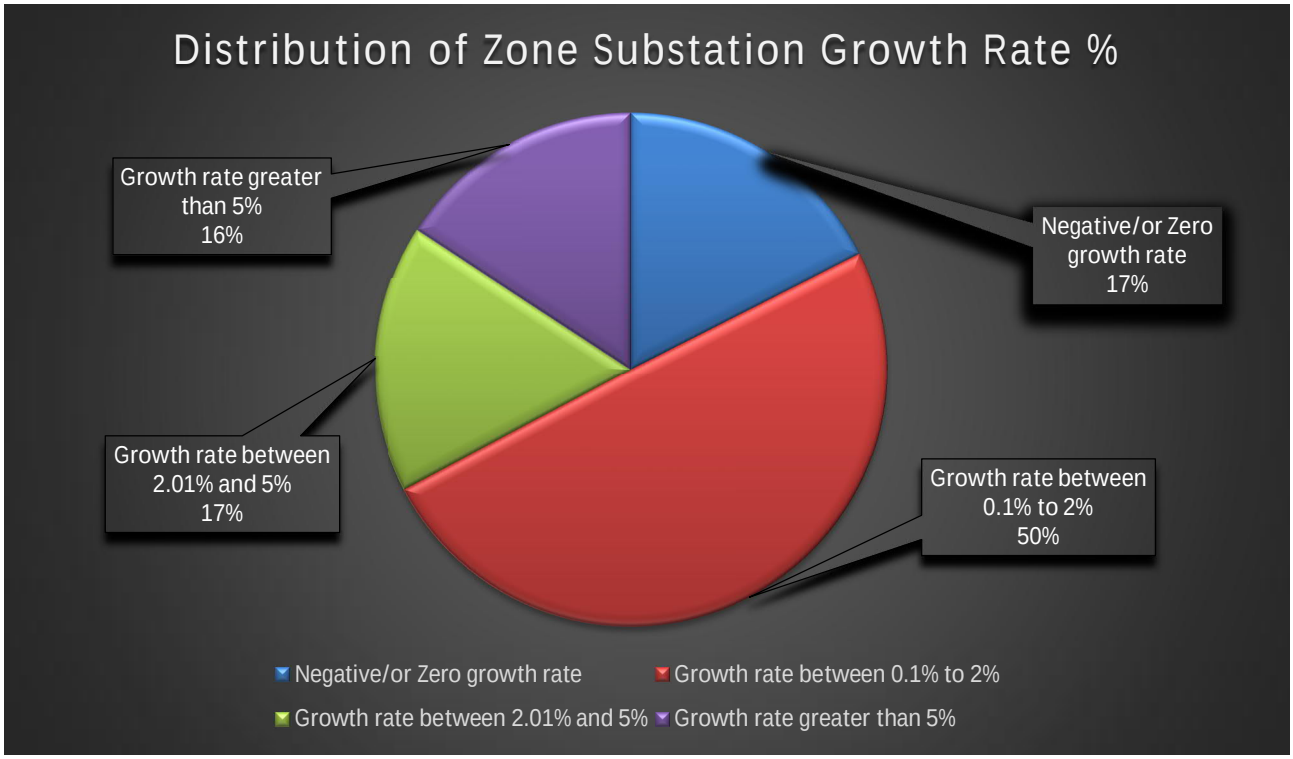


Figure 7 - Distribution of Zone Substation Growth Rates

The forecast has identified a number of network substation assets that will approach their firm capacity rating within the next ten years. This includes 19 zone substations (including proposed substations) which are in greenfield development areas and 21 zone substations in brownfield areas. Twenty-two of these substations, that will reach their firm rating (including proposed substations), have a growth rate greater than 5%. The sub-transmission substations and sub-transmission lines that will also reach firm rating within the 10-year horizon of the forecast will be detailed in the Transmission Network Planning Review following review of the network capability in the light of this latest forecast data.

Significant greenfield demand growth is created by the development of the Western Sydney Aerotropolis, which includes the airport at Badgerys Creek, and the large surrounding residential, commercial and industrial areas planned to support the Greater Sydney Commission's vision of a 'third city' for Sydney with a potential 200,000 jobs and 100,000 dwellings. Our network's greenfield development areas include the North West and South West priority growth areas in Greater Western Sydney which are projected to accommodate 500,000 new residents, the equivalent to two cities the size of Canberra and Wollongong, over the next 30 years. These priority growth areas are the result of the biggest coordinated greenfield land release in the state's history. Additionally, there is also growth occurring as part of the Western Sydney Employment Area, Greater Macarthur Priority Growth Area and the West Lake Illawarra Growth Area. Growth in these regions, and the new assets required to service this growth are discussed in the relevant Area Plans. The Load Area Forecasts Section (Section 4) contains the precinct and asset forecasts relating to these Area Plans.

Section 6 contains the detailed network forecasts, pertaining to mostly existing assets, and are presented on a temperature corrected 10% and 50% Probability of Exceedence (PoE) basis.

Recent Summer Conditions

Endeavour Energy Network System aggregate total demand for the 2022 summer peaked at 3,716 megawatts (MW) at 3:30 pm on 1st Feb 2022 (Tue). The expected 50 PoE (50% probability of exceedance) demand on an aggregate level was 3904MW. The maximum temperature at Richmond recorded 34.8ºC on the day of peak. This was the third highest daily maximum temperature recorded at Richmond for the 2022 summer but is considerably lower than what might be considered a peak temperature associated with a 50 PoE demand. A significant factor in lower-than-expected aggregate demand values has been the continuing La-nina weather phenomena and the associated cooler and wetter conditions over the last two summers.

2 FORECASTING METHODOLOGY AND INPUTS

2.1 INTRODUCTION

The key uses for the the ten-year demand forecast are as follows:

- Provide visibility of likely asset investment decisions for new largely unserviced areas ('greenfield') requiring new assets to enable new connections to be made to the network.
- Provide visibility of likely asset investment decisions for augmentation of the existing network to service expanding 'greenfield' areas as well as older areas undergoing redevelopment
- Initiate and provide supporting evidence for asset investment decisions for augmentation of the existing network to cater for growing 'organic' growth in the network owing to existing customers increasing their usage.
- Provide insight for planning for the-long term technical adequacy of the network in terms of ability to service the load growth indicated in the forecast using existing assets and detailed technical planning requirements for new assets.
- As a reference when planning for operational requirements, particularly in the short term (one or two years ahead).
- Informing TransGrid's investment and operational requirements at the Bulk Supply Point level and upcoming large spot loads.
- As a reference when considering remaining capacity for planning decisions to address what additional loads can be accodated within catchment areas of the existing network, particularly zone substations.

A conceptual overview of the relationship between various forecast inputs and the need for augex investment is presented in Figure 8.

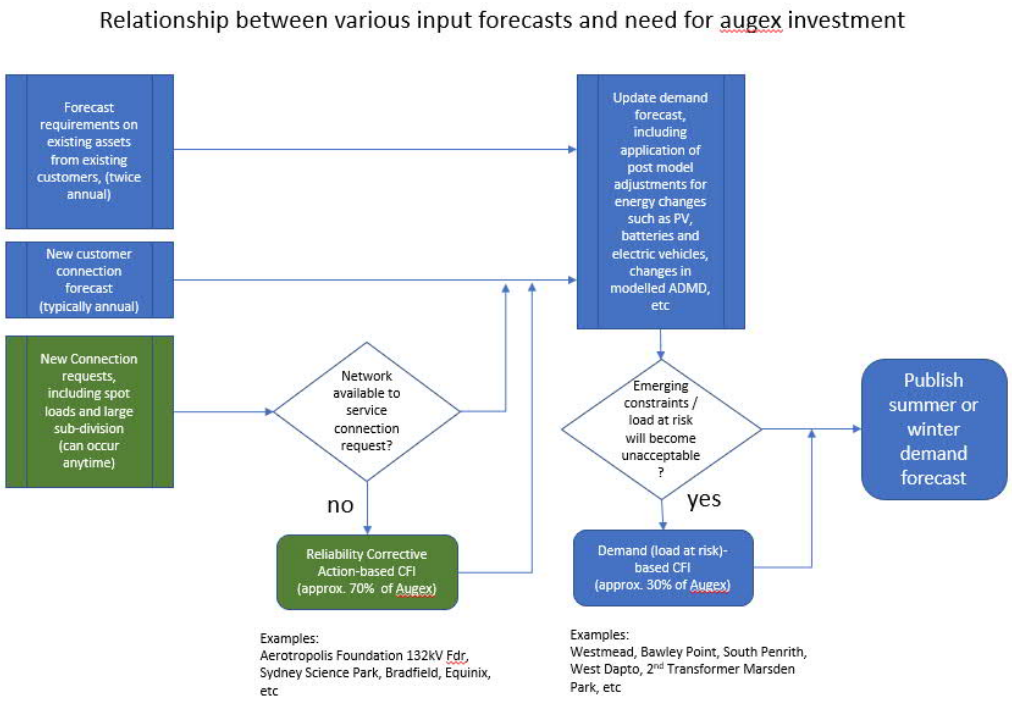


Figure 8 - Conceptual overview of the role of Demand Forecasts in Investment Decisions

Asset investment decisions for new assets in ‘greenfield’ areas have traditionally relied on Area Plans and associated forecasts which have existed separately. These forecasts have often been only informally documented and have been separately revised closer to the time of investment. These forecasts have not traditionally been well documented in the iterative summer and winter demand forecast documents, resulting in some discontinuities between forecasts used for asset investment decisions in ‘greenfield’ areas and the formal summer and winter forecast documents. Other uses of the forecast document listed above have been met with the summer and winter forecast documents.

This iteration of the summer demand forecast is the first edition where the load area forecasts for asset investments occurring over the next ten years is documented. Hence, the document is essentially divided into a section relating to Load Area Forecasts, and a section pertaining to detailed network demand forecasts, the latter being essentially well documented traditionally. A conceptual overview is presented in Figure 9.

Figure 9 - Conceptual Overview of Forecast

The Load Area forecasts addresses the need to document investment drivers and ensuring sufficient connection capacity is available ahead of time.

Detailed Network Demand Forecasts addresses the need to flag augementation requirements for existing assets as well as service operational purposes and ensuring supply security is not compromised.

The question of including a proposed zone substation in the traditional existing asset-based forecast has at times been driven by an imminent perceived need for a zone substation whereas the approach used at other times has been to allocate new greenfield growth to existing substation assets in adjacent precincts. Often both approaches have been used in the traditional forecast. The inclusion of area plan forecasts, with clearly demarcated new greenfield load allocations, will address some of the confusion that arises when dealing with new proposed zone substations and provide the basis for how the forecast load has been derived.

EE has a number of new and proposed substations in various stages of the approval and construction process. We are in the process of adopting a convention of only including substations into the detailed network forecasts, which focuses on existing assets, when the RIT-D process has commenced for a particular project.

In addition to the above, there are emerging needs that the current demand forecast document does not currently address. These include:

- Distribution Feeder and distribution substation forecasts arising from a need to evaluate solar hosting capacity.
- Minimum demand forecasts arising from operational issues driven by increased PV penetration.
- Scenario analysis arising from adoption of various AEMO ISP scenarios.

2.2 OVERVIEW OF METHODOLOGIES

A summary of the combined processes associated with the demand forecasts is presented below in Figure 10. Forecasting inputs and pathways to key end uses are presented in Figure 11.

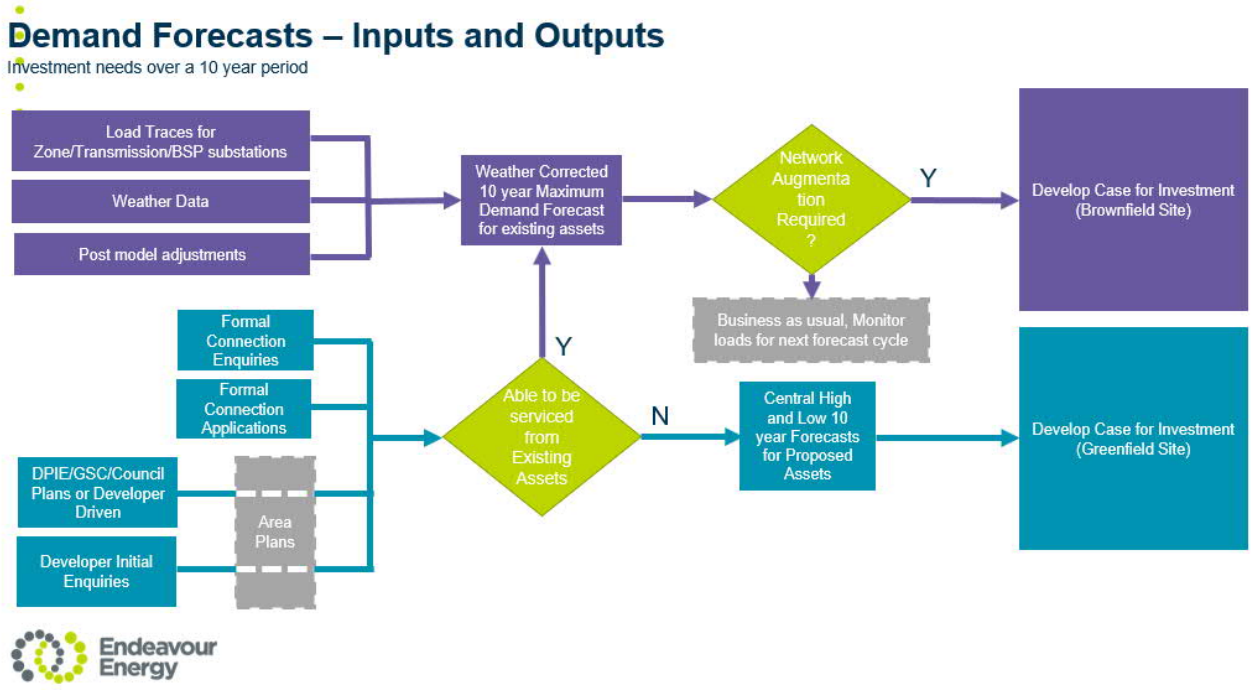


Figure 10 - Conceptual Summary of the Demand Forecasting Process

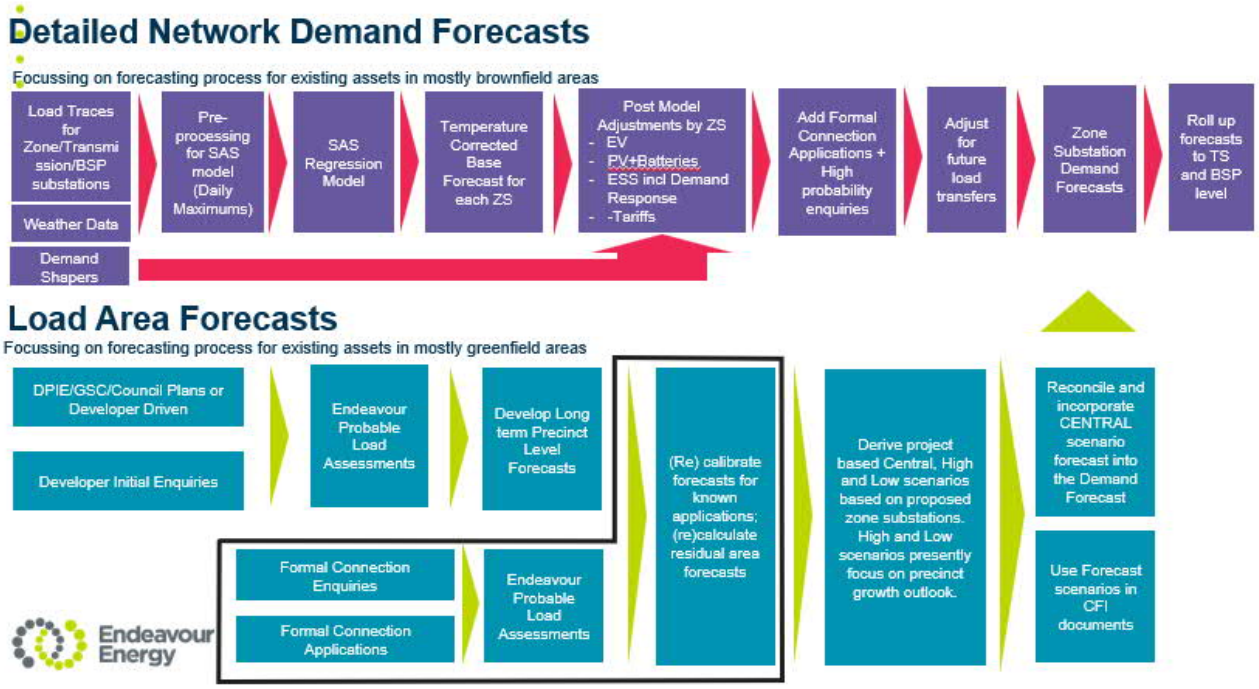


Figure 11 - Forecasting inputs and pathways to Key End uses

2.3 SPATIAL FORECASTING METHODOLOGY

The Load Area forecasts are in indication of the ultimate load that will need to be serviced within the boundaries of the Area Plans. Area plans exist or are being developed for the following broad areas within the Endeavour Energy network area. While reasonable effort has been made to align this with Department of Planning and Environment priority growth areas, some boundaries may be out of step with the Department of Planning, particularly those where further investment by Endeavour Energy is considered minimal.

The area plans currently under consideration are:

- Western Sydney Aerotropolis
- North West Sector
- Greater Parramatta and Olympic Peninsula – with emphasis on the Westmead Health and Education Precinct
- South West Sector
- Wilton
- Greater Macarthur Area
- West Lake Illawarra

The Load Area Forecast for a given Area Plan is undertaken once for each Area Plan on an as required basis, and then updated regularly as new information comes in. Incorporating a version of the area plan forecasts into the Winter and Summer Demand forecasts provides the linkages between existing and planned assets and establishes a clear line of sight between planned future investments and demand forecasts, particularly for new greenfield areas where the driver for investment is establishing connection capacity before any consideration is given to meeting rising peak demand.

A brief description of the Load Area Forecasting process follows:

The process starts with a consideration of government precinct plans (DPIE, GSC, Councils) or in the case of proponent-initiated planning proposals, direct consultation with developers or Councils as the case may be.

High level demand calculations are performed on the basis of numbers of residential dwellings in the case of residential developments, and for the cast of employment lands, either building floor space, if known, and known spot loads or developable land area if no other information is available. These estimates are refined by discussions with developers as they negotiate the planning system; (typically developers have a closer appreciation of the development yields for their particular developments; however, their staging and timing is usually optimistic. The development rates provided by developers are assessed by Endeavour, and adjustments are made based on Endeavour's experience.

High level forecasts for the given area or sub-area are developed, and this incorporates a minimum of three growth scenarios - a central case and high and low growth scenarios, based on the above assessment and Endeavour's probabilistic estimate of likelihood of development progressing at the stated levels in particular years.

At this time, assessments of meeting demand for the first stages from existing assets is made, and communication of a method of supply may include providing for the first stages of a development from existing assets that are close by and have capacity. Communication about longer term supply

arrangements for the full development, such as the requirement of a zone substation, is also made at this time. This would be on the basis of formal enquiries received from proponents.

Once enquiries are converted to applications by proponents, application fees paid, and service providers appointed, this gives Endeavour Energy a very high certainty that the connection will proceed. The uncertainty at this point, for all practical purposes, only lies in the extent to which the load applied for will materialise and the timing of it.

Endeavour Energy monitors development rates in terms of subdivision and connection applications coming through and using this to inform the area plan forecast assessments. Not all of the load applied for actually eventuates so a 'load realisation factor' (default of 80%) is applied to all applications. In recent times a lower load realisation factor has been applied during the COVID years to account for a slower economy.

A diversity factor is also applied for individual loads or load groups based on an assessment of contribution to an aggregated (usually zone substation) peak demand.

Where appropriate, a fourth 'scenario' is now incorporated to increase visibility of what customers actually applied for (ie forecasts with no reduction or diversity factors)

Ensuring there is sufficient flexibility in timing of investments to cater for the range of scenarios; and using demand management tools to manage this uncertainty.

In concept, as load applications are received, the established area plan forecast is modified on the basis of known load values for particular parcels of land. Load for the remaining area is then re-calculated based on generic load density values. Generic load density values would in turn be updated as more data becomes available for a particular area.

In considering the Load Area Forecasts, both existing and proposed assets have therefore been considered. A description of each Area Forecast below contains a list of all existing assets within the area (or assets that may not be strictly within the area, but play a role in servicing some initial stages of new development for the area).

As area plan forecasts may be at different stages of development at a given point in time, the area plan forecasts presented in this section are not necessarily at a uniformly consistent stage of development. This is noted in the relevant sections below.

A summary of the validation process for the area plan forecasts is given in Figure 12.

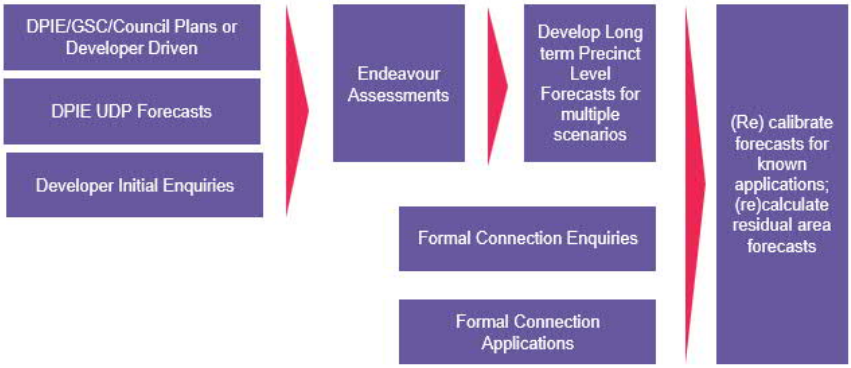


Figure 12 - Area Plan forecast validation process

2.4 DEMAND FORECASTING METHODOLOGY

2.4.1 Introduction

Peak demand forecasts are produced for both the summer and winter seasons. Summer is defined as the 5-month period between November and March while winter consists of the 4-month period from May to August. The forecast method is based on a bottom-up approach and provides maximum MVA, MW and MVAr loads and Power Factor for summer and winter peak periods for the next ten years. The forecasts include loads on each zone substation and major customer zone substation, sub-transmission substation, EE/TransGrid's Bulk Supply Points (BSPs) and the EE's total.

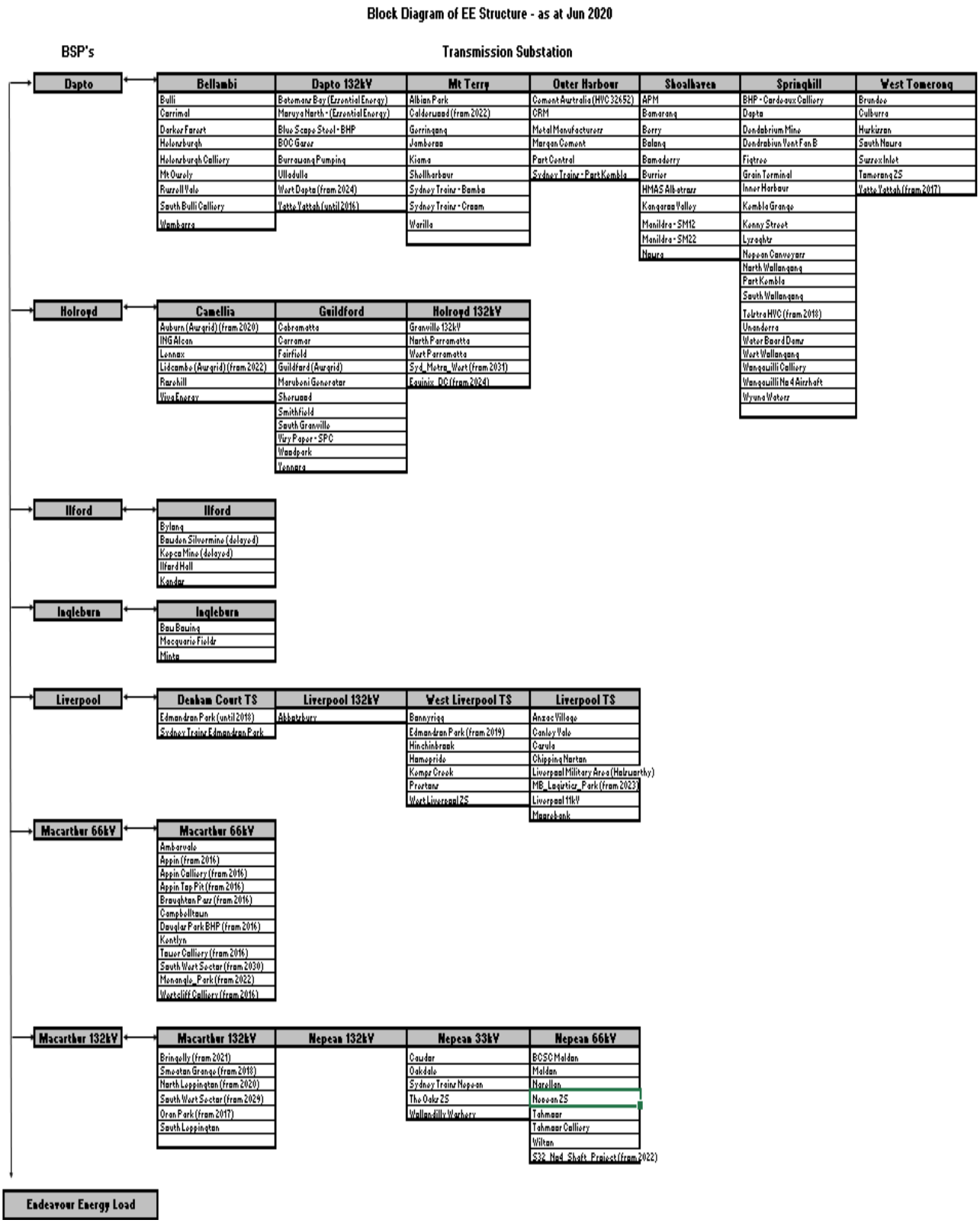
The forecasts consider planned load transfers, spot loads, land releases and re-development in the area under consideration. Embedded generation connected to the network is incorporated in the calculation of maximum demand forecasts.

For forecasting purposes, the most important days are those with the highest demand. The summer demand is most likely to peak on weekdays with high maximum temperatures while the winter demand generally peaks on weekdays corresponding to low 6 pm temperatures.

Historical and forecast peak demands at the EE Total, Bulk Supply Point Sub-transmission Load area, Sub-transmission Substation and Zone Substation levels are corrected to 'normalised' figures that represent a specific weather condition. Temperature Corrected Maximum Demand (TCMD) is the estimate of the likely peak demand that could be expected in the reference conditions with 10% and 50% Probability of Exceedence (PoE). The forecasts provide both undiversified and diversified values where metering is available.

The block diagram shown in Section 3.1.1 illustrates the hierarchical structure of the forecast and the manner in which the metered loads are progressively aggregated to create an EE total. This forecast could be used to identify the system constraints at the zone substation level and above. The 10-year forecast sets the path for the 10-year capital and demand management expenditures for EE.

2.4.2 Network topology



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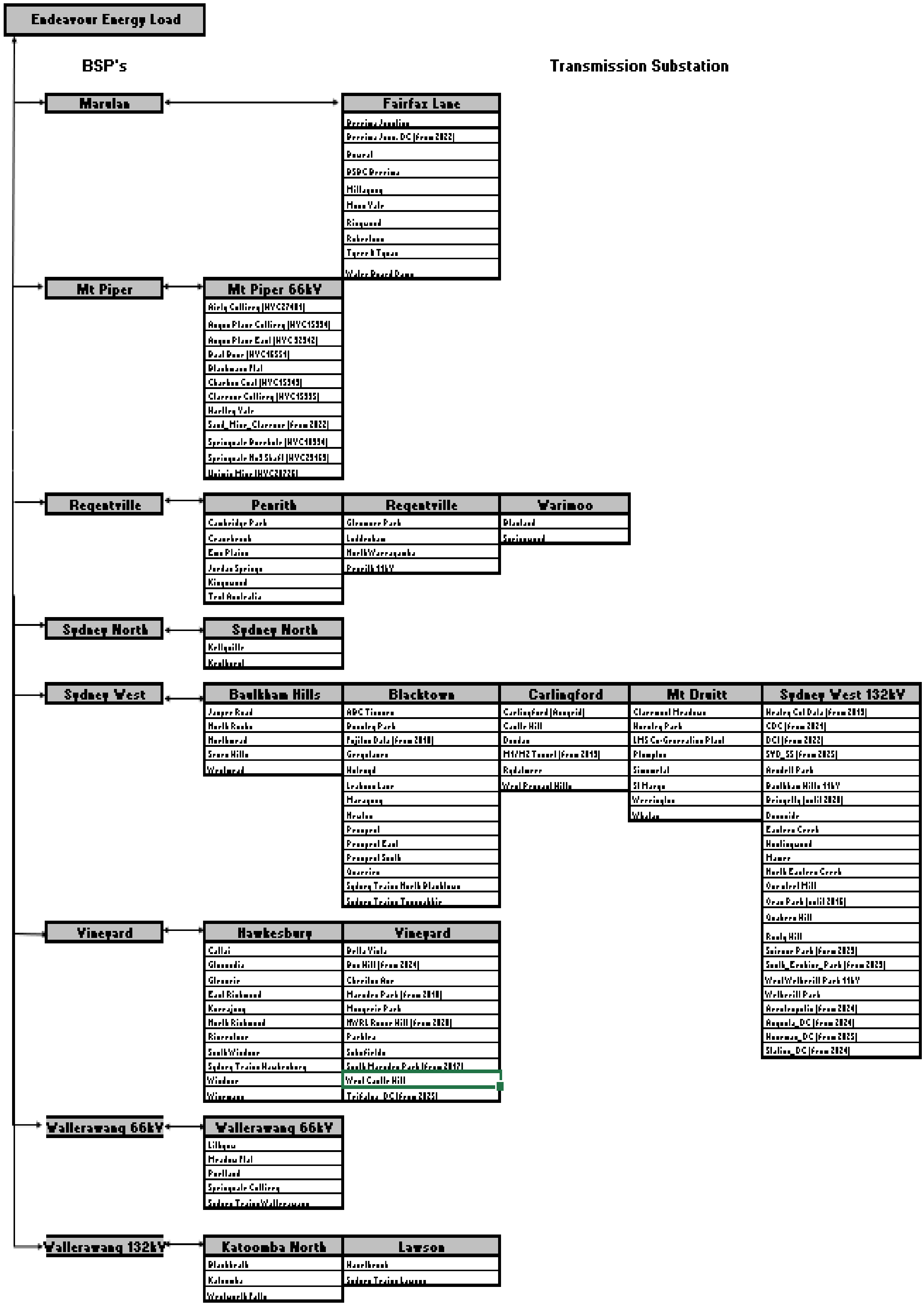

Endeavour Energy Load
BSP's
Transmission Substation
Marulan
Fairfax Lane
Berrima Junction
Berrima Junc. DC (from 2022)
Bowral
BSPC Berrima
Hilltops
Moss Vale
Kingwood
Robertson
Tyree & Tyson
Water Board Dams
Mt Piper
Mt Piper 66kV
Airly Colliery (HVC27481)
Angus Place Colliery (HVC15334)
Angus Place East (HVC 32342)
Baal Bone (HVC16551)
Blackmans Flat
Charbon Coal (HVC15349)
Clarence Colliery (HVC15335)
Hartley Vale
Sand_Mine_Clarence (from 2022)
Springvale Borehole (HVC40334)
Springvale No3 Shaft (HVC29463)
Unimin Mine (HVC20726)
Regentville
Penrith
Cambridge Park
Cranebrook
Emu Plains
Jordan Springs
Kingswood
Teal Australia
Regentville
Glenmore Park
Luddenham
North Warragamba
Penrith 11kV
Warimoo
Blaxland
Springwood
Sydney North
Sydney North
Kellyville
Kenthurst
Sydney West
Baulkham Hills
Jasper Road
North Rocks
Northmead
Seven Hills
Westmead
Blacktown
ABC Tissues
Doonley Park
Fujitsu Data (from 2018)
Girraween
Holroyd
Leabons Lane
Marayong
Newton
Prospect
Prospect East
Prospect South
Quarries
Sydney Trains North Blacktown
Sydney Trains Toongabbie
Carlingford
Carlingford (Ausgrid)
Castle Hill
Dundas
M1/M2 Tunnel (from 2019)
Rydalmere
West Pennant Hills
Mt Druitt
Claremont Meadows
Hassley Park
LMS Co-Generation Plant
Plumpton
Simmelal
St Marys
Werrington
Whalan
Sydney West 132kV
Healey Col Data (from 2019)
CDC (from 2021)
DCI (from 2022)
SYD_S5 (from 2025)
Arndell Park
Baulkham Hills 11kV
Bringelly (until 2020)
Doonside
Eastern Creek
Hoolingwood
Mamre
North Eastern Creek
Qar alrel Hill
Oran Park (until 2016)
Quakers Hill
Rooty Hill
Sairom Park (from 2023)
South_Erskine_Park (from 2023)
West Wetherill Park 11kV
Wetherill Park
Aerotropolis (from 2024)
Angaula_DC (from 2024)
Hoorman_DC (from 2025)
Station_DC (from 2024)
Vineyard
Hawkesbury
Callai
Glossodia
Glenorie
East Richmond
Kurrajong
North Richmond
Riverstone
South Windsor
Sydney Trains Hawkesbury
Windsor
Wisemans
Vineyard
Bella Vista
Box Hill (from 2024)
Cheriton Ave
Marsden Park (from 2018)
Mungerie Park
NWRL Rouse Hill (from 2020)
Parklea
Schofields
South Marsden Park (from 2017)
West Castle Hill
Trifalea_DC (from 2025)
Wallerawang 66kV
Wallerawang 66kV
Lithgow
Meadow Flat
Portland
Springvale Colliery
Sydney Trains Wallerawang
Wallerawang 132kV
Katoomba North
Blackheath
Katoomba
Wentworth Falls
Lawson
Hazelbrook
Sydney Trains Lawson

2.4.3 Endeavour Energy's Network

Weather correction is applied to the peak demands at substations where there is a strong relationship between demand and temperature. Summer demands at zone substations in the Blue Mountains and demands of all high voltage customers are not subject to any weather normalisation.

A new improved weather normalisation method based on a simulation approach has been developed and adopted. This is used to normalise peak demands for the EE network area. Two reference weather stations were employed for temperature correction of the maximum demand (TCMD) for summer. One weather station at Nowra is used for the South Coast area which covers the Dapto BSP Region while the Richmond weather station is used for the remaining EE areas. The temperature correction method is basically divided into the following steps:

- To develop/update a regression model for estimating the relationship of demand, weather and periodic patterns (calendar effects) of demand.
- To simulate the demand using multi-years of historical weather data to produce 10% and 50% normalised demand.

The regression model uses the most recent six years of daily maximum demand and temperature to determine the relationship between demand, weather and periodic patterns of demand. Various input parameters were employed for the model. Day of the week variables accounted for the difference between daily peak by day of the week and workday/non-workday. Monthly and bimonthly variables captured some of the seasonal demand variations. Year variables described the changes in base load level for each year. Previous hot/cold day effect variables were included to explain the impacts of the successive hot/cold days on daily peak demand. In addition, for summer, a set of holiday variables were included to describe the load reductions associated with holidays. Separate variables were used for the following days: New Year's Day, Australia Day, and Christmas. A school holiday variable was introduced to capture the reduced loads (increased loads in some south coast zone substations) occurring during the school holiday period in December and January.

From the regression model, daily demands were estimated using 24 years of daily weather data available at the reference weather stations. Annual seasonal maximum demands were derived from the calculated daily demands. The 10% and 50% demand values were computed from the distribution of annual seasonal maximum demands to give the 10% and 50% PoE TCMD values. Error adjustment was applied to the 10% and 50% PoE TCMD values using the error simulation results for zone substations in western Sydney region and the South Coast. The final TCMD values for the latest year are the starting points of the peak demand forecasts.

Peak demand forecast considers the growth from the existing customers as well as the new customer connections. The forecasting process can be divided into two major steps. The first step is to estimate the organic growth at the zone substation which specifies the internal growth from its existing customers likely to be experienced over the forecast period. The organic growth for each zone substations was taken from the results of the NIEIR report[1] prepared for EE on post model adjustments for peak demand forecasts. The reports estimated the demand impacts from different state and national energy policies and programs, such as Minimum Energy Performance Standards (MEPS), NSW Energy Savings Scheme (ESS), change of building codes and NSW Solar Bonus Scheme (SBS) as well as the emerging solar battery storage and electric vehicles. This growth at the zone substation was used to establish the base level of the 10-year forecast.

[1]NIEIR (2019): Post-modelling adjustments of energy and peak demand forecasts for Endeavour Energy's long-term demand forecasts. National Institute of Economic and Industry Research

The second part of the forecast process involves incorporating the planner's inputs to the base level forecast. The inputs include new developments planned to occur (lot releases), new load increases expected from customer applications (spot loads) and also information regarding the transfer of load from one zone or subtransmission substation to another (load transfers). The final forecast at a zone substation is derived from the base level forecast after adjustment for planned load transfers, spot loads, land releases and re-development within the zone substation load catchment area.

The final forecasts for all zone substations were presented to the Network Planners for review and confirmation of the expected demand growth. The Network Planners' local knowledge is vital in determining load transfer, embedded generation, proposed spot-loads and predicted lot release information. This feedback also provides an audit trail for quality purposes.

The forecast at sub-transmission substations and bulk supply points is based on the rolled up zone substation forecast and calculated using the corresponding historical diversity factors.

2.4.4 Probability of Exceedence

The following Probability of Exceedence (PoE) parameters are adopted:

- 1 in 10 year event (corresponds to 10% PoE)
- 1 in 2 year event (corresponds to 50% PoE)

A 10% PoE figure is estimated to be exceeded only once in every ten seasons on average whilst a 50% PoE figure is likely to be exceeded once every two years on average.

2.4.5 Substation Ratings

Each sub-transmission substation forecast contains a table of capacity rating details for each of the zone substations normally connected to that sub-transmission substation and for the sub-transmission substation itself. The details provided are as follows:

Transformer description: Outlines the number and nameplate rating of transformers installed.

Installed Capacity: The summation of maximum transformer rating installed.

Firm Capacity (N-1): The summation of maximum transformer rating installed less the single largest transformer[2].

These ratings are not intended to indicate the limit of any substation within the network. Other information on ratings for zone and sub-transmission substations can be found in the Transmission Network Planning Review (TNPR) Report.

2 Assumed to be the maximum power able to be supplied in the event of 1 transformer failure

2.4.6 Demand Management

Demand Management (DM) programs are targeted at specific constrained network elements (usually at the individual Zone Substation level) to reduce peak demand on that part of the network. Network DM initiatives take two forms, the first being a temporary reduction in peak demand (such as a load shedding program or Demand Side Response (DSR)) at a specific location for a specific period. The other form being a permanent reduction in demand and energy, carried out through methods such as energy efficiency, new technology and fuel substitution programs. While temporary load reduction is added back into the forecast to preserve the true peak demand, permanent reductions in load are not added back into the forecast as that demand should not return.

The demand forecast forms the basis in which network planners identify network limitations. These limitations are then screened for non-network (demand management) opportunities in accordance with the National Electricity Rules Chapter 5 Part B, and the associated Application Guidelines. EE prepares a demand management plan annually listing all network limitations where non-network alternatives are to be screened for non-network potential. If identified as being feasible, EE will then issues a Non-Network Options Report to commence the consultation process to obtain any proposal for non-network alternatives from the market place in accordance with Chapter 5 of National Electricity Rules, RIT-D process. A summary of this investigation and development is included in the Distribution Annual Planning Report.

Post Model adjustments in the forecasting process for existing assets account for demand management and energy efficiency measures in the ten-year forecast period.

2.4.7 Data Sources

All demand and temperature data were sourced from EE's Historian reports, TM1 report and PQM database. SCADA data would be used as a substitute where gaps existed in the metering data. Where neither metering nor SCADA data was available, circuit breaker data would be used.

3 SPATIAL LOAD AREA FORECASTS

The purpose of this section is to include forecasts for zone substations that are proposed to be constructed within the 10-year forecast outlook provided by this document. Historically load area forecasts were only partly accommodated and relied primarily on load applications and enquiries. As load applications became material only within one to three years of load materialising on the network, this did not provide suffient lead times for the busiess to react with an efficient and appropriate response. As the detailed network forecasts focus principally on existing sub-transmission assets, load applications, particulary for those in 'greenfield areas' were treated in one of two ways:

- Load applications were allocated to the closest appropriate zone substation without any due consideration of the practicalities and feasibility of supplying these loads.
- A new line item was created for some proposed zone substations depending on how close the business was to constructing this substation. As a result, the detailed network forecasts contained entries for some, but not all proposed zone substations planned for construction within the ten-year forecast period.

This iteration of the forecast intends to provide coverage of all proposed zone substations to be built within the ten-year forecast period, and intends to present these in this section, separate to the detailed network demand forecasts that deal with existing assets. However, this document should be considered transitional as it requires considerable effort to unravel the previous approach and remove all inconsistencies.

As the load area forecasts were prepared ahead of this iteration of the demand forecast document to inform Case for Investment documents, changes to CAMS applications (additional spot loads and lot releases over the last six months) reflected in this iteration of the forecast have not yet been reflected in the load area forecasts.

The following subsections relate to assets proposed to be constructed within the next ten years in accordance with the appropriate Area Plans.

3.1 Western Sydney Priority Growth Area (Aerotropolis)

The Western Sydney Aerotropolis is a new growth area where most growth will occur over the next ten to fifteen years.

Existing substation assets within the area or capable of servicing some parts of the area are as follows:

- Kemps Creek 33/11 kV Zone Substation
- Luddenham 33/11 kV Zone Substation
- Bringelly 33/11 kV Zone Substation
- South Erskine Park 132/22V Zone Substation

Substation assets proposed to be installed within the Western Sydney Aerotropolis region are:

- Orchard Hills Switching Station including Metro connection point
- Western Sydney Airport 132/33 kV Sub-transmission Substation
- Science Park Zone Substation
- Badgerys Creek Zone Substation
- Northern Gateway Zone Substation
- Agribusiness South Zone Substation
- Agribusiness North Zone Substation
- Bradfield North Zone Substation
- Kemps Creek Bulk Supply Point (by TransGrid)

Proposed Zone Substations and Existing Assets relied on for initial Servicing are shown in Table 1. Figure 13 shows the precincts within the Aerotrpopolis area. Figure 14 is the long-term load area forecast for the Aerotopolis area.

Table 1 – Precincts and servicing

Precincts and Major Spot Loads	Initial Servicing from Existing Assets	Proposed Substation
Metro		Orchard Hills
Sydney Science Park	Luddenham ZS	Science Park
Western Sydney Airport	Kemps Creek ZS	Airport TS
Northern Gateway East		Northern Gateway
Northern Gateway West		
Luddenham Rd to Northern Rd		
Agribusiness North		Agribusiness North
Agribusiness South	Bringelly ZS	Agribusiness South
Enterprise Southwest		
Aerotropolis Core		Bradfield North
Aerotropolis City		
Badgerys Creek	Kemps Creek ZS	Badgerys Creek
Kemps Creek		
Rossmore*		Rossmore*
Mamre Rd	South Erskine Park ZS	

Note: * >10 years away

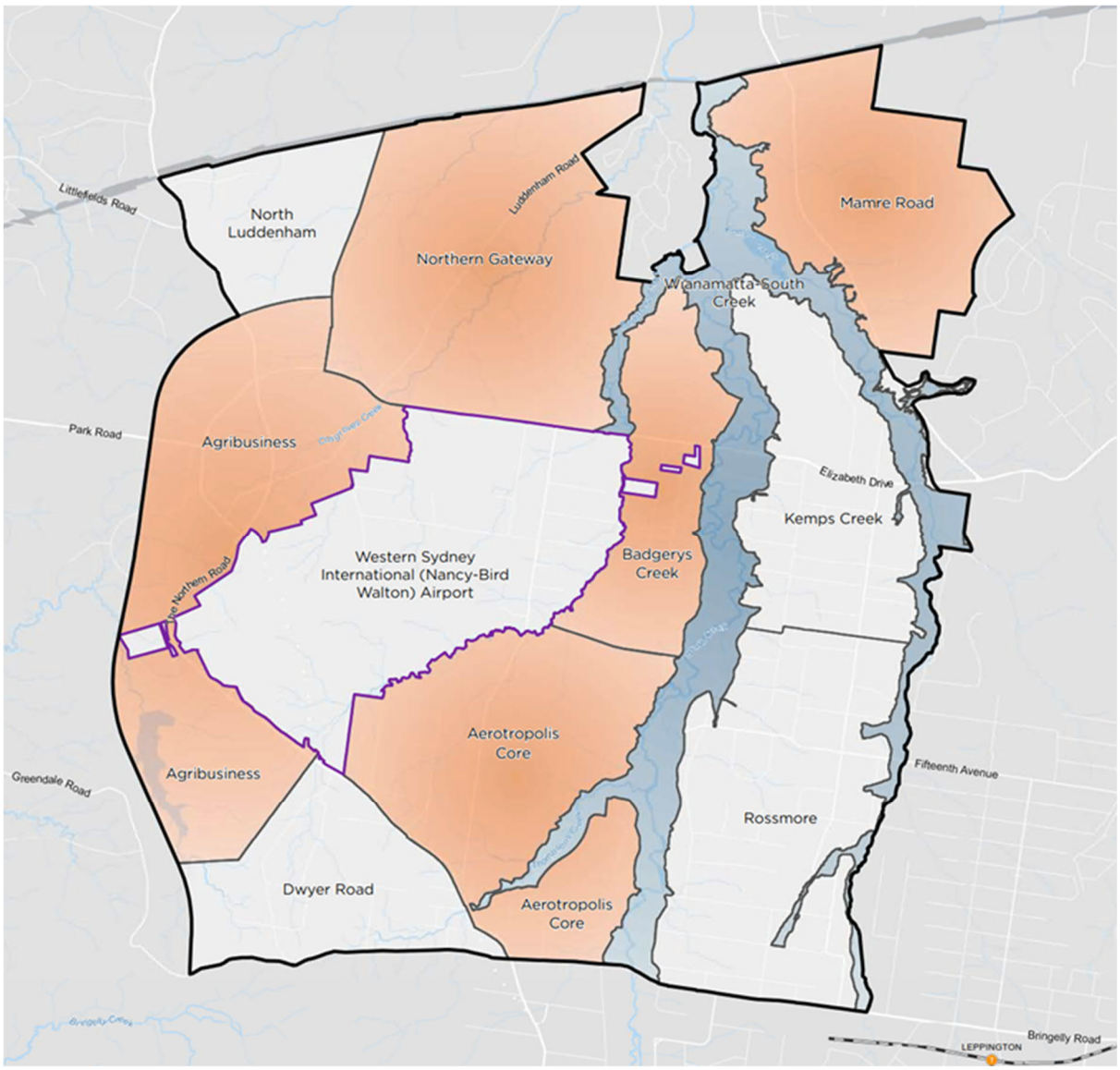


Figure 13 - Western Sydney Aerotropolis Precincts

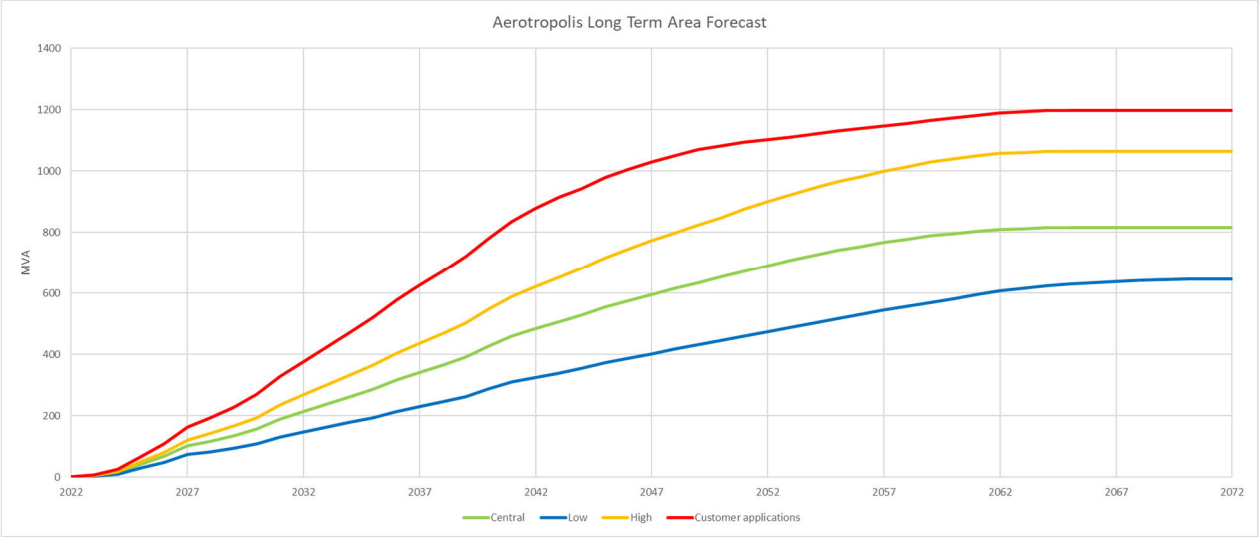


Figure 14- Western Sydney Aerotropolis Area Forecast (No Data Centres)

3.1.1 Badgerys Creek Zone Substation

The proposed Badgerys Creek ZS does not have a stand-alone entry in the detailed network demand forecast section. Confirmed load applications and known lot relases from this area have been depicted as being supplied from existing zone substation:
:

- **Kemps Creek ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Badgerys Creek**
- **Kemps Creek**
- **Rossmore**

Figure 10 contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 3 shows the forecast load on the proposed Zone Substation.

Table 2 – Proposed Badgerys Creek ZS forecast Connections included in detailed network forecast

Kemps Creek forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Kemps Creek SDF23 50% PoE	26.6	46.2	62.7	71.3	79.3	84.4	86.4	87.2	87.8	88.7
DBL2559 Metro TBM Airport Business Park Statio	0.0	0.0	0.0	-6.2	-6.2	-6.2	-6.2	-6.2	-6.2	-6.2
DBL2561 Metro Science Park, Luddenham	0.0	0.0	0.0	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
DBL2631 Multiplex WSA Terminal Construction	0.0	0.0	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7
DBL2635 Metro WSA Construction Supply	0.0	0.0	0.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0
ENL4150 M12 Batching Plant	0.0	0.0	0.0	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
NUL0649 Sydney Water Factory Stage 1	0.0	0.0	0.0	-5.2	-5.2	-5.2	-5.2	-5.2	-5.2	-5.2
UIL5931-1 Adams Rd Industrial Estate, Luddenham	0.0	0.0	0.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
UIL6312 Mirvac Warehouse No.2 Elizabeth Enterprise	0.0	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
UIL6313 Mirvac Warehouse No.6 Elizabeth Enterprise	0.0	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
UIL6314 Mirvac Warehouse No.7 Elizabeth Enterprise	0.0	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
UIL6315 Mirvac Warehouse No.13 Elizabeth Enterpri	0.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
UIL6316 Mirvac Warehouse No.15 Elizabeth Enterpris	0.0	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
UIL6317 Mirvac Warehouse No.18 Elizabeth Enterpris	0.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
UIS0949 BHL Stage 1 Northern Gateway	0.0	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1
UUL1937 M12 ITS Supply near Duff Lane Kemps	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
UUL1941 M12 & Metro Entry to WSA	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Aerotropolis - Mirvac Elizabeth Enterprise Park Stage	0.0	0.0	0.0	-1.0	-4.1	-8.7	-11.8	-12.8	-12.8	-12.8
ENL3685 Sydney Water Factory - Kemps Creek 2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-1.5
ENL3685 Sydney Water Factory - Kemps Creek 2036	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENL3685 Sydney Water Factory - Kemps Creek 2041	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Inghams Aerotropolis Stage 1 Part B	0.0	-1.8	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6
ENL3708 BHL Northern Gateway Estate Stage 1	0.0	-5.2	-5.2	-5.2	-5.2	-5.2	-5.2	-5.2	-5.2	-5.2
ENL4081 Bradfield City Initial Development North	0.0	0.0	0.0	0.0	-1.1	-3.7	-4.8	-4.8	-4.8	-4.8
UIS0949 BHL Northern Gateway Stage 1	0.0	-0.8	-2.8	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6
ENL4318 Agribusiness North Mixed Use Development	0.0	0.0	-1.6	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2
ENL4318 Agribusiness North Mixed Use Development	0.0	0.0	-1.6	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2	-3.2

Table 3- Prospective forecast for proposed Badgerys Creek ZS

Central Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Badgerys Creek	1.8	3.7	5.5	7.4	9.2	11.1	12.9	14.8	16.6	18.5
Sydney Water AWRC	0.0	0.0	0.0	2.4	4.8	5.2	5.7	6.1	6.5	6.9
Oakey Creek	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
Rossmore	0.0	0.0	0.0	0.0	0.0	3.1	6.1	9.2	12.3	15.4
C3 load (80% diversity)	1.8	3.7	5.5	7.8	11.2	15.5	19.8	24.1	28.3	34.3
Kemps Creek with Aerotropolis (80% diversity)	28.2	35.2	44.8	32.7	40.0	42.1	44.2	48.3	52.7	58.5
Low Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Badgerys Creek	1.1	2.2	3.3	4.4	5.5	6.6	7.8	8.9	10.0	11.1
Sydney Water AWRC	0.0	0.0	0.0	1.9	3.8	4.2	4.5	4.9	5.2	5.6
Oakey Creek	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Rossmore	0.0	0.0	0.0	0.0	0.0	1.8	3.7	5.5	7.4	9.2
C3 load (80% diversity)	1.1	2.2	3.3	5.1	7.5	10.1	12.8	15.4	18.0	21.7
Kemps Creek with Aerotropolis (80% diversity)	27.5	33.7	42.6	30.0	36.2	36.7	37.2	39.6	42.4	45.9
High Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Badgerys Creek	2.8	5.5	8.3	11.1	13.9	16.6	19.4	22.2	24.9	27.7
Sydney Water AWRC	0.0	0.0	0.0	2.9	5.8	6.3	6.8	7.3	7.8	8.3
Oakey Creek	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
Rossmore	0.0	0.0	0.0	0.0	0.0	3.1	6.1	9.2	12.3	15.4
C3 load (80% diversity)	2.8	5.5	8.3	11.2	15.7	20.8	25.9	30.9	36.0	43.7
Kemps Creek with Aerotropolis (80% diversity)	29.2	37.0	47.6	36.0	44.4	47.3	50.3	55.1	60.4	67.9

3.1.2 Bradfield North Zone Substation

The proposed Bradfield North ZS does not have a stand-alone entry in the detailed network demand forecast section. Confirmed load applications and known lot relases from this area have been depicted as being supplied from existing zone substation:
:

- **Bringelly ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Agribusiness South**
- **Enterprise South West**
- **Aerotropolis Core**
- **Aerotropolis City**

Table 4 is the contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 5 shows the forecast load on the proposed Zone Substation.

Table 4- Proposed Bradfield North ZS forecast Connections included in detailed network forecast

Bringelly forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Bringelly SDF23 50% PoE	21	22	25.5	33.3	37.7	45.1	55	64.9	73.5	79.1
Existing Load	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9
Bradfield City Building No.3	0.0	0.0	0.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
Bradfield City Building No.2	0.0	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
DBL2554 Metro Aerotropolis Station	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9
DBL2556 Metro WSA Tunnel Portal Construction Supp	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
UCL11122 Bradfield City Building No.1	0.0	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
UIL5931 Adams Rd Industrial Estate (Part)	0.0	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
Aerotropolis - Bradfield (Bringelly)	0.0	0.0	0.0	-0.9	-3.8	-8.5	-14.6	-19.3	-22.1	-23.0
Aerotropolis - Agribusiness South (Bringelly)	0.0	0.0	0.0	-0.5	-1.8	-4.1	-7.4	-11.5	-15.7	-18.9
CSR Aerotropolis Stage 1 Part A	0.0	0.0	-1.8	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6
Inghams Aerotropolis Stage 1 Part A	0.0	0.0	-1.8	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6
Bringelly Precinct (BHL)	0.0	0.0	0.0	-0.1	-0.3	-0.8	-1.4	-2.2	-3.1	-4.2
Bringelly without Aerotropolis (1% growth >2031)	14.5	14.4	14.3	13.8	13.7	13.7	13.7	13.9	14.6	14.9

Table 5- Prospective forecast for proposed Proposed Bradfield North ZS Forecast

Central Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Agribusiness South	0.0	0.0	0.0	0.0	2.0	3.9	5.9	7.0	8.1	9.2
Enterprise Southwest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	4.9	7.4
Aerotropolis Core	0.0	3.2	6.5	9.7	12.9	16.2	19.4	22.7	25.9	29.1
Aerotropolis City (mixed comm)	0.0	0.0	0.0	1.1	2.3	3.4	4.6	5.7	6.8	8.0
Aerotropolis City (mixed resi)	0.0	0.0	0.0	1.1	2.2	3.3	4.4	5.5	6.6	7.7
Bradfield North load (80% diversity)	0.0	3.2	6.5	9.6	15.5	21.4	27.4	34.6	41.8	49.1
Bringelly with all Aerotropolis (80% diversity)	14.5	17.6	20.8	23.4	29.2	35.2	41.1	48.6	56.5	64.0
Low Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Agribusiness South	0.0	0.0	0.0	0.0	1.6	3.1	4.7	5.6	6.5	7.4
Enterprise Southwest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	2.9	4.4
Aerotropolis Core	0.0	1.9	3.9	5.8	7.8	9.7	11.7	13.6	15.5	17.5
Aerotropolis City (mixed comm)	0.0	0.0	0.0	0.7	1.4	2.1	2.7	3.4	4.1	4.8
Aerotropolis City (mixed resi)	0.0	0.0	0.0	0.7	1.3	2.0	2.6	3.3	3.9	4.6
Bradfield North load (80% diversity)	0.0	1.9	3.9	5.7	9.6	13.5	17.4	21.9	26.4	30.9
Bringelly with all Aerotropolis (80% diversity)	14.5	16.3	18.2	19.5	23.4	27.2	31.0	35.8	41.0	45.8
Agribusiness South	0.0	0.0	0.0	0.0	2.4	4.7	7.1	8.4	9.7	11.0
Enterprise Southwest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	7.4	11.1
Aerotropolis Core	0.0	4.9	9.7	14.6	19.4	24.3	29.1	34.0	38.8	43.7
Aerotropolis City (mixed comm)	0.0	0.0	0.0	1.4	2.9	4.3	5.7	7.1	8.6	10.0
Aerotropolis City (mixed resi)	0.0	0.0	0.0	1.7	3.4	5.1	6.8	8.5	10.3	12.0
Bradfield North load (80% diversity)	0.0	4.9	9.7	14.2	22.4	30.7	39.0	49.4	59.8	70.2
Bringelly with all Aerotropolis (80% diversity)	14.5	19.3	24.0	28.0	36.2	44.4	52.6	63.3	74.4	85.1

3.1.3 Northern Gateway Zone Substation

The proposed Northern Gateway ZS does not have a stand-alone entry in the detailed network demand forecast section. Confirmed load applications and known lot relases from this area have been depicted as being supplied from existing zone substation:
:

- **Luddenham ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Northern Gateway East**
- **Northern Gateway West**
- **Agribusiness North**

Table 6 is the contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 7shows the forecast load on the proposed Zone Substation. Note that the timing of Agribusiness North ZS and Northern Gateway ZS could be considered complementary as each has the potential to defer the other, depending on the pace of development.

Table 6- Proposed Northern Gateway ZS forecast Connections included in detailed network forecast

Luddenham forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Luddenham SDF23 50% PoE	10.9	13.2	14.4	12.8	15	17.6	19.2	20.3	21	21.4
Science Park (Luddenham) - 2024	0.0	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Science Park (Luddenham) - 2023	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
UIL5931 No.275 Adams Rd Luddenham - Warehouse	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
ULL3448 WSA Concrete Batching Plant	0.0	0.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
Load transfer to Science Park	0.0	0.0	0.0	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Luddenham Village (existing)	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9
Luddenham without Aerotropolis (0.5% growth >2031)	7.6	8.3	8.3	10.1	12.3	14.9	16.5	17.6	18.3	18.7

Table 7- Prospective forecast for proposed Northern Gateway ZS Forecast

Central Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Northern Gateway East	0.0	1.3	2.7	4.0	5.3	6.6	8.0	9.3	10.6	11.9
Northern Gateway West	0.0	0.0	0.0	0.0	0.0	1.3	2.7	4.0	5.3	6.7
Luddenham Village (existing)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Agribusiness North	0.0	0.0	3.0	6.0	8.9	10.6	12.3	14.0	15.6	18.7
C4 load (80% diversity)	0.9	1.8	5.2	8.7	12.1	15.6	19.0	22.5	26.0	30.5
Luddenham with Aerotropolis (80% diversity)	8.5	10.1	13.5	18.7	24.4	30.5	35.5	40.1	44.3	49.2
Low Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Northern Gateway East	0.0	0.4	0.7	1.1	1.4	1.8	2.1	2.5	2.8	3.2
Northern Gateway West	0.0	0.0	0.0	0.0	0.0	0.7	1.4	2.1	2.8	3.6
Luddenham Village (existing)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Agribusiness North	0.0	0.0	2.4	4.8	7.1	8.5	9.8	11.2	12.5	14.9
C4 load (80% diversity)	0.7	0.9	3.0	5.2	7.4	9.3	11.3	13.2	15.1	17.9
Luddenham with Aerotropolis (80% diversity)	8.3	9.2	11.3	15.3	19.7	24.2	27.8	30.8	33.4	36.6
High Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Northern Gateway East	0.0	2.0	4.0	6.0	8.0	9.9	11.9	13.9	15.9	17.9
Northern Gateway West	0.0	0.0	0.0	0.0	0.0	2.0	4.0	6.0	8.0	10.0
Luddenham Village (existing)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Agribusiness North	0.0	0.0	4.4	8.7	13.1	15.6	18.0	20.5	22.9	27.4
C4 load (80% diversity)	0.9	2.3	7.4	12.5	17.6	22.7	27.9	33.0	38.2	44.9
Luddenham with Aerotropolis (80% diversity)	8.5	10.6	15.7	22.6	29.8	37.6	44.4	50.6	56.5	63.6

3.1.4 Science Park Zone Substation

The proposed Science Park ZS has a stand-alone entry in the detailed network demand forecast section. Initial servicing for this area has been from existing zone substation:
:

- **Luddenham ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Sydney Science Park**
- **Luddenham Rd to Northern Rd**

Table 8 contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 9 shows the forecast load on the proposed Zone Substation.

Table 8- Proposed Science Park ZS forecast Connections included in detailed network forecast

Luddenham forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Luddenham SDF23 50% PoE	10.9	13.2	14.4	12.8	15	17.6	19.2	20.3	21	21.4
Science Park (Luddenham) - 2024	0.0	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6
Science Park (Luddenham) - 2023	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
UIL5931 No.275 Adams Rd Luddenham - Warehouse	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
ULL3448 WSA Concrete Batching Plant	0.0	0.0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
Load transfer to Science Park	0.0	0.0	0.0	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Luddenham Village (existing)	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9
Luddenham without Aerotropolis (0.5% growth >2031)	7.6	8.3	8.3	10.1	12.3	14.9	16.5	17.6	18.3	18.7

Table 9 - Prospective forecast for proposed Science Park ZS Forecast

Central Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Sydney Science Park	1.8	4.1	6.4	8.7	11.0	13.3	15.5	17.8	20.1	22.4
Luddenham Enterprise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	2.9	4.3
Science Park load (80% diversity)	1.8	4.1	6.4	8.7	11.0	13.3	15.5	15.4	18.4	21.4
C4 load (80% diversity)	0.9	1.8	5.2	8.7	12.1	15.6	19.0	22.5	26.0	30.5
Luddenham with C4 & Science Park (80% diversity)	10.2	14.2	19.9	27.4	35.3	43.7	51.1	55.5	62.7	70.6
Low Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Sydney Science Park	1.4	3.3	5.1	6.9	8.8	10.6	12.4	14.3	16.1	17.9
Luddenham Enterprise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.7	2.6
Science Park load (80% diversity)	1.4	3.3	5.1	6.9	8.8	10.6	12.4	12.1	14.3	16.4
C4 load (80% diversity)	0.7	0.9	3.0	5.2	7.4	9.3	11.3	13.2	15.1	17.9
Luddenham with C4 & Science Park (80% diversity)	9.7	12.4	16.4	22.2	28.5	34.8	40.2	42.9	47.7	53.0
High Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Sydney Science Park	2.2	5.0	7.8	10.5	13.3	16.1	18.9	21.7	24.5	27.3
Luddenham Enterprise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	4.3	6.5
Science Park load (80% diversity)	2.2	5.0	7.8	10.5	13.3	16.1	18.9	19.1	23.0	27.0
C4 load (80% diversity)	0.9	2.3	7.4	12.5	17.6	22.7	27.9	33.0	38.2	44.9
Luddenham with C4 & Science Park (80% diversity)	10.6	15.6	23.4	33.1	43.2	53.7	63.3	69.7	79.5	90.6

3.1.5 Agribusiness South Zone Substation

The proposed Agribusiness South ZS does not have a stand-alone entry in the detailed network demand forecast section. Confirmed load applications and known lot relases from this area have been depicted as being supplied from existing zone substation:
:

- **Bringelly ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Enterprise South West**
- **Agribusiness South**

Table 10 shows the forecast load on the proposed Zone Substation.

At this stage the table below shows initial servicing from Bradfield North Zone Substation which is also a proposed zone substation at this point in time.

Table 10- Prospective forecast for proposed Agribusiness South ZS Forecast

Central Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Enterprise Southwest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.5	3.7
Agribusiness South	0.0	0.0	0.0	0.0	2.0	3.9	5.9	7.0	8.1	9.2
AgriSouth load (80% diversity)	0.0	0.0	0.0	0.0	2.0	3.9	5.9	6.6	8.4	10.3
Bradfield North load	0.0	3.2	6.5	9.6	15.5	21.4	27.4	34.6	41.8	49.1
Bradfield North load, after AgriSouth	0.0	3.2	6.5	9.6	15.5	21.4	27.4	34.6	33.4	38.8
Low Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Enterprise Southwest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.5	2.2
Agribusiness South	0.0	0.0	0.0	0.0	1.6	3.1	4.7	5.6	6.5	7.4
AgriSouth load (80% diversity)	0.0	0.0	0.0	0.0	1.6	3.1	4.7	5.1	6.4	7.6
Bradfield North load	0.0	1.9	3.9	5.7	9.6	13.5	17.4	21.9	26.4	30.9
Bradfield North load, after AgriSouth	0.0	1.9	3.9	5.7	9.6	13.5	17.4	21.9	20.0	23.3
High Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Enterprise Southwest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	3.7	5.5
Agribusiness South	0.0	0.0	0.0	0.0	2.4	4.7	7.1	8.4	9.7	11.0
AgriSouth load (80% diversity)	0.0	0.0	0.0	0.0	2.4	4.7	7.1	8.2	10.7	13.2
Bradfield North load	0.0	4.9	9.7	14.2	22.4	30.7	39.0	49.4	59.8	70.2
Bradfield North load, after AgriSouth	0.0	4.9	9.7	14.2	22.4	30.7	39.0	49.4	49.1	56.9

3.1.6 Agribusiness North Zone Substation

The proposed Agribusiness North ZS does not have a stand-alone entry in the detailed network demand forecast section. Parts of this precinct could be supplied by the following proposed zone substation if it is established ahead of the Agribusiness North Zone Substation:

- **Northern Gateway ZS (Proposed)**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Agribusiness North**

Table 10 shows the forecast load on the proposed Zone Substation. Note that the timing of Agribusiness North ZS and Northern Gateway ZS could be considered complementary as each has the potential to defer the other, depending on the pace of development.

Table 11- Prospective forecast for proposed Agribusiness North ZS Forecast

Central Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Northern Gateway East	0.0	1.3	2.7	4.0	5.3	6.6	8.0	9.3	10.6	11.9
Northern Gateway West	0.0	0.0	0.0	0.0	0.0	1.3	2.7	4.0	5.3	6.7
Luddenham Village (existing)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Agribusiness North	0.0	0.0	3.0	6.0	8.9	10.6	12.3	14.0	15.6	18.7
C4 load (80% diversity)	0.9	1.8	5.2	8.7	12.1	15.6	19.0	22.5	26.0	30.5
Luddenham with Aerotropolis (80% diversity)	8.5	10.1	13.5	18.7	24.4	30.5	35.5	40.1	44.3	49.2
Low Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Northern Gateway East	0.0	0.4	0.7	1.1	1.4	1.8	2.1	2.5	2.8	3.2
Northern Gateway West	0.0	0.0	0.0	0.0	0.0	0.7	1.4	2.1	2.8	3.6
Luddenham Village (existing)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Agribusiness North	0.0	0.0	2.4	4.8	7.1	8.5	9.8	11.2	12.5	14.9
C4 load (80% diversity)	0.7	0.9	3.0	5.2	7.4	9.3	11.3	13.2	15.1	17.9
Luddenham with Aerotropolis (80% diversity)	8.3	9.2	11.3	15.3	19.7	24.2	27.8	30.8	33.4	36.6
High Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Northern Gateway East	0.0	2.0	4.0	6.0	8.0	9.9	11.9	13.9	15.9	17.9
Northern Gateway West	0.0	0.0	0.0	0.0	0.0	2.0	4.0	6.0	8.0	10.0
Luddenham Village (existing)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Agribusiness North	0.0	0.0	4.4	8.7	13.1	15.6	18.0	20.5	22.9	27.4
C4 load (80% diversity)	0.9	2.3	7.4	12.5	17.6	22.7	27.9	33.0	38.2	44.9
Luddenham with Aerotropolis (80% diversity)	8.5	10.6	15.7	22.6	29.8	37.6	44.4	50.6	56.5	63.6

3.1.7 Orchard Hills Switching Station

The proposed Orchard Hills Switching Station does not have a stand-alone entry in the detailed network demand forecast section. All applications from this area have been depicted in the detailed network demand forecast in a placeholder entry as:

- **Aerotropolis**

In the 10-15 year horizon, the proposed switching substation will service parts of the precincts of:

- **Airport Metro**
- **Orchard Hills (together with the construction of Orchard Hills ZS)**

As this is driven in the first instance, by the need to connect the Airport Metro by a firm date, growth sensitivity analysis has not been performed for this entry and the relevant forecast is in under the Aerotropolis placeholder under the Sydney West 132kV in the detailed network forecast.

Table 12 shows the forecast load on the proposed Substation.

Table 12 - Proposed Orchard Hills SS forecast Connections included in Existing Asset Forecasts

Aerotropolis Forecast	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Orchad Hills SS				21.6	22.9	24.3	25.6	26.9	28.2	29.6	30.9

3.1.8 Western Sydney Airport STS

The proposed Western Sydney Airport STS does not have a stand-alone entry in the detailed network demand forecast section. All applications from this area have been depicted in the detailed network demand forecast in a placeholder entry as:

- **Aerotropolis**

In the 10-15 year horizon, the proposed switching substation will service parts of the precincts of:

- **Western Sydney Airport Stage 1**
- **Western Sydney Airport Stage 2**
- **Western Sydney Airport Business Park (within Airport Perimeter)**

As this is driven in the first instance, by the need to connect the Western Sydney Airport by a firm date, growth sensitivity analysis has not been performed for this entry and the relevant forecast is in under the Aerotropolis placeholder under Sydney West 132kV in the detailed network forecast.

Error! Reference source not found. shows the forecast load on the proposed Sub-transmission Substation.

Proposed WSA TS forecast Connections included in Existing Asset Forecasts

Aerotropolis Forecast	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
WSA				2.1	14.4	37.1	33.0	33.7	34.3	51.2	52.4

3.2 North West Growth Area

The North West growth area has been progressing for more than ten years, and much of the growth in this region is now being serviced by existing, and assets established over the last ten years

Existing assets within the area or capable of servicing some parts of the area are as follows:

- Riverstone 33/11 kV Zone Substation
- Schofields 132/11 kV Zone Substation
- Mungerie Park 132/22 kV Zone Substation
- Parklea 132/22kV Zone Substation

Assets proposed to be installed within the North West Growth Area are:

- Box Hill 132/22kV Zone Substation
- Riverstone East 132kV Zone Substation

Of these, Box Hill Zone Substation is an approved project and has an entry in the detailed network demand forecast section. Proposed Riverstone East ZS is not an entry in the forecast, and early stage loads have been applied to either Riverstone Zone Substation or Schofields Zone Substation.

Proposed Zone Substations and Existing Assets relied on for initial Servicing are indicated in Table 13.

Table 13- Precincts and servicing

Precincts and Major Spot Loads	Partial or complete servicing from Existing Assets:	Proposed Zone Substation
North Kellyville	Kellyville ZS & Mungerie Park ZS	-
Box Hill	Mungerie Park ZS	Box Hill ZS
Box Hill North		
Box Hill Industrial		
Vineyard Stage 1	South Windsor ZS	
Vineyard Stage 2	Riverstone ZS & South Windsor ZS	Riverstone East ZS
Riverstone	Riverstone ZS	-
Riverstone West		-
Riverstone East Stage 1-2	Schofield ZS	Riverstone East ZS
Riverstone East Stage 3		
Schofields		
Alex Avenue		
West Schofields		
Colebee		
Marsden Park Industrial	South Marsden Park ZS	-
Marsden Park	Marsden Park ZS	-
Marsden Park North		-
Shanes Park		-

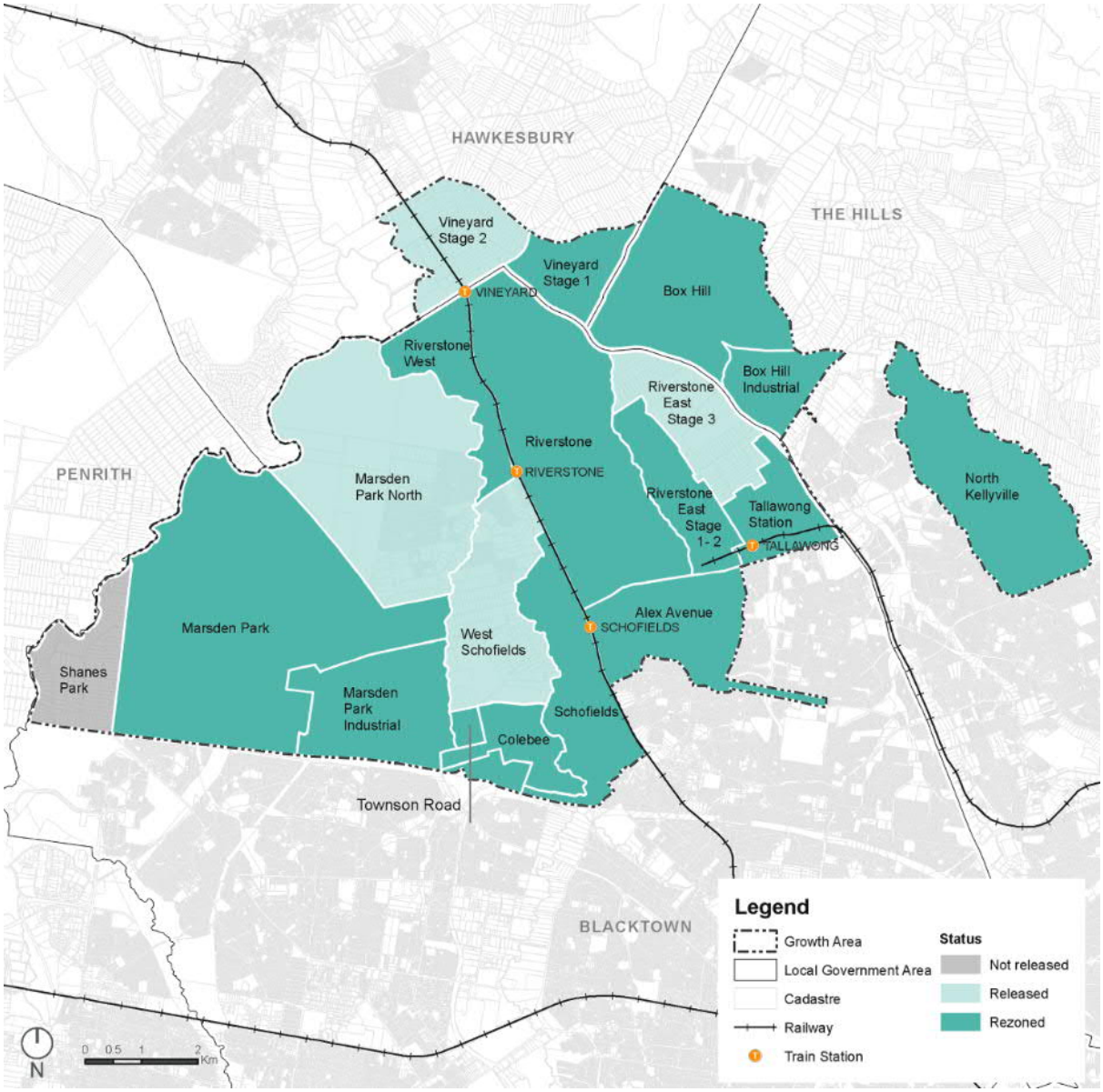


Figure 15- South West Sector - development precincts

3.2.1.1 Box Hill Zone Substation

The proposed Box Hill ZS has a stand-alone entry in the detailed network demand forecast section. RIT-D for this zone substation has commenced. All applications from this area have previously been supplied from existing zone substations:

- **Mungerie Park ZS**
- **South Windsor ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Box Hill**
- **Box Hill North**
- **Box Hill Industrial**
- **Vineyard Stage 1**

Table 14 shows the forecast load on the proposed Zone Substation.

Table 14- Prospective forecast for proposed Box Hill Forecast

Box Hill ZS Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
High - Demand Forecast	0	19.1	28.5	33.5	40.1	48.1	53.2	58.3	63.7	69.1
Central - Demand Forecast	0	17.4	25.9	30.5	36.5	43.7	48.4	53	57.9	62.8
Low - Demand Forecast	0	15.6	23.3	27.4	32.8	39.4	43.5	47.7	52.1	56.6

3.2.1.2 Riverstone East Zone Substation

The proposed Rivestone East ZS does not have a stand-alone entry in the detailed network demand forecast section. Confirmed load applications and known lot relases from this area have been depicted as being supplied from existing zone substation:

- **Schofield ZS**
- **Riverstone ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Vineyard Stage 2**
- **Riverstone East Stage 1**
- **Riverstone East Stage 2**
- **Riverstone East Stage 3**

The following tableTable 8 is the contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 9 shows the forecast load on the proposed Zone Substation.

Table 15- Proposed Riverstone East ZS forecast Connections included in detailed network forecasts

Schofields Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Schofields SDF23 50% PoE	32.4	50.8	61.3	67.7	74.4	80.9	86.2	89.6	93	96.3
Riverstone East - 400 residential dwellings							1.7	1.7	1.7	1.7
Riverstone East - 550 residential dwellings (1/2)						1.2				
Riverstone East - 600 residential dwellings (1/2)			1.3	1.3	1.3					
Riverstone Precinct - 400 residential dwellings (1/2)			0.9	0.9	0.9	0.9				
UML10036 Units Rivo east area New Feeder			0.8							
Riverstone East Load currently shown on Schofields ZS			3.0	5.2	7.3	9.4	11.1	12.8	14.6	16.3
Schofields w/o Riverstone East Load	32.4	50.8	58.3	62.5	67.1	71.5	75.1	76.8	78.4	80.0

Riverstone Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Riverstone SDF23 50%PoE	19.3	22.4	32.3	34.5	36.9	39.3	39.9	40.5	41.1	41.8
Riverstone East - 550 residential dwellings (1/2)						1.2				
Riverstone East - 600 residential dwellings (1/2)			1.3	1.3	1.3					
Riverstone Precinct - 400 residential dwellings (1/2)			0.9	0.9	0.9	0.9				
Riverstone West - 88 hectares of employment land			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
URS19294 Off Windsor Rd		0.5								
URS19295 Off Windsor Rd		0.4								
URS20274 Garfield Rd East 35 lots			0.2							
URS20316 Edmund St			0.2							
URS20833 231 Garfield Rd East Riverstone		0.1								
URS21299 Garfield Rd East			0.2							
URS21416 Crown st development		0.0								
URS21885 161 Crown St, Riverstone			0.2							
URS23064 Regent st Riverstone			0.2							
URS23322 Regent st riverstone			0.1							
URS24221 69 lots 70 Riverstone rd		0.3								
URS26190 Rivo east dweelings		0.8								
URS26599 Edmund St			0.3							
UUL1964 Syd water			4.8							
UUL1964 Sydney water	2.3									
Riverstone East Load currently shown on Riverstone ZS	2.3	4.4	13.2	15.9	18.5	21.0	21.5	22.0	22.5	23.0
Riverstone ZS w/o Riverstone East Load	17.0	18.0	19.1	18.6	18.4	18.3	18.4	18.5	18.6	18.8

Table 16 – Prospective forecast for proposed Riverstone East ZS Forecast

Riverstone East Forecast Low	2.1	4.0	14.6	18.9	23.2	27.4	29.4	31.3	33.3	35.3
Riverstone East Forecast Central	2.3	4.4	16.2	21.0	25.8	30.4	32.6	34.8	37.0	39.2
Riverstone East Forecast High	2.5	4.8	17.8	23.1	28.4	33.5	35.9	38.3	40.7	43.2

3.3 South West Growth Area

The South West growth area complements the residential growth in the North West sector, but there remains large tracts of land within this region that remains to be rezoned. Following the creation of the Western Sydney Aerotropolis, future South West sector precincts such as North Rossmore were reassigned to the Western Sydney Aerotropolis.
Existing assets within the area or capable of servicing some parts of the area are as follows:

- **Kemps Creek 33/11 kV Zone Substation**
- **Hinchinbrook 33/11 kV Zone Substation**
- **North Leppington 132/11 kV Zone Substation**
- **South Leppington 132/11 kV Zone Substation**
- **Oran Park 132/11 V Zone Substation**

Assets proposed to be installed within the North West Growth Area are:

- **Austral 132/22kV Zone Substation**
- **Catherine Park 132/11 kV Zone Substation**
- **Maryland 132/11 kV Zone Substation**
- **North Catherine Field 132/11kV Zone Substation (>10 years away; not covered in this forecast)**

None of the proposed zone substations have their own entries in the demand forecast and early-stage loads have been applied to zone substations indicated in the table below.
Proposed Zone Substations and Existing Assets relied on for initial Servicing

Table 17- Precincts and Servicing

Precincts and Major Spot Loads	**Partial or complete servicing from Existing Assets:**	**Proposed Zone Substation**
Austral	Hinchinbrook ZS; North Leppington ZS; Kemps Creek ZS	Austral ZS
Leppington North	Leppington North	-
Leppington East	South Leppington ZS	-
Edmondson Park	Edmondson Park ZS	
Oran Park	Oran Park ZS	
Turner Road		
Lowes Creek Maryland		Maryland ZS
Catherine Park		Catherine Park ZS; North Catherine Field ZS*
Catherine Field*	-	
North Catherine Field*	-	

Note: * >10 years away

3.3.1.1 Austral Zone Substation

The proposed Austral ZS does not have a stand-alone entry in the detailed network demand forecast section. Confirmed load applications and known lot relases from this area have been depicted as being supplied from existing zone substations:

- **Hinchinbrook ZS**
- **North Leppington ZS**
- **Kemps Creek ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Austral**

Table 8 is the contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 9 shows the forecast load on the proposed Zone Substation.

Table 18 Proposed Austral ZS forecast Connections included in detailed network forecasts

Hinchinbrook Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Hinchinbrook SDF23 50%PoE	49.1	53.0	59.0	64.4	69.1	72.5	75.4	77.5	79.0	79.6
Austral Precinct compliment of precinct - 6600 Lots	1.0	1.4	1.8	9.3	4.4	3.6	2.8	2.0	1.2	0.4
Austral Precinct east and north areas - 1900 Lots	0.7									
Middleton Grange Release Area - 2850 Lots										
USC0576 Middleton Grange Town Centre - 978 Units + R	0.6	1.9	2.7	1.9	0.6					
Austral load currently shown on Hinchinbrook	2.3	5.6	10.1	21.3	26.3	29.8	32.6	34.6	35.8	36.2
Hinchinbrook ZS w/o Austral Load	46.8	47.4	48.9	43.1	42.8	42.7	42.8	42.9	43.2	43.4
North Leppington Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
North Leppington SDF23 50%PoE	8.0	13.8	17.4	22.2	29.7	36.0	41.1	45.8	49.9	53.5
Austral Precinct south area - 250 Lots							0.3	0.6	0.2	
Austral Precinct south area - 250 Lots						0.3	0.6	0.2		
Austral Precinct south area - 250 Lots					0.3	0.6	0.2			
Austral Precinct south area - 250 Lots				0.3	0.6	0.2				
Austral load currently shown on North Leppington				0.3	1.1	2.2	3.3	4.1	4.3	4.3
North Leppington w/o Austral Load	8.0	13.8	17.4	21.9	28.6	33.8	37.8	41.7	45.6	49.2
Kemps Creek Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Kemps Creek SDF23 50%PoE	26.6	46.1	62.6	71.1	79.2	84.4	86.5	87.4	88.1	89.2
Austral Precinct west area - 250 Lots							0.3	0.6	0.2	
Austral Precinct west area - 250 Lots						0.3	0.6	0.2		
Austral Precinct west area - 250 Lots					0.3	0.6	0.2			
Austral Precinct west area - 250 Lots				0.3	0.6	0.2				
ENL3680 No.555 Fifteenth Ave Austral Mixed Commerci		0.1	0.2	0.1						
URS18492 404 Fourth Ave Austral	0.1	0.0								
ENL4117 Fourth Ave Austral	0.5	0.2								
URS25050 240-270 Thirteenth Ave Austral 140 Lots	0.3	0.3								
URS25052 Thirteenth Ave Austral 140 Lots		0.3	0.3							
URS25300 Twelfth Ave Austral 70 Lots		0.2	0.2							
UUL1988 Sydney Water Pumping Station Austral Precinc		0.2	0.6	0.2						
URS25052 133 Residential Lots - Thirteenth Ave Austral		0.1	0.3	0.1						
URS25300 70 Residential Lots - Twelfth Ave Austral		0.1	0.2	0.1						
Austral load currently shown Kemps Creek	0.9	2.4	4.1	4.9	5.7	6.8	7.9	8.7	9.0	9.0
Kemps Creek w/o Austral Load	25.7	43.7	58.5	66.2	73.5	77.6	78.6	78.7	79.1	80.2

Table 19 - Prospective forecast for proposed Austral ZS

Proposed Austral ZS Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Austral Precinct Forecast Low	10.56	12.32	14.56	17.36	20.64	24.32	27.6	30.4	32.72	34.48
Austral Precint Forecast Central	13.2	15.4	18.2	21.7	25.8	30.4	34.5	38.0	40.9	43.1
Austral Precinct Forecast High	15.8	18.5	21.8	26.0	31.0	36.5	41.4	45.6	49.1	51.7

3.3.1.2 Catherine Park Zone Substation

The proposed Catherine Park ZS does not have a stand-alone entry in the detailed network demand forecast section. Confirmed load applications and known lot relases from this area have been depicted as being supplied from existing zone substation:

- **Oran Park ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Catherine Park**
- **Catherine Field**

The following Table 20 is the contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 21 shows the forecast load on the proposed Zone Substation.

Table 20 - Proposed Cathefine Park Connections included in Oran Park ZS Forecast

Oran Park ZS Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Oran Park SDF23 50%PoE	44.1	53.9	61.1	67.3	74.8	82.0	89.9	99.9	106.8	114.4
Catherine Fields								0.4		
Catherine Park	1.6	1.5	0.9	0.9	0.9	0.9	0.9	1.1		
ULL2960 Catherine Park School	0.2									
Catherine Park load currently shown on Oran Park ZS	1.8	3.4	4.2	5.1	6.0	6.8	7.7	9.2	9.2	9.2
Prospective load transfer to Catherine Park										
Oran Park ZS w/o Catherine Park Load	42.3	50.5	56.9	62.2	68.8	75.2	82.2	90.7	97.6	105.2

Table 21 - Prospective forecast for proposed Catherine Park ZS

Catherine Park ZS prospective Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Catherine Park Prospective Forecast Low	1.6	3.0	3.8	4.6	5.4	6.1	6.9	8.3	8.3	8.3
Catherine Park Prospective Forecast Central	1.8	3.4	4.2	5.1	6.0	6.8	7.7	9.2	9.2	9.2
Catherine Park Prospective Forecast High	2.0	3.7	4.7	5.6	6.6	7.5	8.5	10.1	10.1	10.1

3.3.1.3 Lowes Creek Maryland Zone Substation

The proposed Maryland ZS does not have a stand-alone entry in the detailed network demand forecast section. Confirmed load applications and known lot relases from this area have been depicted as being supplied from existing zone substation:

- **Oran Park ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Maryland**
- **Lowes Creek**

The following Table 20 is the contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 21 shows the forecast load on the proposed Zone Substation.

Table 22 - Proposed Lowes Creek Maryland and surrounds connections included in Oran Park ZS Forecast

Oran Park ZS Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Oran Park SDF23 50%PoE	44.1	53.9	61.1	67.3	74.8	82.0	89.9	99.9	106.8	114.4
Cobbitty		1.3	1.3	1.9	1.5	1.5	1.5	1.5	1.5	2.1
NRL14922 64 Coates Park Rd, Cobbitty		0.0								
Pondicherry		0.9	0.9	0.9	1.3	0.9	0.9	2.1	0.9	0.9
UCL11295 421 Cobbitty Rd		0.0								
UCS0555 Longbush Precinct - Aldi & community centre	0.3									
Bringelly, Lowes Creek, Maryland 7000 Lots			0.3	0.3	0.7	0.9	1.2	6.3	3.5	3.9
ENL3395 Woodstock Cobbitty			0.1	0.4	0.7	0.9	0.9	0.7	0.4	0.1
URS25677-9 The Northern Road, Cobbitty - Stages 7-9		0.3	0.3							
URS26824 Marylands Birling Stage 1 The Northern Road	0.5	1.1	0.5							
URS26825 Marylands Birling Stage 2 The Northern Road	0.3	0.3								
URS26836 Marylands Stage 1 Northern Rd	0.5	0.5								
Additional load on Oran Park due to Maryland etc	1.6	6.0	9.3	12.7	16.9	21.1	25.6	36.2	42.5	49.5
Oran Park ZS w/o Maryland and Surrounds	42.5	47.9	51.8	54.6	57.9	60.9	64.3	63.7	64.3	64.9

Table 23 – Lowes Creek Maryland Load Area Forecast

Low		1.9	5.0	8.2	12.8	18.0	22.9	27.5	32.3	37.2
Lowes Creek Maryland Load Area Forecast Central		2.1	5.6	9.1	14.2	20.0	25.4	30.5	35.9	41.3
High		2.3	6.1	10.0	15.6	22.0	28.0	33.6	39.5	45.4

3.4 Greater Macarthur

The Greater Macarthur region for forecasting purposes can be viewed from two distinct angles. The first is the urban renewal area comprising of redevelopment of existing urban areas around train stations. These are the existing areas of Glenfield, Macquarie Fields, Ingleburn, Minto, Leumeah, Campbelltown and Macarthur. As this covers areas that are already serviced by existing Endeavour Energy assets, forecast load increases are captured in the demand forecast tables for existing assets.

The second category concerns the new land release regions in the Greater Macarthur Area and which are not adequately captured in the demand forecasts based on existing assets. These new land release areas are listed below.

Maps of the both the redevelopment areas and the new precinct areas are reproduced below.

Table 24- Precincts and servicing

Precincts and Major Spot Loads	Partial or complete servicing from Existing Assets:	Proposed Zone Substation
Menangle Park	Ambarvale ZS	Menangle Park ZS
Menangle	Ambvarvale ZS	
Mt Gilead	-	Mt Gilead ZS
Mt Gilead South	-	South Gilead ZS*
West Appin	-	West Appin ZS
North Appin	-	North Appin ZS
Appin	Appin	-

Note: * >10 years away, may not be required due to North Appin ZS

3.4.1.1 Menangle Park Zone Substation

The proposed Menangle Park ZS has a stand-alone entry in the detailed network demand forecast section. Initial servicing for this area has been from existing zone substation:

- **Ambarvale ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Menangle**
- **Menangle Park**

The following tableTable 8 is the contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 9 shows the forecast load on the proposed Zone Substation.

Table 25 – Loads included in detailed network forecast

Ambarvale ZS Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Ambarvale ZS SDF23 50% PoE	26.0	27.5	28.6	29.7	30.9	32.3	33.8	35.3	35.7	36.0
URS22438-41 URS22438-41 - Menangle Road MENANGLE	0.6	0.6								
URS22443 Menangle Park Stage 3.6-103 residential lots		0.5								
Menangle Park load shown on Ambarvale ZS	0.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Ambarvale ZS w/o Menangle Park load	25.4	25.8	26.9	28.0	29.2	30.6	32.1	33.6	34.0	34.3
Menangle Park ZS Committed loads	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
20 Ha commercial Menangle Park Development area								0.1	0.3	0.5
28 Ha industrial Menangle Park Development area								0.1	0.4	0.7
ENL4222 152 - Townhouses - East Village Dahua						0.0	0.1	0.2	0.1	0.0
ENL4222 2026 Units - East Village - Dahua						0.4	1.3	1.9	1.3	0.4
Mirvac C&I				0.1	0.1	0.1	0.2	0.3	1.4	0.8
Mt Taurus Apartments						0.1	0.1			
Menangle Park (Dahua Group)	0.2	0.4	1.1	0.4	0.4	1.3	1.3	1.3	1.3	1.3
Mirvac	0.5	0.8	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6
Mirvac C&I	0.2		0.5							
Mt Taurus		1.4	0.3	0.5	0.5	0.5	1.9	1.3	0.5	0.5
Cumulative Sum of additional load at Menangle Park	0.9	3.5	5.7	7.2	8.9	12.0	17.6	23.5	29.5	34.5

Table 26 – Prospective forecast for Menangle Park ZS

Menangle Park ZS prospective Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Catherine Park Prospective Forecast Low	2.5	4.9	6.8	8.2	9.8	12.8	17.9	23.5	28.3	32.7
Catherine Park Prospective Forecast Central	2.8	5.4	7.6	9.1	10.9	14.2	19.9	26.1	31.4	36.3
Catherine Park Prospective Forecast High	3.1	5.9	8.4	10.0	12.0	15.6	21.9	28.7	34.5	39.9

3.4.1.2 Mt Gilead Zone Substation

The proposed Mt Gilead ZS does not have a stand-alone entry in the detailed network demand forecast section document. Confirmed load applications and known lot relases from this area have been depicted as being supplied from existing zone substation:

- **Ambarvale ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **Mt Gilead**

Table 27contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 28 shows the forecast load on the proposed Zone Substation.

Table 27 - Loads included in detailed network forecast

Ambarvale ZS Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Ambarvale Forecast SDF23 50PoE	26.0	27.5	28.6	29.7	30.9	32.3	33.8	35.3	35.7	36.0
Figtree Hill (Mt Gilead)	0.4	0.4	1.3	1.3	1.3	1.3	1.3	1.3		
Cumulative Load	0.4	0.7	2.0	3.3	4.6	5.9	7.2	8.5		
Ambarvale ZS Foreacst w/p Mt Gilead Load	25.6	26.8	26.6	26.4	26.3	26.4	26.6	26.8	35.7	36.0

Table 28 - Mt Gilead Load Area Forecast

Mt Gilead Load Area Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Low	0.1	0.5	1.1	1.9	3.0	4.4	6.0	7.8	9.8	12.2
Central	0.2	0.6	1.5	2.6	4.1	5.8	7.9	10.4	13.1	16.2
High	0.2	0.8	1.8	3.2	5.1	7.3	9.9	13.0	16.4	20.3

3.4.1.3 West Appin/North Appin Zone Substation

The proposed South Gilead ZS does not have a stand-alone entry in the detailed network demand forecast section. Confirmed load applications and known lot relases from this area have been depicted as being supplied from existing zone substation:
:

- **Appin ZS**

In the 10-15 year horizon, the proposed zone substation will service parts of the precincts of:

- **West Appin**
- **North Appin**

Table 29 contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 30 shows the forecast load on the proposed Zone Substation.

Table 29 - Appin ZS Forecast and loads

Appin ZS	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Appin ZS SDF23 50PoE	6.1	7.1	7.2	7.6	8.6	10.4	12.9	17.8	21.2	24.4
APPNAP Walker Group - Appin - Neighbourhood 1								0.8		
APPNAP Walker Group - Appin - Neighbourhood 2										
APPNAP Walker Group - Appin - Neighbourhood 3										
APPNAP Walker Group - Appin - Neighbourhood 4										
APPNAP Walker Group - Appin - Neighbourhood 5										
APPNAP Walker Group - Appin - Neighbourhood 6										
APPNAP Walker Group - Appin - Neighbourhood 7								1.2		
APPNAP West & North Appin redevelopment - FY26				2.0						
APPNAP West & North Appin redevelopment - FY27					2.0					
APPNAP West & North Appin redevelopment - FY28						2.0				
APPNAP West & North Appin redevelopment - FY29							2.0			
APPNAP West & North Appin redevelopment - FY30								2.0		
APPNAP West & North Appin redevelopment - FY31									2.0	
APPNAP West & North Appin redevelopment - FY32										2.0
APPNAP West & North Appin redevelopment - FY33										
URS24503 Stage 2 Macquariedale Rd Appin - 68 lots		0.3								
URS24504 Stage 3A Macquariedale Rd Appin - 66 lots		0.3								
URS26612 Stage 3B Macquariedale Rd Appin - 78 lots		0.3								
URS26606 Stage 1A Heritage Dr Appin - 47 lots	0.2									
APPNAP Walker Group - Appin - Neighbourhood 6 Tow										
Cumulative New Load	0.2	1.1	1.1	3.1	5.1	7.1	9.1	13.1	15.0	17.0
Appin ZS w/o new loads	5.9	6.0	6.1	4.5	3.5	3.3	3.8	4.7	6.2	7.4

Table 30 - Appin/West Appin/North Appin Load Area Forecast

West Appin/North Appin Area Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Central				5.4	7.9	10.4	12.9	15.3	19.3	22.2
Low				5.4	5.4	7.4	9.4	11.4	13.3	16.9
High				5.4	8.4	11.4	14.3	17.3	21.8	25.2

3.4.2 Wilton

As there are no further assets proposed for the Wilton area for the next 10 years; this has not been included in this forecast at the present time. Figure below indicates future precincts around Wilton

Table 31- Precincts and Servicing

Precincts and Major Spot Loads	Partial or complete servicing from Existing Assets:	Proposed Zone Substation
Wilton Town Centre	Wilton ZS	-
West Wilton		-
South East Wilton		-
Bingara Gorge		-
North Wilton		-
Maldon	Maldon ZS	-

Note: * >10 years away

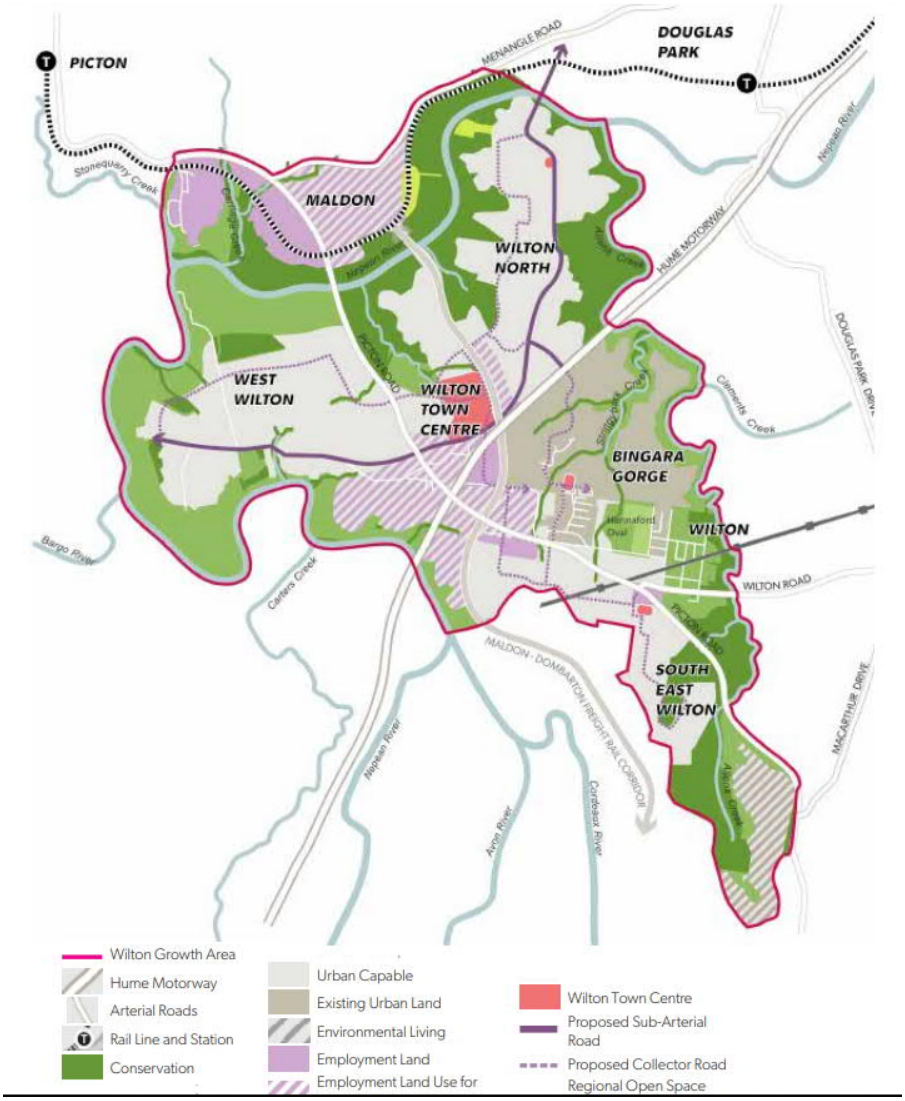


Figure 16- Wilton Development Area

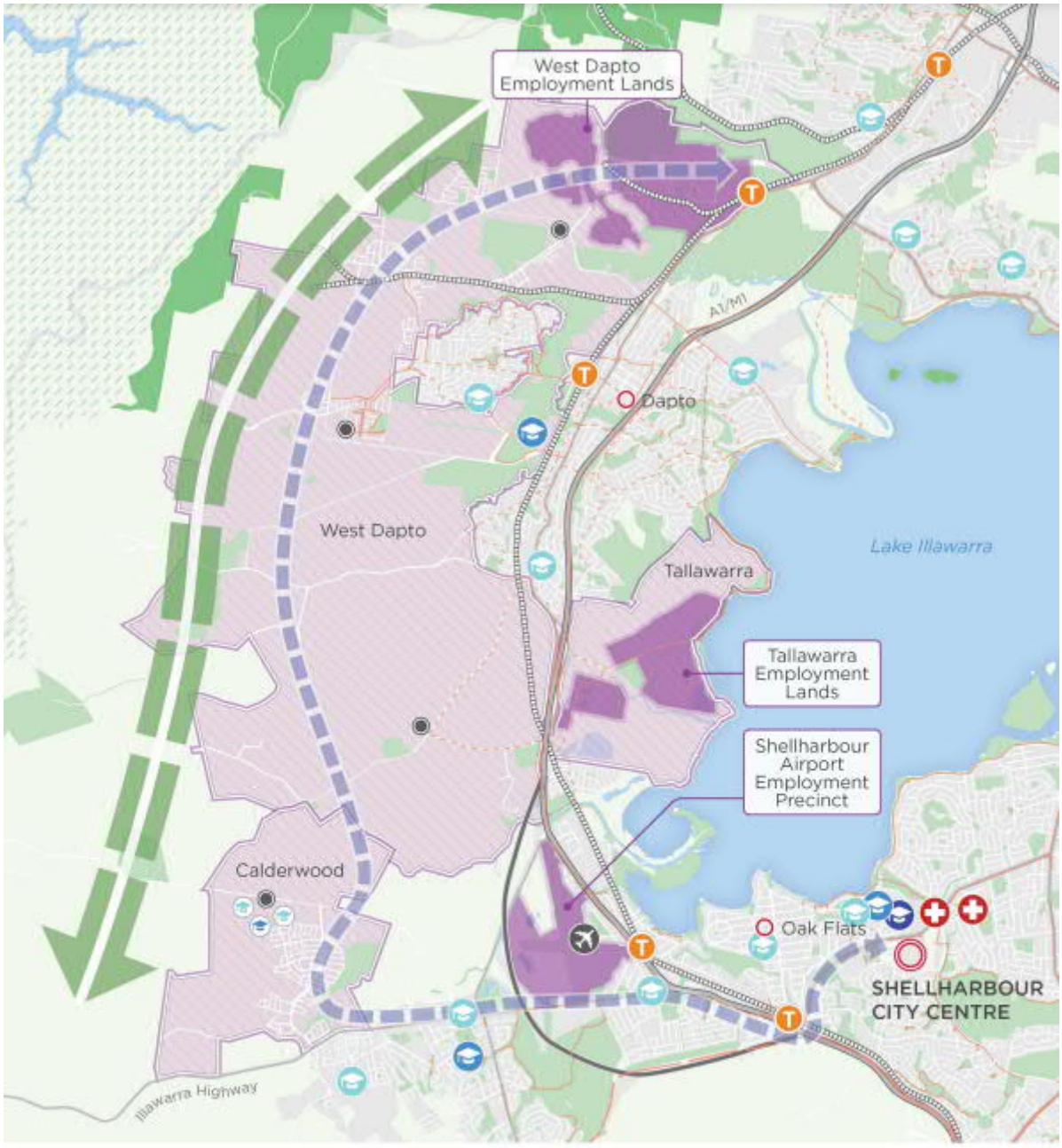
4.1 West Lake Illawarra

The West Lake Illawarra development area is depicted in the figure below and captures the long term development of West Dapto, Avondale, Calderwood and Tullimbar regions.

Table 32- Precincts and Servicing

Precincts and Major Spot Loads	**Partial or complete servicing from Existing Assets:**	**Proposed Zone Substation**
West Dapto Employment Lands	Kembla Grange	West Dapto ZS
West Dapto	Kembla Grange	
Calderwood		Calderwood ZS
Avondale		Avondale ZS*
Tallawarra		
Tallawarra Employment Lands		

Note: * >10 years away



Map 9: West Lake Illawarra Growth Area

0 0.5 1 2km

N

- Regional city
- Strategic centre
- Future local centre
- Housing release areas
- Regionally Significant Employment Lands
- Improved connectivity
- Railway line
- A1/M1
- Albion Park Rail Bypass
- Existing cycle paths
- Proposed cycle paths
- Train station
- Tertiary education
- Secondary education
- Primary education
- Future secondary education
- Future primary education
- Hospital
- Shellharbour Airport and Technology Park
- Biodiversity corridor
- Sydney drinking water catchment
- Open space
- National park
- Water body

4.1.1.1 West Dapto Zone Substation

Although approval for construction of West Dapto Zone Substation has not been sought, it has been the subject of a trial grid battery project and hence has a line item in the detailed network demand forecast section.

Table 33 contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 34 shows the forecast load on the proposed Zone Substation.

Table 33 - Loads considered in forecast for Kembla Grange

Kembla Grange	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Kembla Grange SDF3 50 PoE	8.9	9.8	9.9	9.9	9.9	9.9	4.5	4.6	4.8	4.9
UCL10699 (WLI) Horsley, West Dapto Rd, 65 light Indust	0.7									
UIL5619 Kembla Grange, Composting Site	0.7									
UIS0966 (WLI) Kembla Grange, Service Station & Industrial Deve		0.4								
UML9761 (WLI) West Dapto, Kembla Grange, 108 Apartn	0.3									
(WLI) West Dapto Residential Dev. Nth, Ctrl & Sth			0.8	0.8	0.8	0.9	0.9	0.9	1.0	
URS19124 (WLI) Kembla Grange, Sheaffes Rd, Phase 02,										
URS19125 (WLI) Kembla Grange, Sheaffes Rd, Phase 03,	0.0									
URS19126 (WLI) Kembla Grange, Sheaffes Rd, Phase 03,	0.1	0.0								
URS20190 (WLI) Smith lane, Kembla Grange - Sanctury P	0.1	0.0								
URS20191 (WLI) Smith lane, Kembla Grange - Sanctury P	0.1	0.0								
URS20192 (WLI) Smith lane, Kembla Grange - Sanctury P										
URS21477 (WLI) West Dapto Rd, 77 lots	0.1									
URS21478 (WLI) West Dapto Rd, 54 lots										
URS21479 (WLI) West Dapto Rd, 64 lots										
URS21634 (WLI) Wongawilli, 36 lots										
URS21635 (WLI) Wongawilli, 52 lots										
URS21636 (WLI) Wongawilli, 27 lots	0.1									
URS21637 (WLI) Wongawilli, 39 lots	0.1									
URS21638 (WLI) Wongawilli, 30 lots	0.1	0.1								
URS21639 (WLI) Wongawilli, 21 lots	0.0	0.0								
URS22665 (WLI) West Dapto, Horsley, 24 Lots										
URS24537 (WLI) West Dapto, Horsley, 38 T/Houses	0.1									
URS24537 (WLI) West Dapto, Horsley, 45 Lots	0.1									
URS25175 (WLI) Kembla Grange, Sheaffes Rd, 15 Dual O	0.0	0.1	0.0							
URS25175 (WLI) Kembla Grange, Sheaffes Rd, 84 Town H	0.1	0.1	0.1							
URS26234 (WLI) Kembla Grange, Stage 2A - 27 Lots	0.1	0.1								
URS26234 (WLI) Kembla Grange, Stage 2A - 71 Lots	0.1	0.1								
Cumulative new Load	2.5	3.5	4.4	5.2	6.1	7.0	8.0	8.9	9.9	9.9
Load Transfers to West Dapto						5.5				
Kembla Grange Forecast w/o West Dapto loads	6.4	6.3	5.5	4.7	3.8	2.9	4.5	4.6	4.8	4.9

Table 34 – Prospective forecast for West Dapto ZS

West Dapto ZS Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Low			0.7	1.5	2.3	3.2	23.9	24.7	25.7	25.7
Central			0.8	1.7	2.5	3.5	26.5	27.4	28.5	28.5
High			0.9	1.9	2.8	3.9	29.2	30.1	31.4	31.4

4.1.1.2 Calderwood Zone Substation

As construction of Calderwood (Mobile) Zone Substation has been approved and is underway, there is a line entry for Calderwood ZS in the detailed network demand forecast section.
A full reconciliation between the area plan forecast and the existing assets forecast is in the process of being compiled.

Table 29 contains the existing zone substation(s) and the anticipated load applications for the new (greenfield precincts) over a ten-year period. Table 36 shows the forecast load on the proposed Zone Substation.

Table 35 - Calderwood loads shown in Albion Park ZS Forecast

Albion Park	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Albion Park SDF23 50PoE	25.9	21.9	22.4	22.1	22.2	22.4	22.7	23.1	23.6	24.1
NRL11077 Yellow Rock	0.0									
UCL10715 (WLI) Calderwood, Tavern	0.1									
UIL6067 Croom, Cleary Bros	0.2									
URS21501 Tullimbar, Commercial Load	0.2									
Calderwood Residential Development	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	
UIL5809 Albion Park Rail, Industrial Units	0.2	0.1								
URS18121-1 (WLI) Calderwood, Stage 2B1 - 145 Lots										
URS18121-2 (WLI) Calderwood, Stage 2B2 - 121 Lots										
URS18542 (WLI) Calderwood - Stage 3A1, 126 Lots	0.0									
URS18543 (WLI) Calderwood - Stage 3A2, 127 Lots	0.0									
URS19245-1 (WLI) Calderwood - Stage 2C, 151 lots	0.1	0.0								
URS19245-2 (WLI) Calderwood - Stage 3B South, 157 lots	0.2	0.1	0.0							
URS19436 Albion Park, Bella Vista Estate, - 87 Dual Occu										
URS20846-47 (WLI) Calderwood, 112 lots	0.2	0.2								
URS20848 (WLI) Calderwood, 29 lots	0.0	0.0	0.0	0.0						
URS20988 Tullimbar, Yellow Rock Rd - 31 lots	0.0									
URS21096 Tullimbar, 87 lots										
URS21097 Tullimbar, 76 lots										
URS21099 Tullimbar, 50 lots										
URS21384 Tullimbar, 49 lots										
URS21420 Tullimbar, 37 lots										
URS21522 Tullimbar, 16 lots										
URS21579 (WLI) Calderwood, 31 lots										
URS21580 (WLI) Calderwood, 38 lots	0.1									
URS21581 (WLI) Calderwood, 67 lots	0.1	0.1								
URS21582 (WLI) Calderwood, 58 lots	0.1	0.1								
URS21583 (WLI) Calderwood, 19 lots	0.0	0.0								
URS22581 Albion Park	0.0									
URS23620 (WLI) Calderwood - Stage 3C1A, 115 Lots	0.2	0.1	0.0							
URS23621 (WLI) Calderwood, Stage 3C1B, 41 Lots	0.1	0.1								
URS23756 (WLI) Calderwood - Stage 3C2A, 97 Lots	0.1	0.1	0.1							
URS23834 (WLI) Calderwood - Stage 3C2A, 89 Lots	0.1	0.2	0.1							
URS23902 Tullimbar, Tomerong St - Stage 8A, 35 lots	0.1	0.0								
URS24321 Albion Park, Stage 3B, 3C & 3D - 24 Lots	0.0									
URS24616 Tullimbar, Yellow Rock Rd	0.1	0.2	0.1	0.0						
URS24798 Tullimbar - Stage 8b, 35 Lots	0.1	0.0								
URS26189 Albion Park, Stage 5 - 32 Lots	0.1	0.1								
Cumulative load	2.6	4.1	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Load transfers to Calderwood		5.1								
Albion Park Load w/o Calderwood load	23.3	17.8	17.9	17.6	17.7	17.9	18.2	18.6	19.1	19.6

Table 36 - Prospective Forecast for Calderwood ZS

Calderwood Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Low	0.7	5.9	6.7	7.3	8.0	8.6	9.4	10.2	11.0	11.0
Central	0.8	6.6	7.4	8.1	8.9	9.6	10.4	11.3	12.2	12.2
High	0.9	7.3	8.1	8.9	9.8	10.6	11.4	12.4	13.4	13.4

5 DEMAND FORECASTS: SUB-TRANSMISSION SUBSTATIONS

5.1 Baulkham Hills STS Demand Forecast

Discussion

There are four 132/33kV 60MVA transformers at Baulkham Hills STS. There is 55 MVAr of capacitance installed on the 33kV busbar at Baulkham Hills STS. The historical and forecast MVAr figures include the effects of this capacitance. Baulkham Hills Zone Substation contains two 132/11kV 45MVA transformers and is located within Baulkham Hills STS.

Baulkham Hills ZS is supplied by Sydney West Bulk Supply Point via Baulkham Hills STS 132kV busbar. The Baulkham Hills 132/11kV load is shown under the Sydney West STS 132kV load.

Major developments on Baulkham Hills are the upgrade to Westmead Hospital, the expansion of the University of Western Sydney at Westmead and various medium to high density developments.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Baulkham Hills	1 x 30/45/60 + 2 x 40/50/60 + 1 x 40/60	240
Jasper Road	1 x 15/19/25 + 2 x 15/20/25	75
North Rocks	2 x 15/19/25	50
Northmead	2 x 22/27/35	70
Seven Hills	3 x 15/19/25	75
Westmead	2 x 22/27/35	70

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2023	North_Rocks	Baulkham_Hills	Jasper_Road	Baulkham_Hills	0.44
2024	Seven_Hills	Baulkham_Hills	Station_DC	Sydney_West_132kV	3.60
2024	Westmead	Baulkham_Hills	Wmead_132KV	Holroyd_132kV	24.57
2023	Leabons_Lane	Blacktown	Seven_Hills	Baulkham_Hills	0.86
2025	Cheriton_Avenue	Vineyard	Jasper_Road	Baulkham_Hills	1.20

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Jasper_Road	ULL2378 Ted Horwood Reserve	2023	0.18	0.09	0.20
North_Rocks	UIL5358 18 Loyalty Rd, North Rocks	2023	0.63	0.31	0.70
Northmead	UCL10605 574-584 Church St, North Parramatta	2023	0.12	0.06	0.13
Northmead	UCL10885 1 Windsor Rd, North Rocks	2024	0.74	0.15	0.75
Northmead	UCL11272 98-100 Windsor Rd, Northmead	2024	0.09	0.02	0.09
Northmead	UML7948 34-36 Briens Rd, Northmead	2023	0.07	0.03	0.08
Seven_Hills	DBL2589 Building supply for UIL6077 data centre connection	2023	0.81	0.39	0.90
Seven_Hills	UCL10204 Car charging Abbott Rd	2025	0.90	0.44	1.00
Seven_Hills	UCL10317 Brumby St industrial	2023	0.23	0.11	0.25
Seven_Hills	UIL5819 18 powers rd	2024	0.32	0.15	0.35
Seven_Hills	UIL5934 163 prospect hwy hilti	2024	0.18	0.09	0.20
Seven_Hills	UIL6077 Dedicated Data centre load temporary	2023	5.40	2.62	6.00
Seven_Hills	uml10041 16 units freeman rd	2024	0.05	0.01	0.05
Seven_Hills	UML7829 29 and 13 Rowley st sevenhills units	2024	0.09	0.04	0.10
Seven_Hills	UML8795 Pioneer St 40 multi unit	2023	0.12	0.06	0.13
Seven_Hills	UUL1927 Warehouse Brahms Road	2024	0.16	0.08	0.18
Westmead	ARP4548 24-26 Railway Pde, Westmead	2023	-0.11	0.05	-0.13
Westmead	Cumberland West FY23	2023	0.09	0.04	0.10
Westmead	Cumberland West FY24	2024	0.12	0.06	0.13
Westmead	Cumberland West FY25	2025	0.15	0.07	0.17
Westmead	Cumberland West FY26	2026	0.19	0.09	0.21
Westmead	Cumberland West FY27	2027	0.23	0.11	0.25
Westmead	Cumberland West FY28	2028	0.26	0.13	0.29
Westmead	Cumberland West FY29	2029	0.29	0.14	0.32
Westmead	Cumberland West FY30	2030	0.32	0.16	0.36
Westmead	Cumberland West FY31	2031	0.36	0.17	0.40
Westmead	Cumberland West FY32	2032	0.40	0.19	0.44
Westmead	DBL2675 24-26 Railway Pde, Westmead	2024	0.42	0.20	0.47
Westmead	ENL2699 Lot 3 UWS Site	2026	0.79	0.38	0.88
Westmead	Other Westmead Developments FY23	2023	0.30	0.14	0.33

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Westmead	Other Westmead Developments FY24	2024	0.30	0.14	0.33
Westmead	Other Westmead Developments FY25	2025	0.30	0.14	0.33
Westmead	Other Westmead Developments FY26	2026	0.30	0.14	0.33
Westmead	Other Westmead Developments FY27	2027	0.30	0.14	0.33
Westmead	Other Westmead Developments FY28	2028	0.30	0.14	0.33
Westmead	Other Westmead Developments FY29	2029	0.30	0.14	0.33
Westmead	Other Westmead Developments FY30	2030	0.30	0.14	0.33
Westmead	Other Westmead Developments FY31	2031	0.30	0.14	0.33
Westmead	Other Westmead Developments FY32	2032	0.30	0.14	0.33
Westmead	UUL1843 PLR TPS 1, Westmead	2024	3.18	0.64	3.24
Westmead	Westmead Hospital FY23	2023	1.98	0.96	2.20

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Jasper_Road	UML7004 2 Seven Hills Rd, Baulkham Hills	2021	3	1.47
Westmead	UCL10445 Lot 2, UWS Site, Hawkesbury Rd, Westmead	2024	2	2.20
Westmead	UML8502 Lot 5, UWS Site, Hawkesbury Rd, Westmead	2021	3	1.83
Westmead	UML9223 Lot 4, UWS Site, Hawkesbury Rd, Westmead	2025	2	1.14

Generation

Zone Substation	Name	Description	Date
Westmead	Westmead Hospital	2 x 1MW diesel	Installed

Baulkham Hills STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**41.3**	**35.1**	**39.8**	**38.5**	**32.8**	**26.8**										
Jasper Road	MW	37.7	35.0	42.1	35.9	37.1	36.6	37.1	36.8	38.0	37.5	37.4	37.3	37.3	37.2	37.3	37.4
	MVAr	10.0	8.0	10.0	7.4	6.9	5.3	5.4	5.3	5.5	5.4	5.4	5.4	5.4	5.4	5.4	5.4
10% POE	**MVA**	**39.0**	**35.9**	**43.2**	**36.7**	**37.7**	**37.0**	**37.5**	**37.2**	**38.4**	**37.9**	**37.8**	**37.7**	**37.7**	**37.6**	**37.7**	**37.8**
	PF	0.966	0.975	0.973	0.979	0.983	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
	MW	31.8	30.0	35.6	29.9	31.4	31.2	31.7	31.4	32.6	32.1	32.0	31.9	31.9	31.8	31.9	32.0
	MVAr	8.4	6.8	8.5	6.2	5.8	4.5	4.6	4.5	4.7	4.6	4.6	4.6	4.6	4.6	4.6	4.6
50% POE	**MVA**	**32.9**	**30.7**	**36.6**	**30.5**	**31.9**	**31.5**	**32.0**	**31.7**	**32.9**	**32.5**	**32.3**	**32.2**	**32.2**	**32.2**	**32.2**	**32.3**
	PF	0.966	0.975	0.973	0.979	0.983	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
Actual	**MVA**	**24.7**	**27.7**	**27.6**	**27.7**	**19.7**	**20.6**										
Northmead	MW	23.2	26.1	28.5	26.5	24.5	24.9	24.6	24.9	24.8	24.4	24.3	24.3	24.5	24.6	24.9	25.2
	MVAr	2.9	6.4	3.2	0.6	0.7	1.4	3.1	3.1	3.1	3.0	3.0	3.0	3.0	3.1	3.1	3.1
10% POE	**MVA**	**23.3**	**26.9**	**28.7**	**26.5**	**24.5**	**24.9**	**24.8**	**25.1**	**25.0**	**24.6**	**24.4**	**24.5**	**24.7**	**24.8**	**25.1**	**25.4**
	PF	0.992	0.971	0.994	1.000	1.000	0.998	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
	MW	21.0	24.0	25.8	23.4	21.6	22.0	21.8	22.1	21.9	21.5	21.5	21.5	21.7	21.9	22.2	22.5
	MVAr	2.7	5.9	2.9	0.5	0.7	1.3	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.8
50% POE	**MVA**	**21.1**	**24.7**	**25.9**	**23.4**	**21.6**	**22.1**	**21.9**	**22.2**	**22.1**	**21.7**	**21.6**	**21.7**	**21.9**	**22.0**	**22.3**	**22.6**
	PF	0.992	0.971	0.994	1.000	1.000	0.998	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Actual	**MVA**	**21.6**	**18.9**	**21.6**	**19.6**	**19.5**	**18.7**										
North Rocks	MW	20.9	19.9	22.7	19.5	20.7	21.4	21.3	21.2	21.2	21.0	20.9	21.0	21.1	21.3	21.5	21.7
	MVAr	1.5	1.3	6.1	4.1	0.8	1.6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.2
10% POE	**MVA**	**21.0**	**19.9**	**23.5**	**19.9**	**20.7**	**21.5**	**21.6**	**21.4**	**21.4**	**21.2**	**21.2**	**21.2**	**21.4**	**21.5**	**21.7**	**22.0**
	PF	0.998	0.998	0.965	0.979	0.999	0.997	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	18.6	17.4	19.7	17.1	18.4	19.1	19.1	18.9	18.9	18.7	18.7	18.7	18.9	19.0	19.2	19.5
	MVAr	1.3	1.1	5.3	3.6	0.7	1.4	2.8	2.8	2.8	2.8	2.7	2.8	2.8	2.8	2.8	2.9
50% POE	**MVA**	**18.6**	**17.5**	**20.4**	**17.5**	**18.4**	**19.2**	**19.3**	**19.1**	**19.1**	**18.9**	**18.9**	**18.9**	**19.1**	**19.2**	**19.4**	**19.7**
	PF	0.998	0.998	0.965	0.979	0.999	0.997	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	**MVA**	**27.2**	**24.2**	**23.1**	**21.6**	**18.8**	**21.0**										
Seven Hills	MW	26.1	23.8	22.4	20.5	18.2	20.3	26.4	23.3	23.9	23.6	23.5	23.5	23.5	23.5	23.6	23.7
	MVAr	7.7	4.4	5.8	6.6	4.8	5.2	7.0	6.2	6.4	6.3	6.3	6.3	6.3	6.3	6.3	6.3
10% POE	**MVA**	**27.2**	**24.2**	**23.1**	**21.6**	**18.8**	**21.0**	**27.3**	**24.1**	**24.8**	**24.5**	**24.3**	**24.3**	**24.3**	**24.3**	**24.4**	**24.5**
	PF	0.959	0.983	0.968	0.952	0.967	0.969	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
	MW	26.1	23.8	22.4	20.5	18.2	20.3	26.4	23.3	23.9	23.6	23.5	23.5	23.5	23.5	23.6	23.7
	MVAr	7.7	4.4	5.8	6.6	4.8	5.2	7.0	6.2	6.4	6.3	6.3	6.3	6.3	6.3	6.3	6.3
50% POE	**MVA**	**27.2**	**24.2**	**23.1**	**21.6**	**18.8**	**21.0**	**27.3**	**24.1**	**24.8**	**24.5**	**24.3**	**24.3**	**24.3**	**24.3**	**24.4**	**24.5**
	PF	0.959	0.983	0.968	0.952	0.967	0.969	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
Actual	**MVA**	**25.1**	**26.1**	**24.3**	**27.0**	**26.4**	**25.4**										
Westmead	MW	25.0	23.1	25.8	26.6	26.6	27.0	29.1	9.3	11.0	12.4	12.8	13.3	13.8	14.4	15.0	15.7
	MVAr	5.4	11.2	5.1	4.8	4.6	4.2	7.4	2.4	2.8	3.1	3.3	3.4	3.5	3.6	3.8	4.0
10% POE	**MVA**	**25.5**	**25.7**	**26.3**	**27.0**	**27.0**	**27.3**	**30.1**	**9.6**	**11.4**	**12.8**	**13.2**	**13.7**	**14.3**	**14.8**	**15.5**	**16.2**
	PF	0.978	0.900	0.981	0.984	0.985	0.988	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969
	MW	23.6	21.8	24.3	25.0	25.1	25.5	27.7	7.8	9.5	10.9	11.4	11.8	12.4	12.9	13.5	14.2
	MVAr	5.1	10.5	4.8	4.5	4.3	4.0	7.0	2.0	2.4	2.8	2.9	3.0	3.1	3.3	3.4	3.6
50% POE	**MVA**	**24.1**	**24.2**	**24.8**	**25.4**	**25.5**	**25.8**	**28.5**	**8.1**	**9.8**	**11.3**	**11.7**	**12.2**	**12.8**	**13.3**	**14.0**	**14.6**
	PF	0.978	0.900	0.981	0.984	0.985	0.988	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969
Actual	**MVA**	**139.9**	**131.9**	**136.4**	**134.3**	**117.2**	**112.5**										
Undiversified	MW	132.9	127.8	141.4	129.0	127.0	130.2	138.6	115.5	118.9	118.9	119.0	119.4	120.2	121.1	122.3	123.7
	MVAr	27.5	31.3	30.3	23.5	17.8	17.7	26.0	20.1	20.8	21.0	21.0	21.1	21.3	21.5	21.7	22.0
10% POE	**MVA**	**136.1**	**132.5**	**144.8**	**131.7**	**128.7**	**131.7**	**141.2**	**117.4**	**120.9**	**121.0**	**121.0**	**121.5**	**122.3**	**123.1**	**124.5**	**125.8**
	PF	0.976	0.965	0.976	0.980	0.987	0.989	0.981	0.984	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
	MW	121.0	116.9	127.7	115.9	114.7	118.2	126.6	103.5	106.9	106.9	107.0	107.5	108.3	109.1	110.4	111.7
	MVAr	25.2	28.8	27.3	21.4	16.3	16.4	24.1	18.2	19.0	19.1	19.2	19.3	19.5	19.6	19.9	20.2
50% POE	**MVA**	**124.0**	**121.2**	**130.7**	**118.3**	**116.2**	**119.6**	**129.1**	**105.2**	**108.7**	**108.8**	**108.9**	**109.4**	**110.2**	**111.1**	**112.4**	**113.7**
	PF	0.976	0.964	0.976	0.979	0.987	0.989	0.981	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
Actual	**MVA**	**141.4**	**164.3**	**156.1**	**131.1**	**122.2**	**113.2**										
Diversified#	MW	137.9	146.7	141.3	135.0	140.0	139.6	136.7	113.9	117.3	117.3	117.4	117.8	118.6	119.4	120.7	122.0
(Meter)	MVAr	29.4	32.7	30.0	26.0	30.6	40.06	30.9	25.8	26.5	26.5	26.5	26.6	26.8	27.0	27.3	27.6
10% POE	**MVA**	**141.0**	**150.3**	**144.4**	**137.5**	**143.3**	**145.2**	**140.1**	**116.8**	**120.2**	**120.3**	**120.3**	**120.8**	**121.6**	**122.4**	**123.7**	**125.1**
	PF	0.978	0.976	0.978	0.982	0.977	0.961	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
	MW	119.2	128.7	119.6	115.5	121.4	121.2	124.8	102.0	105.4	105.5	105.5	106.0	106.8	107.6	108.9	110.2
	MVAr	25.4	28.7	25.4	22.2	26.5	34.78	28.2	23.1	23.8	23.8	23.9	24.0	24.2	24.3	24.6	24.9
50% POE	**MVA**	**121.9**	**131.8**	**122.3**	**117.6**	**124.3**	**126.1**	**128.0**	**104.6**	**108.1**	**108.1**	**108.2**	**108.7**	**109.5**	**110.4**	**111.7**	**113.0**
	PF	0.978	0.976	0.978	0.982	0.977	0.961	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
Est. System Normal																	
	MVA				**121.1**	**103.9**	**107.8**										

Note: #Diversified values which are greater than undiversified values are due to abnormal switching.

5.2 Bellambi STS Demand Forecast

Discussion

Bellambi STS has three 60 MVA 132/33kV transformers providing a firm capacity of 120MVA and is supplied from Dapto BSP via two 132kV feeders 980 and 981.

The main load growth in the Bellambi STS supply area will be further development at the University of Wollongong in addition to high density residential and commercial redevelopment in north Wollongong.

The 33kV network at Helensburgh ZS was rearranged to accommodate the expansion of Helensburgh Colliery (HVC 29470) in April 2014 with some existing load transferred from the 11kV network to the new 33kV connection.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Bellambi	3 x 60	180
Bulli	2 x 15	30
Corrimal	2 x 19	38
Darkes Forest	2 x 5	10
Helensburgh	2 x 12.5	25
Mt Ousley	2 x 35	70
Russell Vale	2 x 25	50
Wombarra	2 x 5	10

Proposed Load Transfers

No Proposed Load Transfers at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Bulli	ULL3245 Thirroul, Thomas Gibson Park	2023	0.13	0.06	0.14
Bulli	UML9641 Bulli, 18 Units	2023	0.05	0.03	0.06
Corrimal	ULL3146 Corrimal, Public High School	2023	0.24	0.11	0.26
Corrimal	UML9611 Corrimal, 28 x Townhouses	2024	0.10	0.05	0.11
Helensburgh	NCL1716 Helensburgh, Symbio Wildlife Park	2023	0.07	0.01	0.07
Helensburgh	NCL1717 Helensburgh, Symbio Wildlife Park	2023	0.08	0.02	0.08
Mt_Ousley	ULL3019 Fairy Meadow, Sports Ground	2023	0.12	0.02	0.12
Mt_Ousley	UML10229 Fairy Meadow, 27 Units	2024	0.13	0.03	0.13
Mt_Ousley	UML9423 Keiraville, 53 Residential Units	2024	0.16	0.08	0.17
Mt_Ousley	UML9919 Wollongong, Belmore St	2023	0.27	0.13	0.30
Russell_Vale	UIL5757 Bellambi, 87 x Industrial Unit Development	2023	0.72	0.35	0.80
Russell_Vale	UML9978 Bellambi, 18 Units	2024	0.08	0.02	0.08

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Bulli	URS21578 Bulli, 5 lots	2021	2	0.02
Corrimal	URS23031 Balgownie, 22 Large Lots	2023	5	0.18
Russell_Vale	URS12845 Russell Vale, 15 Lots	2021	3	0.07

Generation

No Generation known at this location

Bellambi STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**11.5**	**12.1**	**10.9**	**12.7**	**12.6**	**9.9**										
Bulli	MW	10.1	10.4	12.2	12.0	11.2	11.4	11.5	11.4	11.6	11.4	11.5	11.8	12.2	12.6	13.1	13.6
	MVAr	1.7	1.4	1.3	1.3	0.9	0.1	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.5
10% POE	**MVA**	**10.2**	**10.5**	**12.3**	**12.1**	**11.3**	**11.4**	**11.6**	**11.5**	**11.6**	**11.5**	**11.6**	**11.8**	**12.3**	**12.7**	**13.2**	**13.7**
	PF	0.986	0.992	0.995	0.994	0.997	1.000	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	9.0	9.3	10.7	10.3	9.8	9.9	10.0	9.9	10.0	9.9	10.0	10.3	10.7	11.1	11.6	12.1
	MVAr	1.5	1.2	1.1	1.1	0.8	0.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.3
50% POE	**MVA**	**9.1**	**9.3**	**10.7**	**10.3**	**9.9**	**9.9**	**10.1**	**10.0**	**10.1**	**9.9**	**10.0**	**10.3**	**10.7**	**11.1**	**11.6**	**12.2**
	PF	0.986	0.992	0.995	0.994	0.997	1.000	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**18.7**	**18.4**	**17.8**	**18.4**	**18.6**	**16.7**										
Corrimal	MW	17.2	17.3	20.2	17.5	17.9	17.9	17.9	17.8	18.0	17.7	17.7	17.9	18.2	18.5	18.8	19.2
	MVAr	1.8	3.0	4.0	0.6	2.6	0.6	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2
10% POE	**MVA**	**17.3**	**17.5**	**20.6**	**17.5**	**18.0**	**17.9**	**17.9**	**17.8**	**18.0**	**17.7**	**17.8**	**17.9**	**18.2**	**18.5**	**18.9**	**19.3**
	PF	0.995	0.986	0.981	0.999	0.989	0.999	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
	MW	15.1	15.3	17.0	15.0	15.4	15.2	15.3	15.2	15.4	15.1	15.2	15.3	15.6	15.9	16.3	16.6
	MVAr	1.6	2.6	3.3	0.5	2.3	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1
50% POE	**MVA**	**15.1**	**15.5**	**17.3**	**15.0**	**15.6**	**15.3**	**15.3**	**15.2**	**15.4**	**15.1**	**15.2**	**15.3**	**15.6**	**15.9**	**16.3**	**16.7**
	PF	0.995	0.986	0.981	0.999	0.989	0.999	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
Actual	**MVA**	**0.9**	**0.5**	**0.4**	**0.9**	**0.8**	**1.0**										
Darkes Forest	MW	0.9	0.9	0.3	0.9	0.8	1.0	0.9	0.9	0.8	0.7	0.7	0.7	0.8	0.8	0.9	0.9
	MVAr	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10% POE	**MVA**	**0.9**	**0.9**	**0.4**	**0.9**	**0.8**	**1.0**	**1.0**	**0.9**	**0.8**	**0.7**	**0.7**	**0.7**	**0.8**	**0.8**	**0.9**	**1.0**
	PF	1.000	0.998	0.944	0.989	1.000	1.000	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	0.9	0.9	0.3	0.9	0.8	1.0	0.9	0.9	0.8	0.7	0.7	0.7	0.8	0.8	0.9	0.9
	MVAr	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50% POE	**MVA**	**0.9**	**0.9**	**0.4**	**0.9**	**0.8**	**1.0**	**1.0**	**0.9**	**0.8**	**0.7**	**0.7**	**0.7**	**0.8**	**0.8**	**0.9**	**1.0**
	PF	1.000	0.998	0.944	0.989	1.000	1.000	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	**MVA**	**8.8**	**7.9**	**7.9**	**9.3**	**8.3**	**7.4**										
Helensburgh	MW	8.8	8.8	7.9	9.3	8.2	7.3	7.3	7.3	7.3	7.2	7.2	7.3	7.4	7.5	7.6	7.8
	MVAr	1.0	0.6	0.7	0.7	1.4	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9
10% POE	**MVA**	**8.8**	**8.8**	**7.9**	**9.3**	**8.3**	**7.4**	**7.4**	**7.3**	**7.3**	**7.2**	**7.3**	**7.3**	**7.4**	**7.5**	**7.7**	**7.8**
	PF	0.993	0.998	0.996	0.997	0.987	0.991	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	8.8	8.8	7.9	9.3	8.2	7.3	7.3	7.3	7.3	7.2	7.2	7.3	7.4	7.5	7.6	7.8
	MVAr	1.0	0.6	0.7	0.7	1.4	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9
50% POE	**MVA**	**8.8**	**8.8**	**7.9**	**9.3**	**8.3**	**7.4**	**7.4**	**7.3**	**7.3**	**7.2**	**7.3**	**7.3**	**7.4**	**7.5**	**7.7**	**7.8**
	PF	0.993	0.998	0.996	0.997	0.987	0.991	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**8.6**	**9.3**	**9.2**	**8.9**	**8.8**	**8.9**										
Helensburgh Colliery	MW	8.3	8.3	8.3	8.5	8.1	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
	MVAr	2.5	4.3	4.1	2.5	3.4	2.2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
10% POE	**MVA**	**8.6**	**9.3**	**9.3**	**8.9**	**8.8**	**8.9**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**
	PF	0.957	0.889	0.896	0.959	0.921	0.970	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
Major customer	MW	8.3	8.3	8.3	8.5	8.1	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
	MVAr	2.5	4.3	4.1	2.5	3.4	2.2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
50% POE	**MVA**	**8.6**	**9.3**	**9.3**	**8.9**	**8.8**	**8.9**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**	**9.1**
	PF	0.957	0.889	0.896	0.959	0.921	0.970	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
Actual	**MVA**	**20.8**	**17.8**	**19.8**	**19.6**	**17.2**	**16.5**										
Mt Ousley	MW	19.4	18.3	21.4	19.0	19.0	18.6	18.5	18.4	18.5	18.2	18.1	18.2	18.3	18.5	18.7	18.9
	MVAr	3.6	2.5	3.5	1.4	0.0	3.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7
10% POE	**MVA**	**19.8**	**18.5**	**21.7**	**19.0**	**19.0**	**18.9**	**18.7**	**18.6**	**18.6**	**18.3**	**18.3**	**18.4**	**18.5**	**18.7**	**18.9**	**19.1**
	PF	0.983	0.991	0.987	0.997	1.000	0.983	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
	MW	17.3	16.5	18.2	16.8	16.7	16.2	16.1	16.1	16.1	15.8	15.8	15.8	16.0	16.1	16.3	16.6
	MVAr	3.2	2.2	3.0	1.2	0.0	3.0	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3
50% POE	**MVA**	**17.6**	**16.6**	**18.4**	**16.8**	**16.7**	**16.5**	**16.3**	**16.2**	**16.3**	**16.0**	**15.9**	**16.0**	**16.2**	**16.3**	**16.5**	**16.7**
	PF	0.983	0.991	0.987	0.997	1.000	0.983	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
Actual	**MVA**	**13.8**	**15.0**	**13.9**	**15.4**	**15.7**	**13.2**										
Russell Vale	MW	13.7	13.7	13.9	15.3	15.6	13.2	13.6	13.5	13.7	13.4	13.4	13.6	13.9	14.1	14.5	14.9
	MVAr	1.9	0.0	1.2	1.8	1.7	0.0	1.3	1.2	1.3	1.2	1.2	1.2	1.3	1.3	1.3	1.4
10% POE	**MVA**	**13.8**	**13.7**	**13.9**	**15.4**	**15.7**	**13.2**	**13.7**	**13.6**	**13.7**	**13.4**	**13.5**	**13.7**	**13.9**	**14.2**	**14.6**	**15.0**
	PF	0.991	1.000	0.996	0.993	0.994	1.000	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	13.7	13.7	13.9	15.3	15.6	13.2	13.6	13.5	13.7	13.4	13.4	13.6	13.9	14.1	14.5	14.9
	MVAr	1.9	0.0	1.2	1.8	1.7	0.0	1.3	1.2	1.3	1.2	1.2	1.2	1.3	1.3	1.3	1.4
50% POE	**MVA**	**13.8**	**13.7**	**13.9**	**15.4**	**15.7**	**13.2**	**13.7**	**13.6**	**13.7**	**13.4**	**13.5**	**13.7**	**13.9**	**14.2**	**14.6**	**15.0**
	PF	0.991	1.000	0.996	0.993	0.994	1.000	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**2.4**	**3.2**	**2.9**	**3.5**	**1.5**	**1.4**										
South Bulli Colliery	MW	1.9	1.9	2.0	2.5	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	MVAr	1.5	1.8	2.1	2.4	1.1	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
10% POE	**MVA**	**2.4**	**2.6**	**2.9**	**3.5**	**1.5**	**1.4**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**
	PF	0.778	0.726	0.702	0.724	0.684	0.645	0.710	0.710	0.710	0.710	0.710	0.710	0.710	0.710	0.710	0.710
Major customer	MW	1.9	1.9	2.0	2.5	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	MVAr	1.5	1.8	2.1	2.4	1.1	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
50% POE	**MVA**	**2.4**	**2.6**	**2.9**	**3.5**	**1.5**	**1.4**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**
	PF	0.778	0.726	0.702	0.724	0.684	0.645	0.710	0.710	0.710	0.710	0.710	0.710	0.710	0.710	0.710	0.710
Actual	**MVA**	**4.2**	**4.4**	**4.3**	**5.1**	**5.8**	**4.6**										
Wombarra	MW	4.1	4.1	4.3	5.1	5.8	4.6	4.5	4.5	4.6	4.5	4.5	4.6	4.7	4.8	4.9	5.1
	MVAr	0.5	0.3	0.4	0.5	0.5	0.1	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
10% POE	**MVA**	**4.2**	**4.1**	**4.3**	**5.1**	**5.8**	**4.6**	**4.6**	**4.5**	**4.6**	**4.5**	**4.5**	**4.6**	**4.7**	**4.8**	**5.0**	**5.1**
	PF	0.992	0.997	0.995	0.995	0.997	1.000	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	4.1	4.1	4.3	5.1	5.8	4.6	4.5	4.5	4.6	4.5	4.5	4.6	4.7	4.8	4.9	5.1
	MVAr	0.5	0.3	0.4	0.5	0.5	0.1	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
10% POE	**MVA**	**4.2**	**4.1**	**4.3**	**5.1**	**5.8**	**4.6**	**4.6**	**4.5**	**4.6**	**4.5**	**4.5**	**4.6**	**4.7**	**4.8**	**5.0**	**5.1**
	PF	0.992	0.997	0.995	0.995	0.997	1.000	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	**MVA**	**89.6**	**88.5**	**87.1**	**93.7**	**89.3**	**79.6**										
Undiversified	MW	84.3	83.6	90.6	90.1	87.5	83.5	83.9	83.4	83.9	82.6	82.8	83.6	85.0	86.3	88.2	90.0
	MVAr	14.5	13.8	17.3	11.3	11.6	8.6	11.6	11.5	11.5	11.4	11.4	11.5	11.6	11.8	12.0	12.1
10% POE	**MVA**	**86.0**	**85.8**	**93.2**	**91.7**	**89.2**	**84.7**	**85.2**	**84.7**	**85.2**	**83.9**	**84.1**	**84.9**	**86.3**	**87.6**	**89.5**	**91.3**
	PF	0.980	0.973	0.971	0.982	0.982	0.986	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985
	MW	79.0	78.6	82.5	83.7	81.4	77.0	77.4	76.9	77.4	76.1	76.3	77.1	78.5	79.9	81.7	83.6
	MVAr	13.7	13.1	16.0	10.8	11.1	8.1	10.9	10.8	10.9	10.7	10.8	10.8	11.0	11.1	11.3	11.5
50% POE	**MVA**	**80.6**	**80.9**	**85.1**	**85.3**	**83.0**	**78.2**	**78.7**	**78.2**	**78.7**	**77.4**	**77.6**	**78.4**	**79.8**	**81.1**	**83.0**	**84.9**
	PF	0.980	0.972	0.970	0.981	0.981	0.985	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.985	0.985
Actual	**MVA**	**80.7**	**77.9**	**80.4**	**83.5**	**80.6**	**71.4**										
Diversified (Meter)	MW	80.7	76.0	78.5	82.6	79.6	71.0	80.9	80.4	80.9	79.6	79.8	80.6	82.0	83.3	85.0	86.8
	MVAr	16.4	17.0	17.8	12.3	12.8	8.0	9.1	9.0	9.1	8.9	8.9	9.0	9.2	9.3	9.5	9.7
10% POE	**MVA**	**82.3**	**77.9**	**80.4**	**83.5**	**80.6**	**71.4**	**81.4**	**80.9**	**81.4**	**80.1**	**80.3**	**81.1**	**82.5**	**83.8**	**85.6**	**87.4**
	PF	0.980	0.976	0.975	0.989	0.987	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	80.7	76.0	78.5	82.6	79.6	71.0	74.6	74.2	74.7	73.4	73.6	74.4	75.8	77.0	78.8	80.6
	MVAr	16.4	17.0	17.8	12.3	12.8	8.0	8.4	8.3	8.4	8.2	8.2	8.3	8.5	8.6	8.8	9.0
50% POE	**MVA**	**82.3**	**77.9**	**80.4**	**83.5**	**80.6**	**71.4**	**75.1**	**74.6**	**75.1**	**73.9**	**74.1**	**74.9**	**76.2**	**77.5**	**79.3**	**81.1**
	PF	0.980	0.976	0.975	0.989	0.987	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994

5.3 Blacktown STS Demand Forecast

Discussion

Blacktown STS has four 120 MVA 132/33kV transformers providing a firm capacity of 360MVA and is supplied from Sydney West BSP via two dual circuit steel towers lines forming 132kV feeders 93Z/93A and 9J1/9J2.

There is 20MVAr of capacitance installed on the 33kV busbar at Blacktown. An expected load increase on Quarries ZS is attributable to the re-development of Boral land as part of the SEPP 59 Western Sydney Employment Hub development of the Greystanes area.

Load growth in the Blacktown region will be predominately driven by medium density development around Holroyd and Prospect Zone substations. Major developments in the Blacktown area include the upgrade of Blacktown hospital, the establishment of ACU university, along with many residential unit developments, and the addition of Sydney Trains new substation at Toongabbie. Quarries Zone substation will 11MVA of temporary 11kV Data centre load.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Blacktown	4 x 120	480
Bossley Park	2 x 22/26/35	70
Doonside	3 x 45	135
Greystanes	2 x 15/19/25	50
Holroyd	1 x 17.25 + 2 x 25	67.25
Leabons Lane	2 x 15/20/25	50
Marayong	3 x 15/19/25	75
Newton	3 x 15/19/25	75
Prospect	3 x 15	45
Prospect East	2 x 15/20/25	50
Prospect South	2 x 15/20/25	50
Quarries	2 x 35	70

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2024	Greystanes	Blacktown	Fairfield	Guildford	0.4
2024	Greystanes	Blacktown	Woodpark	Guildford	1.80
2024	Holroyd	Blacktown	Sherwood	Guildford	0.6
2023	Leabons_Lane	Blacktown	Seven_Hills	Baulkham_Hills	0.86
2025	Newton	Blacktown	Leabons_Lane	Blacktown	2.10
2024	Quarries	Blacktown	DCI	Sydney_West_132kV	2.50
2024	Quarries	Blacktown	DCI	Sydney_West_132kV	2.50

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
ABC_Tissues	UCL6930 additoinal 8MVA of load totalling 12MVA for ABC Tissues	2024	7.20	3.49	8.00
Bossley_Park	UCL11012 Aged Care Living Community	2023	0.20	0.04	0.20
Fujitsu_Data	Data Centre Load Increase	2023	4.28	2.07	4.75
Fujitsu_Data	Data Centre Load Increase	2024	4.28	2.07	4.75
Fujitsu_Data	Data Centre Load Increase	2025	4.28	2.07	4.75
Fujitsu_Data	Data Centre Load Increase	2026	4.28	2.07	4.75
Fujitsu_Data	Data Centre Load Increase	2027	4.28	2.07	4.75
Greystanes	UIL5884 fox industries load upgrade (undiversified)	2023	0.45	0.22	0.50
Greystanes	UIL6010 Industrial complex (60%)	2023	0.36	0.17	0.40
Greystanes	UIL6091-1 half of 1.75MVA for warren Rd industrial	2023	0.54	0.11	0.55
Greystanes	UIL6111 Warren Rd Smithfield (no Div) 80% div 2.4MVA	2024	1.86	0.38	1.90
Greystanes	uil6928 Pavesi St 80% div 0.93MVA	2024	0.71	0.14	0.72
Holroyd	UCL10610 Units pendleway	2023	0.10	0.05	0.11
Holroyd	UCL10977 127 Wentworth Ave, Wentworthville	2024	0.28	0.06	0.29
Holroyd	UML10144 15 units	2023	0.05	0.01	0.05
Holroyd	UML10279 Units sherwood rd/ Arthur st	2024	0.20	0.04	0.20
Holroyd	UML8923 28 units mays hill belinda pl	2023	0.10	0.05	0.11
Holroyd	UML9146 7 Dunmore St, Wentworthville	2023	0.18	0.09	0.20

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Holroyd	UML9371 Units Wenty	2024	0.14	0.07	0.16
Holroyd	UML9441 30 units	2024	0.10	0.02	0.10
Holroyd	UML9529 42 dunmore st comercial and units	2024	2.64	1.28	2.93
Holroyd	UML9625 49 units 284 GWHY	2024	0.15	0.07	0.16
Leabons_Lane	UCL10900 RSL club upgrade	2024	0.39	0.08	0.40
Leabons_Lane	UML8769 Oxford St 176 units	2024	0.52	0.25	0.58
Marayong	UCL6097 Bessemer St 80%	2023	0.98	0.20	1.00
Marayong	UIL5690 Bessemer st Industrial load (60% diversity)	2024	0.88	0.18	0.90
Marayong	UIL5827 Double cable feeder MA1332, 80% diversification	2023	9.00	4.36	10.00
Marayong	UIL6190 Coronation Ave 60%	2024	1.47	0.30	1.50
Marayong	UIL6226 9 Melissa Cl Kings Park 60%	2024	0.49	0.10	0.50
Newton	UCL9802 Panorama PDE (no diversity)	2023	0.63	0.31	0.70
Newton	UCS0554 Warrick lane University	2025	3.83	1.85	4.25
Newton	UCS0554 Warrick ln University	2024	3.83	1.85	4.25
Newton	UCS0554c Blactkown development	2025	4.12	0.84	4.20
Newton	UML10271 40 unitsGordon St	2024	0.13	0.03	0.13
Newton	UML8687 29-31 Second Ave - 184 units	2024	0.55	0.26	0.61
Newton	UML9046 101 units	2024	0.30	0.15	0.33
Newton	UML9506 Blacktown balmoral st 6 story units	2024	0.25	0.12	0.28
Newton	UML9569 27 second avenue 115 units	2024	0.34	0.17	0.38
Newton	UML9593 1st Avenue Units and commercial	2023	1.34	0.65	1.49
Newton	UML9593 b Units	2023	1.16	0.56	1.29
Newton	UML9653 45 units 28 Peter st Blactkwon	2024	0.13	0.06	0.15
Newton	UML9690 Allawah st units	2024	0.26	0.12	0.28
Newton	UML9775 67 units kildare rd	2024	0.22	0.04	0.22
Newton	URS25531 5 lot subdivision	2024	0.03	0.01	0.03
Prospect	ENL4103 Rowood Rd - switching to B205	2023	0.00	0.00	0.00
Prospect	UCL10465 136 Magowar Rd 80% diversity applied 650kVA load	2024	0.45	0.22	0.50
Prospect	UCL11007 17 9 metella Rd Toongabbie	2025	0.08	0.02	0.08
Prospect	UML9295 Unit Complex Civic st	2023	0.40	0.19	0.44
Prospect	URS23990 10 lots normac st giraween	2024	0.05	0.02	0.05
Quarries	UCL9690-1 DCI Data Centre	2024	1.80	0.87	2.00
Quarries	UCL9690-2 DCI Data Centre	2025	2.70	1.31	3.00
Quarries	UCL9690-3 DCI Data Centre	2024	4.50	2.18	5.00
Quarries	UIL6033 Clunies Ross roundation place 60%	2023	1.62	0.78	1.80
Quarries	UIL6033b Clunies ross st Foundation place 60% div	2023	1.62	0.78	1.80
Quarries	UIL6156 Reconciliation rise (60%)	2023	0.88	0.18	0.90
Quarries	UIL6267 Refer to the below UIL6033	2023	0.00	0.00	0.00
Quarries	ULL2941 41 beresford rd greystanes	2023	0.45	0.22	0.50
Quarries	UML9827 156 units	2023	0.46	0.22	0.51
Quarries	UML9829 144 units	2023	0.43	0.21	0.48
Quarries	URS25064 Residential development driftway dr	2024	0.79	0.38	0.88

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Bossley_Park	UIL5460 1403 The Horsley Dr Wetherill Park - 25 Industrial Units	2024	2	0.33

Generation

No Generation known at this location

Configuration Changes

No configuration change

Blacktown STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**3.8**	**3.8**	**3.9**	**3.9**	**4.1**	**4.0**										
ABC Tissues	MW	3.7	3.7	3.7	3.8	3.9	3.9	3.9	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
	MVAr	0.8	0.9	1.2	0.9	1.3	0.4	0.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
10% POE	**MVA**	**3.8**	**3.8**	**3.9**	**3.9**	**4.1**	**4.0**	**4.0**	**10.4**	**10.4**	**10.4**	**10.4**	**10.4**	**10.4**	**10.4**	**10.4**	**10.4**
	PF	0.979	0.971	0.951	0.974	0.950	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Major customer	MW	3.7	3.7	3.7	3.8	3.9	3.9	3.9	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
	MVAr	0.8	0.9	1.2	0.9	1.3	0.4	0.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
50% POE	**MVA**	**3.8**	**3.8**	**3.9**	**3.9**	**4.1**	**4.0**	**4.0**	**10.4**	**10.4**	**10.4**	**10.4**	**10.4**	**10.4**	**10.4**	**10.4**	**10.4**
	PF	0.979	0.971	0.951	0.974	0.950	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Actual	**MVA**	**7.3**	**9.4**	**9.5**	**9.5**	**9.7**	**9.9**										
Sydney Trains	MW	7.2	9.3	9.4	9.5	9.6	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
North Blacktown	MVAr	1.3	1.7	1.2	1.2	1.7	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
10% POE	**MVA**	**7.3**	**9.4**	**9.5**	**9.5**	**9.7**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**
	PF	0.983	0.983	0.992	0.992	0.985	0.992	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988
Major customer	MW	7.2	9.3	9.4	9.5	9.6	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
	MVAr	1.3	1.7	1.2	1.2	1.7	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
50% POE	**MVA**	**7.3**	**9.4**	**9.5**	**9.5**	**9.7**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**	**9.9**
	PF	0.983	0.983	0.992	0.992	0.985	0.992	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988
Actual	**MVA**	**31.6**	**31.4**	**33.0**	**32.4**	**28.7**	**31.3**										
Bossley Park	MW	32.4	32.1	35.2	32.9	32.7	33.8	33.5	33.3	33.3	33.0	32.9	33.0	33.3	33.5	33.8	34.1
	MVAr	4.1	3.5	3.5	1.0	0.0	5.3	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
10% POE	**MVA**	**32.6**	**32.3**	**35.4**	**32.9**	**32.7**	**33.4**	**33.5**	**33.3**	**33.3**	**33.0**	**32.9**	**33.0**	**33.3**	**33.5**	**33.8**	**34.1**
	PF	0.992	0.994	0.995	1.000	1.000	1.012	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	MW	29.4	29.1	31.6	29.6	29.4	30.4	30.1	29.9	30.0	29.7	29.6	29.7	30.0	30.2	30.5	30.8
	MVAr	3.7	3.2	3.1	0.9	0.0	4.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
50% POE	**MVA**	**29.6**	**29.3**	**31.8**	**29.6**	**29.4**	**30.1**	**30.1**	**29.9**	**30.0**	**29.7**	**29.6**	**29.7**	**29.9**	**30.2**	**30.5**	**30.8**
	PF	0.992	0.994	0.995	1.000	1.000	1.012	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Actual	**MVA**		**8.6**	**8.3**	**8.2**	**8.8**	**5.2**										
Fujitsu Data	MW		7.7	8.1	8.1	8.6	5.0	8.4	11.8	15.3	18.7	22.1	22.1	22.1	22.1	22.1	22.1
	MVAr		3.7	1.9	1.4	1.7	1.3	4.1	5.7	7.4	9.1	10.7	10.7	10.7	10.7	10.7	10.7
10% POE	**MVA**		**8.6**	**8.3**	**8.2**	**8.8**	**5.2**	**9.4**	**13.2**	**17.0**	**20.8**	**24.6**	**24.6**	**24.6**	**24.6**	**24.6**	**24.6**
	PF		0.900	0.972	0.986	0.981	0.969	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Major Customer	MW		7.7	8.1	8.1	8.6	5.0	8.4	11.8	15.3	18.7	22.1	22.1	22.1	22.1	22.1	22.1
	MVAr		3.7	1.9	1.4	1.7	1.3	4.1	5.7	7.4	9.1	10.7	10.7	10.7	10.7	10.7	10.7
50% POE	**MVA**		**8.6**	**8.3**	**8.2**	**8.8**	**5.2**	**9.4**	**13.2**	**17.0**	**20.8**	**24.6**	**24.6**	**24.6**	**24.6**	**24.6**	**24.6**
	PF		0.900	0.972	0.986	0.981	0.969	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Actual	**MVA**	**24.0**	**21.6**	**23.3**	**25.0**	**22.9**	**21.9**										
Greystanes	MW	23.3	22.2	26.9	25.3	23.9	23.6	24.4	24.3	24.2	23.8	23.7	23.8	24.1	24.3	24.7	25.0
	MVAr	2.1	0.0	1.9	0.5	5.5	0.7	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6
10% POE	**MVA**	**23.4**	**22.2**	**27.0**	**25.3**	**24.5**	**23.6**	**24.5**	**24.4**	**24.3**	**23.9**	**23.8**	**24.0**	**24.2**	**24.5**	**24.8**	**25.1**
	PF	0.996	1.000	0.997	1.000	0.975	1.000	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
	MW	20.6	19.4	22.9	21.8	21.2	21.0	21.7	21.6	21.5	21.1	21.1	21.3	21.5	21.7	22.1	22.4
	MVAr	1.8	0.0	1.6	0.4	4.9	0.6	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3
50% POE	**MVA**	**20.6**	**19.4**	**23.0**	**21.8**	**21.7**	**21.0**	**21.8**	**21.8**	**21.6**	**21.2**	**21.3**	**21.4**	**21.6**	**21.9**	**22.2**	**22.5**
	PF	0.996	1.000	0.997	1.000	0.975	1.000	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Actual	**MVA**	**37.0**	**34.8**	**36.6**	**40.9**	**35.2**	**34.2**										
Holroyd	MW	34.6	32.7	38.9	36.3	37.5	38.3	37.5	40.0	40.1	39.4	39.4	39.8	40.6	41.4	42.4	43.5
	MVAr	8.1	4.1	5.0	5.8	4.7	0.8	5.4	5.8	5.8	5.7	5.7	5.8	5.9	6.0	6.2	6.3
10% POE	**MVA**	**35.6**	**33.0**	**39.2**	**36.8**	**37.8**	**38.3**	**37.9**	**40.4**	**40.5**	**39.8**	**39.8**	**40.2**	**41.0**	**41.8**	**42.9**	**43.9**
	PF	0.974	0.992	0.992	0.987	0.992	1.000	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
	MW	29.9	28.7	33.9	31.5	33.2	34.0	33.3	35.8	35.9	35.2	35.2	35.7	36.6	37.3	38.4	39.5
	MVAr	7.0	3.6	4.4	5.0	4.1	0.7	4.8	5.2	5.2	5.1	5.1	5.2	5.3	5.4	5.6	5.7
50% POE	**MVA**	**30.7**	**28.9**	**34.1**	**31.9**	**33.5**	**34.0**	**33.6**	**36.2**	**36.2**	**35.6**	**35.6**	**36.1**	**36.9**	**37.7**	**38.8**	**39.9**
	PF	0.974	0.992	0.992	0.987	0.992	1.000	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
Actual	**MVA**	**22.6**	**22.1**	**22.5**	**23.7**	**21.6**	**20.4**										
Leabons Lane	MW	19.1	22.3	23.7	22.7	22.9	23.5	22.1	22.4	24.4	24.0	23.8	23.8	23.8	23.8	23.9	24.1
	MVAr	9.3	5.4	2.4	3.8	3.8	0.8	5.2	5.3	5.7	5.6	5.6	5.6	5.6	5.6	5.6	5.7
10% POE	**MVA**	**21.3**	**22.9**	**23.8**	**23.1**	**23.2**	**23.5**	**22.7**	**23.1**	**25.0**	**24.6**	**24.5**	**24.4**	**24.4**	**24.5**	**24.6**	**24.7**
	PF	0.900	0.972	0.995	0.987	0.987	0.999	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
	MW	17.2	20.2	21.2	20.5	20.8	21.3	19.9	20.3	22.2	21.8	21.7	21.6	21.7	21.7	21.8	21.9
	MVAr	8.3	4.9	2.1	3.4	3.4	0.7	4.7	4.8	5.2	5.1	5.1	5.1	5.1	5.1	5.1	5.2
50% POE	**MVA**	**19.1**	**20.8**	**21.3**	**20.8**	**21.1**	**21.4**	**20.4**	**20.9**	**22.8**	**22.4**	**22.3**	**22.2**	**22.2**	**22.3**	**22.4**	**22.5**
	PF	0.900	0.972	0.995	0.987	0.987	0.999	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
Actual	**MVA**	**40.1**	**41.9**	**35.5**	**30.8**	**29.6**	**26.7**										
Marayong	MW	39.5	40.3	35.3	30.7	29.6	26.5	34.8	36.8	36.6	36.2	36.1	36.1	36.3	36.5	36.8	37.1
	MVAr	7.3	11.3	3.4	1.6	0.9	3.5	5.3	5.6	5.6	5.5	5.5	5.5	5.5	5.6	5.6	5.7
10% POE	**MVA**	**40.1**	**41.9**	**35.5**	**30.8**	**29.6**	**26.7**	**35.2**	**37.2**	**37.0**	**36.7**	**36.5**	**36.5**	**36.7**	**36.9**	**37.2**	**37.5**
	PF	0.983	0.963	0.995	0.999	1.000	0.991	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	39.5	40.3	35.3	30.7	29.6	26.5	34.8	36.8	36.6	36.2	36.1	36.1	36.3	36.5	36.8	37.1
	MVAr	7.3	11.3	3.4	1.6	0.9	3.5	5.3	5.6	5.6	5.5	5.5	5.5	5.5	5.6	5.6	5.7
50% POE	**MVA**	**40.1**	**41.9**	**35.5**	**30.8**	**29.6**	**26.7**	**35.2**	**37.2**	**37.0**	**36.7**	**36.5**	**36.5**	**36.7**	**36.9**	**37.2**	**37.5**
	PF	0.983	0.963	0.995	0.999	1.000	0.991	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	34.1	33.4	32.9	28.2	27.9	27.2										
Newton	MW	33.1	31.7	33.4	28.1	29.7	29.3	31.5	36.2	40.5	40.1	39.9	39.7	39.6	39.5	39.4	39.3
	MVAr	9.6	10.4	8.9	7.6	6.8	5.9	10.4	11.9	13.3	13.2	13.1	13.0	13.0	13.0	12.9	12.9
10% POE	MVA	34.5	33.4	34.5	29.1	30.4	29.9	33.2	38.1	42.6	42.2	42.0	41.8	41.7	41.5	41.5	41.4
	PF	0.961	0.950	0.966	0.966	0.975	0.980	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
	MW	31.0	29.8	31.1	25.9	27.4	27.0	29.3	34.0	38.2	37.8	37.6	37.4	37.3	37.2	37.1	37.0
	MVAr	9.0	9.8	8.3	7.0	6.3	5.4	9.6	11.2	12.6	12.4	12.4	12.3	12.3	12.2	12.2	12.2
50% POE	MVA	32.2	31.4	32.2	26.8	28.1	27.6	30.8	35.7	40.2	39.8	39.6	39.4	39.3	39.1	39.1	39.0
	PF	0.961	0.950	0.966	0.966	0.975	0.980	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	MVA	31.7	28.4	28.4	25.4	23.9	26.4										
Prospect	MW	29.7	27.6	30.7	27.1	27.7	28.4	28.4	28.5	28.5	28.1	28.0	28.0	28.1	28.2	28.4	28.5
	MVAr	5.1	5.3	2.2	2.0	0.6	1.3	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.2	3.2
10% POE	MVA	30.1	28.1	30.8	27.2	27.7	28.4	28.6	28.7	28.6	28.3	28.2	28.2	28.3	28.4	28.5	28.7
	PF	0.986	0.982	0.998	0.997	1.000	1.001	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	26.9	24.8	27.1	24.3	25.0	25.8	25.8	25.9	25.9	25.5	25.4	25.4	25.5	25.6	25.7	25.9
	MVAr	4.6	4.8	1.9	1.8	0.6	1.2	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.9	2.9
50% POE	MVA	27.3	25.2	27.2	24.3	25.0	25.8	25.9	26.0	26.0	25.7	25.6	25.6	25.7	25.7	25.9	26.1
	PF	0.986	0.982	0.998	0.997	1.000	1.001	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	MVA	10.6	10.7	10.7	10.7	10.8	10.8										
Prospect East	MW	9.9	9.9	9.9	9.9	9.9	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
	MVAr	3.9	3.9	4.0	4.1	4.4	4.7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
10% POE	MVA	10.6	10.7	10.7	10.7	10.8	11.6	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
	PF	0.931	0.931	0.927	0.925	0.915	0.915	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924
Major customer	MW	9.9	9.9	9.9	9.9	9.9	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
	MVAr	3.9	3.9	4.0	4.1	4.4	4.7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
50% POE	MVA	10.6	10.7	10.7	10.7	10.8	11.6	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
	PF	0.931	0.931	0.927	0.925	0.915	0.915	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924
Actual	MVA	3.6	4.4	2.3	2.3	5.5	5.5										
Prospect South	MW	3.4	4.0	2.2	5.0	5.5	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
	MVAr	1.3	1.7	0.7	1.3	0.1	0.2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
10% POE	MVA	3.6	4.4	2.3	5.2	5.5	5.5	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
	PF	0.936	0.925	0.952	0.968	1.000	1.001	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964
Major customer	MW	3.4	4.0	2.2	5.0	5.5	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
	MVAr	1.3	1.7	0.7	1.3	0.1	0.2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
50% POE	MVA	3.6	4.4	2.3	5.2	5.5	5.5	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
	PF	0.936	0.925	0.952	0.968	1.000	1.001	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964
Actual	MVA	30.1	23.8	25.1	26.8	25.5	21.1										
Quarries	MW	28.4	22.8	25.9	25.5	25.8	23.1	27.5	28.5	30.7	30.4	30.3	30.3	30.3	30.3	30.4	30.5
	MVAr	8.3	6.5	6.6	7.1	6.7	4.5	7.2	7.5	8.1	8.0	8.0	8.0	8.0	8.0	8.0	8.0
10% POE	MVA	29.6	23.7	26.7	26.5	26.7	23.6	28.4	29.5	31.7	31.5	31.4	31.3	31.3	31.3	31.4	31.5
	PF	0.960	0.962	0.969	0.963	0.967	0.982	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
	MW	26.4	20.9	23.7	23.4	23.7	21.1	25.4	26.4	28.6	28.4	28.3	28.2	28.2	28.3	28.4	28.5
	MVAr	7.7	5.9	6.0	6.5	6.2	4.1	6.7	7.0	7.5	7.5	7.4	7.4	7.4	7.4	7.5	7.5
50% POE	MVA	27.5	21.7	24.4	24.3	24.5	21.5	26.3	27.3	29.6	29.4	29.2	29.2	29.2	29.3	29.4	29.5
	PF	0.960	0.962	0.969	0.963	0.967	0.982	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
Actual	MVA		10.9	8.9	9.7	10.6	12.2										
Sydney Trains Toongabbie	MW		10.7	8.6	9.6	10.1	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
	MVAr		1.8	2.0	1.5	3.4	2.1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
10% POE	MVA		10.9	8.9	9.7	10.6	12.2	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
	PF		0.986	0.974	0.988	0.947	0.985	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW		10.7	8.6	9.6	10.1	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
	MVAr		1.8	2.0	1.5	3.4	2.1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
50% POE	MVA		10.9	8.9	9.7	10.6	12.2	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
	PF		0.986	0.974	0.988	0.947	0.985	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	MVA	276.5	285.3	280.7	277.4	264.8	256.7										
Undiversified	MW	264.2	277.1	291.9	274.5	277.3	273.5	290.0	310.2	321.8	322.1	324.7	324.9	326.4	327.9	330.2	332.6
	MVAr	61.1	60.3	44.9	39.7	41.4	32.7	55.9	60.7	64.8	65.9	67.4	67.4	67.5	67.7	68.0	68.3
10% POE	MVA	272.4	285.2	296.5	278.8	282.2	275.8	297.1	318.1	330.3	331.0	333.9	334.2	335.7	337.2	339.5	341.9
	PF	0.970	0.972	0.985	0.985	0.983	0.992	0.976	0.975	0.974	0.973	0.972	0.972	0.972	0.973	0.973	0.973
	MW	244.9	258.5	268.6	253.4	257.8	254.1	270.7	290.9	302.5	302.8	305.5	305.9	307.4	308.9	311.3	313.6
	MVAr	56.7	57.2	42.0	37.0	38.8	30.9	52.8	57.7	61.7	62.9	64.4	64.4	64.5	64.7	65.0	65.3
50% POE	MVA	252.5	266.3	272.9	257.4	262.4	256.3	277.5	298.5	310.8	311.4	314.4	314.9	316.4	317.9	320.2	322.6
	PF	0.970	0.971	0.984	0.984	0.982	0.991	0.976	0.975	0.973	0.972	0.972	0.972	0.972	0.972	0.972	0.972
Actual	MVA	279.6	233.7	213.5	221.6	238.2	239.0										
Diversified (Meter)	MW	270.8	259.8	276.2	242.3	254.7	255.9	271.7	290.6	301.4	301.7	304.1	304.4	305.8	307.1	309.3	311.5
	MVAr	38.9	11.5	50.9	28.4	9.1	37.4	33.7	36.0	37.4	37.4	37.7	37.7	37.9	38.1	38.4	38.6
10% POE	MVA	273.5	260.1	280.8	243.9	254.8	258.6	273.7	292.8	303.7	304.0	306.5	306.7	308.1	309.5	311.7	313.9
	PF	0.990	0.999	0.983	0.993	0.999	0.989	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
	MW	247.3	238.3	253.1	220.1	233.0	234.1	250.7	269.5	280.2	280.5	283.0	283.4	284.8	286.1	288.3	290.4
	MVAr	35.5	10.6	46.6	25.8	8.3	34.2	31.1	33.4	34.7	34.8	35.1	35.1	35.3	35.5	35.7	36.0
50% POE	MVA	249.8	238.5	257.3	221.6	233.1	236.6	252.7	271.5	282.3	282.6	285.1	285.5	286.9	288.3	290.5	292.7
	PF	0.990	0.999	0.983	0.993	0.999	0.989	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992

5.4 Camellia STS Demand Forecast

Discussion

Camellia STS has 3 x 120 MVA 132/33kV transformers and is supplied at 132kV from the Holroyd Bulk Supply Point via Guildford Sub-Transmission Substation.

Camellia STS is currently subject to Project TS616 Camellia STS Transformer replacement due to end of life issues. This project has replaced Transformer 1 with a new 120 MVA unit and will be decommissioning and removing Transformer No.3. This approach will provide firm capacity of 120 MVA in the short term with the ability to increase that with the addition of a third transformer if required in the future.

The Parramatta CBD has a number of developments that are in progress. The Parramatta Square Master plan could potentially produce up to 18 MVA of load.

Shell has ended its refining operations and now uses the existing Clyde site as a fuel import terminal. The Shell site has significantly reduced its electrical load and is now run by as a joint venture with Vitol called Viva Energy.

Endeavour Energy has been in discussions with Ausgrid regarding the supply of their Auburn and Lidcombe Zone Substations from Camellia. This strategy has been approved and the two Ausgrid zone substations will now be supplied from Camellia. It is expected that these zone substations will be transferred to Camellia from 2020.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Camellia	3 x 120	360
Lennox	1 x 15/19/25 + 2 x 15/25	75
Rosehill	3 x 25	75

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2024	Rosehill	Camellia	Equinix_Data_Centre	Holroyd_132kV	20.02
2023	Rosehill	Camellia	West_Parramatta	Holroyd_132kV	1.49
2023	West_Parramatta	Holroyd_132kV	Lennox	Camellia	1.43
2023	West_Parramatta	Holroyd_132kV	Lennox	Camellia	0.86
2025	West_Parramatta	Holroyd_132kV	Lennox	Camellia	3.10
2023	Lennox	Liverpool_STS	Rosehill	Camellia	0.40

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Lennox	ARP3883-1 14-20 Parkes St, Harris Park (Removal of sub, related UML8883)	2023	-0.30	0.15	-0.34
Lennox	UCL10567 24-26 Railway Pde, Westmead	2023	1.44	0.70	1.60
Lennox	UCL10734 55 Aird St, Parramatta	2025	0.27	0.06	0.28
Lennox	UCL10755 60A Great Western Hwy, Parramatta	2024	0.25	0.12	0.28
Lennox	UCL10777 28 Glebe St, Parramatta	2023	0.27	0.13	0.30
Lennox	ULL3074 7A Park Pde, Parramatta	2023	1.62	0.78	1.80
Lennox	UML8421 102-108 Great Western Hwy, Westmead	2024	0.25	0.12	0.27
Lennox	UML8896 2-6 Robilliard St, Mays Hill	2023	0.20	0.09	0.22
Lennox	UML9233 127-129 Great Western Hwy, Mays Hill	2023	0.09	0.04	0.10
Lennox	UML9888 210-214 Burnett St, Mays Hill	2023	0.14	0.07	0.16
Rosehill	ARP4244 Sydney Metro West - Clyde Site existing subs removal	2023	-0.27	0.13	-0.30
Rosehill	ARP4245 Sydney Metro West - Clyde Site existing subs removal	2023	-0.90	0.44	-1.00
Rosehill	ARP4246 Sydney Metro West - Clyde Site existing subs removal	2023	-0.18	0.09	-0.20
Rosehill	ARP4247 Sydney Metro West - Clyde Site existing subs removal	2023	-0.11	0.05	-0.13
Rosehill	UCL10312 Sydney Metro West - Clyde Site (End)	2026	-19.26	9.33	-21.40
Rosehill	UCL10312 Sydney Metro West - Clyde Site (Start)	2023	19.26	9.33	21.40

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Rosehill	UCL10956 8 Colquhoun St, Rosehill	2024	0.16	0.03	0.16
Rosehill	UCL9550 128A Alfred St, Harris Park	2024	0.36	0.17	0.40
Rosehill	UIL5395 Goodman HVC conversion to 11kV customer	2023	1.17	0.57	1.30
Rosehill	UIL5878 Equinix Data Centre Y2	2023	14.01	2.85	14.30
Rosehill	UIS0925 Lot 62 - 9 Devon St, Rosehill	2024	0.25	0.05	0.25
Rosehill	UIS0948 10A Grand Ave, Rosehill	2025	0.22	0.11	0.24
Rosehill	UML9621 15-19 Weston St, Rosehill	2025	0.32	0.07	0.33
Rosehill	UML9946 125-129 Arthur St, Parramatta	2024	0.19	0.09	0.21
Rosehill	UUL1846 PLR TPS 4, Camellia	2024	3.14	0.64	3.20
Rosehill	UUL1849 PLR TPS 8, Stabling Yard	2024	1.79	0.26	1.81
Syd_Metro_West	ENL3181 Sydney Metro West	2025	49.50	23.97	55.00

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Lennox	Auto Alley Precinct	2025	20	38.00
Lennox	UML7522 76-100 Church St, Parramatta	2021	4	1.31
Lennox	UML8348 5-7 Parkes St, Parramatta	2023	2	0.57
Lennox	UML8367 12A Parkes St, Parramatta	2023	2	0.3795
Lennox	UML8883 14-20 Parkes St, Harris Park (Related ARP3883)	2023	3	1.45
Rosehill	UIL5936 9 Devon St, Rosehill	2023	2	2.60

Generation

Zone Substation	Name	Description	Date
Camellia	Viva Energy	6.7+5.6+5.0MW natural gas	Installed
Rosehill	Earthpower	2.45 MW	Installed

Configuration Changes

No configuration change

Camellia STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**1.8**	**1.9**	**1.2**	**1.1**	**1.0**	**0.8**										
ING Alcan	MW	1.6	1.7	1.1	1.1	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	MVAr	0.9	0.9	0.5	0.4	0.3	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
10% POE	**MVA**	**1.8**	**1.9**	**1.2**	**1.1**	**1.0**	**0.8**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**
	PF	0.884	0.889	0.894	0.934	0.941	0.995	0.923	0.923	0.923	0.923	0.923	0.923	0.923	0.923	0.923	0.923
Major customer	MW	1.6	1.7	1.1	1.1	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	MVAr	0.9	0.9	0.5	0.4	0.3	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
50% POE	**MVA**	**1.8**	**1.9**	**1.2**	**1.1**	**1.0**	**0.8**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**
	PF	0.884	0.889	0.894	0.934	0.941	0.995	0.923	0.923	0.923	0.923	0.923	0.923	0.923	0.923	0.923	0.923
Actual	**MVA**	**20.8**	**20.7**	**21.6**	**20.9**	**20.2**	**20.9**										
Lennox	MW	21.8	21.9	22.5	20.8	21.0	21.1	27.6	28.4	32.1	32.1	32.8	33.8	35.3	37.1	39.3	41.8
	MVAr	0.6	1.4	2.2	2.2	0.6	2.6	2.3	2.3	2.6	2.6	2.7	2.8	2.9	3.1	3.2	3.4
10% POE	**MVA**	**21.8**	**22.0**	**22.6**	**20.9**	**21.0**	**21.2**	**27.7**	**28.5**	**32.2**	**32.2**	**32.9**	**33.9**	**35.4**	**37.2**	**39.5**	**42.0**
	PF	1.000	0.998	0.995	0.995	1.000	0.993	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
	MW	20.2	20.2	20.8	19.2	19.4	19.4	26.0	26.8	30.4	30.4	31.1	32.2	33.7	35.4	37.7	40.3
	MVAr	0.5	1.3	2.0	2.0	0.5	2.4	2.1	2.2	2.5	2.5	2.6	2.6	2.8	2.9	3.1	3.3
50% POE	**MVA**	**20.2**	**20.2**	**20.9**	**19.3**	**19.5**	**19.6**	**26.0**	**26.9**	**30.5**	**30.5**	**31.2**	**32.3**	**33.8**	**35.6**	**37.8**	**40.4**
	PF	1.000	0.998	0.995	0.995	1.000	0.993	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
Actual	**MVA**	**21.0**	**23.1**	**21.2**	**18.7**	**20.0**	**21.6**										
Rosehill	MW	20.7	22.7	21.1	18.4	20.0	21.5	50.3	36.6	37.0	19.9	19.8	19.8	19.8	19.7	19.8	19.8
	MVAr	3.5	3.8	1.9	3.8	1.6	3.6	7.6	5.5	5.6	3.0	3.0	3.0	3.0	3.0	3.0	3.0
10% POE	**MVA**	**21.0**	**23.1**	**21.2**	**18.8**	**20.0**	**21.8**	**50.9**	**37.0**	**37.4**	**20.1**	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**
	PF	0.986	0.986	0.996	0.979	0.997	0.986	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	20.7	22.7	21.1	18.4	20.0	21.5	50.3	36.6	37.0	19.9	19.8	19.8	19.8	19.7	19.8	19.8
	MVAr	3.5	3.8	1.9	3.8	1.6	3.6	7.6	5.5	5.6	3.0	3.0	3.0	3.0	3.0	3.0	3.0
50% POE	**MVA**	**21.0**	**23.1**	**21.2**	**18.8**	**20.0**	**21.8**	**50.9**	**37.0**	**37.4**	**20.1**	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	**20.0**
	PF	0.986	0.986	0.996	0.979	0.997	0.986	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	**MVA**	**3.2**	**3.0**	**3.2**	**2.7**	**1.7**	**1.6**										
Viva Energy	MW	2.8	2.5	3.2	2.3	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	MVAr	1.5	1.6	0.1	1.5	0.9	0.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
10% POE	**MVA**	**3.2**	**3.0**	**3.2**	**2.7**	**1.7**	**1.6**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**
	PF	0.884	0.838	1.000	0.840	0.840	0.950	0.892	0.892	0.892	0.892	0.892	0.892	0.892	0.892	0.892	0.892
Major customer	MW	2.8	2.5	3.2	2.3	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	MVAr	1.5	1.6	0.1	1.5	0.9	0.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
50% POE	**MVA**	**3.2**	**3.0**	**3.2**	**2.7**	**1.7**	**1.6**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**
	PF	0.884	0.838	1.000	0.840	0.840	0.950	0.892	0.892	0.892	0.892	0.892	0.892	0.892	0.892	0.892	0.892
Actual	**MVA**																
Auburn	MW									41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8
(Ausgrid)	MVAr									13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
10% POE	**MVA**									**44.0**	**44.0**	**44.0**	**44.0**	**44.0**	**44.0**	**44.0**	**44.0**
	PF									0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW									41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8
	MVAr									13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
50% POE	**MVA**									**44.0**	**44.0**	**44.0**	**44.0**	**44.0**	**44.0**	**44.0**	**44.0**
	PF									0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**				**12.9**	**14.7**	**13.4**										
Lidcombe	MW				12.0	13.9	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
(Ausgrid)	MVAr				4.8	4.9	4.0	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
10% POE	**MVA**				**12.9**	**14.7**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**
	PF				0.929	0.943	0.955	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW				12.0	13.9	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
	MVAr				4.8	4.9	4.0	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
50% POE	**MVA**				**12.9**	**14.7**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**	**13.4**
	PF				0.929	0.943	0.955	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**46.9**	**48.6**	**47.3**	**56.4**	**57.7**	**58.4**										
Undiversified	MW	47.0	48.8	47.9	54.4	57.2	57.7	117.1	104.3	150.3	133.4	134.4	135.7	137.5	139.9	142.2	144.7
	MVAr	6.4	7.7	4.7	12.7	8.4	10.7	26.9	24.9	39.1	36.6	36.8	37.0	37.3	37.8	38.0	38.2
10% POE	**MVA**	**47.9**	**49.9**	**48.2**	**56.4**	**58.5**	**58.9**	**121.4**	**108.4**	**156.7**	**139.5**	**140.6**	**141.9**	**143.8**	**146.3**	**148.6**	**151.1**
	PF	0.981	0.979	0.993	0.966	0.979	0.981	0.965	0.962	0.959	0.956	0.956	0.956	0.956	0.956	0.957	0.958
	MW	45.4	47.1	46.3	52.9	55.6	56.1	115.6	102.8	148.8	132.2	133.0	134.4	136.5	138.3	140.6	143.1
	MVAr	6.4	7.6	4.5	12.5	8.3	10.5	26.8	24.9	39.0	36.6	36.8	37.1	37.5	37.6	37.8	38.0
50% POE	**MVA**	**46.3**	**48.2**	**46.6**	**54.8**	**56.9**	**57.2**	**119.9**	**107.0**	**155.1**	**138.4**	**139.3**	**140.7**	**142.9**	**144.7**	**146.9**	**149.5**
	PF	0.981	0.978	0.993	0.965	0.978	0.980	0.964	0.961	0.959	0.955	0.955	0.955	0.955	0.956	0.957	0.957
Actual	**MVA**	**61.9**	**45.2**	**46.1**	**52.8**	**55.1**	**54.8**										
Diversified	MW	60.0	44.1	45.1	52.0	54.4	53.9	111.0	98.8	142.4	126.3	127.3	128.5	130.3	132.5	134.7	137.1
	MVAr	15.1	9.9	9.6	9.1	9.1	9.8	22.7	20.2	29.1	25.8	26.0	26.3	26.6	27.1	27.6	28.0
10% POE	**MVA**	**61.9**	**45.2**	**46.1**	**52.8**	**55.1**	**54.8**	**113.3**	**100.9**	**145.3**	**128.9**	**129.9**	**131.2**	**133.0**	**135.3**	**137.5**	**139.9**
	PF	0.970	0.976	0.978	0.985	0.986	0.984	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
(Meter)	MW	60.0	44.1	45.1	52.0	54.4	53.9	109.5	97.4	140.9	125.2	126.0	127.3	129.3	131.0	133.1	135.6
	MVAr	15.1	9.9	9.6	9.1	9.1	9.8	22.4	19.9	28.8	25.6	25.8	26.0	26.5	26.8	27.2	27.7
50% POE	**MVA**	**61.9**	**45.2**	**46.1**	**52.8**	**55.1**	**54.8**	**111.7**	**99.4**	**143.8**	**127.8**	**128.6**	**129.9**	**132.0**	**133.7**	**135.9**	**138.4**
	PF	0.970	0.976	0.978	0.985	0.986	0.984	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980

5.5 Carlingford STS Demand Forecast

Discussion

Carlingford Sub-Transmission Substation has three 120 MVA 132/66kV double-wound transformers and one 120 MVA 132/66kV auto transformer.

Major projects on Carlingford STS include the M1-M2 tunnel supply and development around the North West Rail Link.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Carlingford	4 x 120 (132/66kV)	480
Castle Hill	3 x 15/25	75
Dundas	1 x 22/26/35 + 1 x 22/35	70
Rydalmere	1 x 20/25/27/33 + 1 x 15/19/25 + 1 x 22/27/35	93
West Pennant Hills	2 x 22/26/35	70

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2023	North_Parramatta	Holroyd_132kV	Dundas	Carlingford	1.02
2023	Cheriton_Avenue	Vineyard	Castle_Hill	Carlingford	0.95

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Castle_Hill	ULL3238 423-521 Old Northern Rd, Castle Hill	2025	0.32	0.16	0.36
Castle_Hill	UML10292 370 Old Northern Rd, Castle Hill	2025	0.32	0.07	0.33
Dundas	ENL4322 Telopea Urban Renewal (Dundas 50%)	2037	0.59	0.28	0.65
Dundas	UCL11020 233-237 Marsden Rd, Carlingford	2025	0.30	0.06	0.31
Dundas	UCL8342 264-268 Pennant Hills Rd, Carlingford	2023	0.48	0.23	0.53
Dundas	ULL3283 86 Chelmsford Ave, Epping	2024	0.29	0.06	0.30
Dundas	ULL3312 Carlingford West Public School	2023	0.29	0.06	0.30
Dundas	UML10298 35-39 Jenkins Rd, Carlingford	2025	0.19	0.04	0.20
Dundas	UML8407 31-33 Jenkins Rd, Carlingford	2023	0.15	0.03	0.16
Dundas	UML8868 17-21 Moseley St, Carlingford	2025	0.12	0.06	0.14
Dundas	UML9693 11-17 Shirley St, Carlingford	2024	0.22	0.11	0.25
Dundas	UML9974 16-24 Thallon St, Carlingford	2024	0.40	0.08	0.41
Dundas	UUL1847 PLR TPS 6, Telopea	2024	2.01	0.41	2.05
Dundas	UUL1848 PLR TPS 7, Carlingford	2024	1.91	0.39	1.95
Rydalmere	UIL6322 23 Pike St, Rydalmere	2025	0.44	0.09	0.45
West_Pennant_Hills	URS23088 55 Coonara Ave, West Pennant Hills (Stage 1)	2023	0.54	0.26	0.60
West_Pennant_Hills	URS23088 55 Coonara Ave, West Pennant Hills (Stage 2)	2024	0.37	0.18	0.42
West_Pennant_Hills	URS26626 Oratava Ave, West Pennant Hills	2025	0.07	0.02	0.08

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Castle_Hill	NWRL Castle Hill Precinct, Apartments (50%)	2012	24	7.43
Castle_Hill	NWRL Castle Hill Precinct, Commercial (50%)	2012	24	9.28
Castle_Hill	NWRL Castle Hill Precinct, Houses (50%)	2012	24	-0.54
Castle_Hill	NWRL Castle Hill Precinct, Townhouses (50%)	2012	24	0.22
Dundas	ENL4322 Telopea Urban Renewal (Dundas 50%)	2029	2	1.1418
Dundas	ENL4322 Telopea Urban Renewal (Dundas 50%)	2030	3	1.3596
Dundas	ENL4322 Telopea Urban Renewal (Dundas 50%)	2035	3	1.4355
Dundas	ENL4322 Telopea Urban Renewal (Dundas 50%)	2036	2	0.9339
Dundas	UML7433 19-23 Post Office St, Carlingford	2023	2	0.4356
Rydalmere	ENL3069 Melrose Park - 6000 apartments	2021	15	19.80
Rydalmere	ENL4322 Telopea Urban Renewal (Rydalmere 50%)	2028	3	1.49
Rydalmere	ENL4322 Telopea Urban Renewal (Rydalmere 50%)	2031	2	0.87
Rydalmere	ENL4322 Telopea Urban Renewal (Rydalmere 50%)	2032	3	1.79
Rydalmere	ENL4322 Telopea Urban Renewal (Rydalmere 50%)	2033	3	1.42
Rydalmere	ENL4322 Telopea Urban Renewal (Rydalmere 50%)	2037	3	1.58
Rydalmere	ENL4322 Telopea Urban Renewal (Rydalmere 50%)	2039	4	2.21
West_Pennant_Hills	NWRL Cherrybrook Precinct, Apartments (100%)	2012	24	6.60

Generation

No Generation known at this location

Carlingford STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**25.6**	**21.4**	**25.5**	**28.4**	**24.9**	**21.3**										
Castle Hill	MW	24.2	19.6	26.9	24.4	24.2	24.2	25.7	25.9	26.9	27.1	27.5	28.0	28.5	29.2	30.1	30.8
	MVAr	7.2	5.0	5.9	4.7	4.4	3.7	3.9	3.9	4.1	4.1	4.2	4.2	4.3	4.4	4.5	4.7
10% POE	**MVA**	**25.2**	**20.2**	**27.6**	**24.8**	**24.6**	**24.5**	**26.0**	**26.2**	**27.2**	**27.4**	**27.9**	**28.3**	**28.9**	**29.5**	**30.4**	**31.2**
	PF	0.959	0.969	0.976	0.982	0.984	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	21.7	18.2	24.1	21.6	21.9	21.9	23.3	23.5	24.5	24.7	25.2	25.6	26.3	27.1	28.0	28.8
	MVAr	6.4	4.6	5.3	4.1	4.0	3.3	3.5	3.6	3.7	3.7	3.8	3.9	4.0	4.1	4.2	4.3
50% POE	**MVA**	**22.6**	**18.8**	**24.6**	**21.9**	**22.2**	**22.1**	**23.5**	**23.8**	**24.8**	**25.0**	**25.4**	**25.9**	**26.6**	**27.4**	**28.3**	**29.1**
	PF	0.959	0.969	0.976	0.982	0.984	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	**MVA**	**49.0**	**42.4**	**40.2**	**38.5**	**36.6**	**26.3**										
Dundas	MW	41.6	43.3	42.8	37.0	38.7	37.2	38.7	42.4	42.9	42.5	42.7	43.0	43.9	45.1	46.4	47.4
	MVAr	9.3	0.0	3.2	5.8	5.3	1.2	4.9	5.4	5.4	5.4	5.4	5.4	5.5	5.7	5.9	6.0
10% POE	**MVA**	**42.6**	**43.3**	**42.9**	**37.5**	**39.0**	**37.2**	**39.0**	**42.7**	**43.3**	**42.8**	**43.0**	**43.3**	**44.3**	**45.5**	**46.8**	**47.8**
	PF	0.976	1.000	0.997	0.988	0.991	1.001	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
	MW	36.0	37.4	36.5	30.0	31.9	30.9	32.3	36.0	36.7	36.3	36.4	36.7	37.7	38.9	40.2	41.1
	MVAr	8.0	0.0	2.7	4.7	4.3	1.0	4.1	4.5	4.6	4.6	4.6	4.6	4.8	4.9	5.1	5.2
50% POE	**MVA**	**36.9**	**37.4**	**36.6**	**30.3**	**32.2**	**30.9**	**32.6**	**36.3**	**37.0**	**36.5**	**36.7**	**37.0**	**38.0**	**39.2**	**40.5**	**41.5**
	PF	0.976	1.000	0.997	0.988	0.991	1.001	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Actual	**MVA**	**40.2**	**38.3**	**38.1**	**38.6**	**33.9**	**37.3**										
Rydalmere	MW	38.4	37.3	38.4	39.7	38.5	38.5	38.4	38.7	40.2	41.4	43.3	45.7	48.5	50.7	53.1	55.5
	MVAr	3.7	5.1	8.2	0.3	0.5	1.1	4.2	4.3	4.4	4.6	4.8	5.0	5.4	5.6	5.9	6.1
10% POE	**MVA**	**38.6**	**37.7**	**39.3**	**39.7**	**38.5**	**38.5**	**38.6**	**39.0**	**40.5**	**41.6**	**43.5**	**46.0**	**48.8**	**51.0**	**53.4**	**55.9**
	PF	0.995	0.991	0.978	1.000	1.000	1.000	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	35.4	34.7	34.8	35.5	34.9	34.9	34.8	35.2	36.7	37.9	39.7	42.2	45.0	47.2	49.6	52.1
	MVAr	3.5	4.7	7.4	0.3	0.5	1.0	3.8	3.9	4.1	4.2	4.4	4.7	5.0	5.2	5.5	5.7
50% POE	**MVA**	**35.6**	**35.0**	**35.5**	**35.5**	**34.9**	**34.9**	**35.1**	**35.4**	**36.9**	**38.1**	**40.0**	**42.4**	**45.2**	**47.5**	**49.9**	**52.4**
	PF	0.995	0.991	0.978	1.000	1.000	1.000	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**27.2**	**21.4**	**24.4**	**27.7**	**23.4**	**20.1**										
West Pennant Hills	MW	24.9	19.8	26.2	25.0	22.6	22.9	23.4	23.9	24.3	24.3	24.6	24.9	25.2	25.5	25.8	26.2
	MVAr	3.4	6.1	4.4	6.6	5.6	3.8	5.2	5.3	5.4	5.4	5.5	5.5	5.6	5.7	5.7	5.8
10% POE	**MVA**	**25.2**	**20.7**	**26.6**	**25.9**	**23.3**	**23.2**	**24.0**	**24.5**	**24.9**	**24.9**	**25.2**	**25.5**	**25.8**	**26.1**	**26.5**	**26.8**
	PF	0.991	0.956	0.986	0.967	0.971	0.986	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976
	MW	21.5	16.8	22.1	20.8	19.5	19.9	20.4	20.9	21.3	21.4	21.6	21.9	22.2	22.5	22.9	23.2
	MVAr	2.9	5.2	3.7	5.5	4.8	3.3	4.5	4.7	4.7	4.7	4.8	4.9	4.9	5.0	5.1	5.2
50% POE	**MVA**	**21.7**	**17.6**	**22.5**	**21.5**	**20.0**	**20.2**	**20.9**	**21.4**	**21.8**	**21.9**	**22.1**	**22.4**	**22.8**	**23.1**	**23.4**	**23.8**
	PF	0.991	0.956	0.986	0.967	0.971	0.986	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976
Actual	**MVA**					**13.2**	**13.1**										
M1_M2_Tunnel	**MW**					13.0	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
	MVAr					2.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
10% POE	**MVA**					**13.2**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**
	PF					0.981	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	**MW**					13.0	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
	MVAr					2.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
50% POE	**MVA**					**13.2**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**	**13.1**
	PF					0.981	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**	**107.3**	**105.0**	**118.0**	**118.2**	**106.9**	**106.6**										
Carlingford	MW	100.1	95.3	104.9	107.9	105.3	108.3	108.3	108.3	108.3	108.3	108.3	108.3	108.3	108.3	108.3	108.3
(Ausgrid)	MVAr	30.2	30.7	33.8	29.7	33.5	10.9	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7
10% POE	**MVA**	**104.6**	**100.1**	**110.2**	**111.9**	**110.5**	**108.9**	**112.6**	**112.6**	**112.6**	**112.6**	**112.6**	**112.6**	**112.6**	**112.6**	**112.6**	**112.6**
	PF	0.957	0.952	0.952	0.964	0.953	0.995	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
Major customer	MW	90.1	86.1	94.5	95.1	94.1	97.3	97.3	97.3	97.3	97.3	97.3	97.3	97.3	97.3	97.3	97.3
	MVAr	27.2	27.7	30.5	26.1	29.9	9.8	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
50% POE	**MVA**	**94.1**	**90.4**	**99.3**	**98.6**	**98.8**	**97.8**	**101.1**	**101.1**	**101.1**	**101.1**	**101.1**	**101.1**	**101.1**	**101.1**	**101.1**	**101.1**
	PF	0.957	0.952	0.952	0.964	0.953	0.995	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
Actual	**MVA**	**249.4**	**228.4**	**246.1**	**251.4**	**238.9**	**224.6**										
Undiversified	MW	229.2	215.4	239.3	234.0	242.2	243.6	246.9	251.7	255.1	256.1	258.8	262.3	266.9	271.3	276.2	280.7
	MVAr	53.9	46.8	55.5	47.0	51.8	24.7	53.0	53.6	54.1	54.2	54.5	55.0	55.6	56.1	56.8	57.3
10% POE	**MVA**	**236.2**	**222.1**	**246.6**	**239.8**	**249.1**	**245.3**	**253.2**	**258.0**	**261.5**	**262.5**	**265.2**	**268.8**	**273.4**	**277.8**	**282.8**	**287.3**
	PF	0.971	0.970	0.970	0.976	0.972	0.993	0.975	0.975	0.976	0.976	0.976	0.976	0.976	0.976	0.977	0.977
	MW	204.8	193.1	212.0	202.9	215.2	217.3	220.6	225.4	228.9	229.9	232.6	236.2	240.9	245.4	250.4	254.9
	MVAr	48.1	42.2	49.6	40.7	46.1	22.4	47.6	48.3	48.8	48.9	49.2	49.7	50.3	50.8	51.5	52.1
50% POE	**MVA**	**211.0**	**199.2**	**218.6**	**207.9**	**221.3**	**218.9**	**226.3**	**231.1**	**234.7**	**235.7**	**238.5**	**242.0**	**246.8**	**251.3**	**256.3**	**260.9**
	PF	0.971	0.970	0.970	0.976	0.972	0.992	0.975	0.975	0.975	0.975	0.976	0.976	0.976	0.976	0.977	0.977

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**231.8**	**205.2**	**235.2**	**259.8**	**224.4**	**220.7**										
Diversified	MW	224.5	185.7	207.1	230.4	220.0	223.9	227.1	231.5	234.7	235.6	238.0	241.3	245.5	249.5	254.1	258.2
	MVAr	17.3	0.0	51.3	19.8	0.1	13.2	25.6	26.1	26.4	26.5	26.8	27.2	27.7	28.1	28.6	29.1
10% POE	**MVA**	**225.2**	**185.7**	**213.3**	**231.3**	**220.0**	**224.3**	**228.6**	**233.0**	**236.1**	**237.1**	**239.5**	**242.8**	**247.1**	**251.1**	**255.7**	**259.8**
	PF	0.997	1.000	0.971	0.996	1.000	0.998	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	196.9	166.9	188.3	200.2	197.0	201.5	203.8	208.2	211.5	212.4	214.9	218.2	222.6	226.7	231.3	235.5
	MVAr	15.1	0.0	46.7	17.2	0.1	11.9	23.0	23.5	23.8	23.9	24.2	24.6	25.1	25.5	26.1	26.5
50% POE	**MVA**	**197.4**	**166.9**	**194.0**	**200.9**	**197.0**	**201.8**	**205.1**	**209.6**	**212.9**	**213.8**	**216.3**	**219.6**	**224.0**	**228.2**	**232.8**	**237.0**
	PF	0.997	1.000	0.971	0.996	1.000	0.998	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Est. System Normal																	
	MVA				**244.3**												

Note: #Diversified values which are greater than undiversified values are due to abnormal switching.

5.6 Dapto 132kV STS Demand Forecast

Discussion

The Dapto 132kV entry includes the loads supplied from the 132kV busbar at Dapto BSP. Batemans Bay and Moruya North are Essential Energy substations supplied out of Dapto by Endeavour Energy. New land releases proposed at Calderwood and West Dapto (part of the West Lake Illawarra greenfield development area) are included in the Mt Terry STS and Springhill STS forecasts.

The West Lake Illawarra development area is expected to create 26,000 lots over 30-35 years and is expected to require three additional zone substations. One supplied from Mt Terry STS 33kV network to supply Calderwood and two supplied from the Dapto BSP 132kV network to supply the West Dapto area. The firm and future applications at Calderwood have been included in the Mt Terry STS Demand Forecast with the West Dapto applications included in the Springhill STS Demand Forecast.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Batemans Bay	2 x 45	90
Moruya North	1 x 30 + 1 x 45	75
Ulladulla	2 x 20/25/30	60
West_Dapto	New	NA
Yatte Yattah	1 x 6.5	6.5

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2029	Dapto	Springhill	West_Dapto	Dapto_132kV	16.56
2029	Kembla_Grange	Springhill	West_Dapto	Dapto_132kV	5.52

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Ulladulla	UCL10768 Ulladulla, Wholesale/Retail Nursery	2024	0.05	0.01	0.06
Ulladulla	UCL11372 Ulladulla, Swimming Pool	2024	0.16	0.03	0.17
Ulladulla	UIL5431 Ulladulla, Boat Harbour	2024	0.53	0.25	0.59
Ulladulla	ULL3391 Milton, Christian School	2023	0.54	0.11	0.55
West_Dapto	(WLI) West Dapto Residential Dev. Nth, Ctrl & Sth	2025	0.95	0.46	1.06
West_Dapto	(WLI) West Dapto Residential Dev. Nth, Ctrl & Sth	2026	0.95	0.46	1.06
West_Dapto	(WLI) West Dapto Residential Dev. Nth, Ctrl & Sth	2027	0.95	0.46	1.06
West_Dapto	(WLI) West Dapto Residential Dev. Nth, Ctrl & Sth	2028	1.06	0.51	1.18
West_Dapto	(WLI) West Dapto Residential Dev. Nth, Ctrl & Sth	2029	1.06	0.51	1.18
West_Dapto	(WLI) West Dapto Residential Dev. Nth, Ctrl & Sth	2030	1.06	0.51	1.18
West_Dapto	(WLI) West Dapto Residential Dev. Nth, Ctrl & Sth	2031	1.16	0.56	1.29

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Ulladulla	NRS3489 Milton, 1 Lot	2023	1	0.01
Ulladulla	NRS3501 Little Forest, 5 Lots	2023	3	0.04
Ulladulla	NRS3518 Yatte Yattah, 3 Lots	2023	1	0.02
Ulladulla	URS16766 Burrill Lake, Stages 3,4,5 & 6 - 40 Lots	2017	6	0.19
Ulladulla	URS19922 Burrill Lake, Wuru Dr, 33 lots	2020	3	0.16
Ulladulla	URS20722 Mollymook, 71 Lots	2021	5	0.33
Ulladulla	URS20883 Narrawallee, 21 Lots	2020	3	0.10
Ulladulla	URS20885 Narrawallee, 28 Lots	2021	3	0.13
Ulladulla	URS20887 Narrawallee, 24 Lots	2022	2	0.11
Ulladulla	URS21187 Milton, 29 lots	2020	3	0.14
Ulladulla	URS22425 Dolphin Point, 18 lots	2020	4	0.08
Ulladulla	URS23929 Burrill Lake, 15 lots	2022	3	0.08
Ulladulla	URS24422 Burrill Lake, Stages 16 & 17 - 40 Lots	2021	3	0.08
Ulladulla	URS25145 Croobyar, 17 lots	2022	2	0.08
Ulladulla	URS25596 Ulladulla, 40 Lots	2023	4	0.19
Ulladulla	URS26037 Mollymook, 88 Lots	2023	4	0.39
Ulladulla	URS26087 Mollymook, 24 Lots	2024	2	0.11

Generation

Zone Substation	Name	Description	Date
Blue Scope Steel	BHP Port Kembla	2.5+7.5+7.5+12+16+5+8.75MW processed gas	Installed

Configuration Changes

Year	Zone / HVC	From STS	To STS
2017	Yatte Yattah	Dapto 132kV	West Tomerong

Dapto 132kV STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**145.1**	**147.6**	**134.4**	**142.0**	**134.6**	**142.7**										
BlueScope Steel	MW	124.8	126.9	127.3	135.9	128.7	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
	MVAr	74.0	75.3	43.0	41.3	39.6	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2
10% POE	**MVA**	**145.1**	**147.6**	**134.4**	**142.0**	**134.6**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**
	PF	0.860	0.860	0.947	0.957	0.956	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Major customer	MW	124.8	126.9	127.3	135.9	128.7	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
	MVAr	74.0	75.3	43.0	41.3	39.6	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2
50% POE	**MVA**	**145.1**	**147.6**	**134.4**	**142.0**	**134.6**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**	**142.7**
	PF	0.860	0.860	0.947	0.957	0.956	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Actual	**MVA**	**27.4**	**26.4**	**26.8**	**24.9**	**25.5**	**24.9**										
BOC Gases	MW	27.4	25.9	26.5	24.6	24.7	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.4
	MVAr	0.7	4.9	4.1	4.2	6.7	4.8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
10% POE	**MVA**	**27.4**	**26.4**	**26.8**	**24.9**	**25.5**	**24.9**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**
	PF	1.000	0.983	0.988	0.986	0.965	0.982	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
Major customer	MW	27.4	25.9	26.5	24.6	24.7	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.4
	MVAr	0.7	4.9	4.1	4.2	6.7	4.8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
50% POE	**MVA**	**27.4**	**26.4**	**26.8**	**24.9**	**25.5**	**24.9**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**	**24.8**
	PF	1.000	0.983	0.988	0.986	0.965	0.982	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
Actual	**MVA**	**7.3**	**7.3**	**6.6**	**6.5**	**6.5**	**3.1**										
Burrawang	MW	6.4	6.4	6.3	6.3	6.3	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
	MVAr	3.6	3.6	2.0	1.9	1.9	0.9	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
10% POE	**MVA**	**7.3**	**7.3**	**6.6**	**6.5**	**6.5**	**3.1**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**
	PF	0.873	0.873	0.953	0.956	0.956	0.952	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927
Major customer	MW	6.4	6.4	6.3	6.3	6.3	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
	MVAr	3.6	3.6	2.0	1.9	1.9	0.9	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
50% POE	**MVA**	**7.3**	**7.3**	**6.6**	**6.5**	**6.5**	**3.1**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**
	PF	0.873	0.873	0.953	0.956	0.956	0.952	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927
Actual	**MVA**	**50.4**	**35.5**	**42.5**	**37.9**	**40.3**	**36.6**										
Batemans Bay	MW	50.3	30.3	42.4	32.2	40.3	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4
& Moruya North	MVAr	1.4	0.0	1.6	2.6	0.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
10% POE	**MVA**	**50.4**	**30.3**	**42.5**	**32.3**	**40.3**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**
	PF	1.000	1.000	0.999	0.997	1.000	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Major customer	MW	50.3	30.3	42.4	32.2	40.3	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4
(Essential Energy)	MVAr	1.4	0.0	1.6	2.6	0.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
50% POE	**MVA**	**50.4**	**30.3**	**42.5**	**32.3**	**40.3**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**	**36.6**
	PF	1.000	1.000	0.999	0.997	1.000	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**28.6**	**22.4**	**21.3**	**26.2**	**25.9**	**18.6**										
Ulladulla	MW	27.6	22.4	20.9	25.9	25.8	18.5	19.1	19.8	20.2	19.9	19.9	20.2	20.6	20.9	21.4	21.9
	MVAr	7.6	0.0	4.2	4.5	2.6	1.3	7.1	7.3	7.5	7.3	7.4	7.5	7.6	7.7	7.9	8.1
10% POE	**MVA**	**28.6**	**22.4**	**21.3**	**26.2**	**25.9**	**18.6**	**20.3**	**21.1**	**21.6**	**21.2**	**21.3**	**21.5**	**21.9**	**22.3**	**22.8**	**23.4**
	PF	0.964	1.000	0.981	0.985	0.995	0.997	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
	MW	27.6	22.4	20.9	25.9	25.8	18.5	18.4	19.8	20.2	19.9	19.9	20.2	20.6	20.9	21.4	21.9
	MVAr	7.6	0.0	4.2	4.5	2.6	1.3	6.8	7.3	7.5	7.3	7.4	7.5	7.6	7.7	7.9	8.1
50% POE	**MVA**	**28.6**	**22.4**	**21.3**	**26.2**	**25.9**	**18.6**	**19.6**	**21.1**	**21.6**	**21.2**	**21.3**	**21.5**	**21.9**	**22.3**	**22.8**	**23.4**
	PF	0.964	1.000	0.981	0.985	0.995	0.997	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
Actual	**MVA**																
West Dapto	MW									0.8	1.6	2.4	3.3	25.2	26.1	27.0	27.0
	MVAr									0.3	0.5	0.8	1.1	8.3	8.6	8.9	8.9
10% POE	**MVA**									**0.8**	**1.7**	**2.5**	**3.5**	**26.5**	**27.4**	**28.5**	**28.5**
	PF									0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
	MW									0.8	1.6	2.4	3.3	25.2	26.1	27.0	27.0
	MVAr									0.3	0.5	0.8	1.1	8.3	8.6	8.9	8.9
50% POE	**MVA**									**0.8**	**1.7**	**2.5**	**3.5**	**26.5**	**27.4**	**28.5**	**28.5**
	PF									0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**	**258.7**	**239.2**	**231.6**	**237.7**	**233.0**	**225.8**										
Undiversified	MW	236.4	212.0	223.4	224.7	225.7	224.2	224.8	225.5	226.7	227.2	228.1	229.2	251.4	252.7	254.2	254.7
	MVAr	87.3	83.7	54.9	54.6	51.6	25.3	31.0	31.2	31.6	31.8	32.1	32.4	39.8	40.2	40.7	40.9
10% POE	**MVA**	**258.7**	**234.0**	**231.6**	**232.0**	**233.0**	**225.8**	**227.6**	**228.4**	**229.7**	**230.2**	**231.1**	**232.2**	**255.7**	**257.0**	**258.6**	**259.1**
	PF	0.914	0.906	0.965	0.969	0.969	0.993	0.988	0.987	0.987	0.987	0.987	0.987	0.983	0.983	0.983	0.983
	MW	236.4	212.0	223.4	224.7	225.7	224.2	224.0	225.5	226.7	227.2	228.1	229.2	251.4	252.7	254.2	254.7
	MVAr	87.3	83.7	54.9	54.6	51.6	25.3	30.7	31.2	31.6	31.8	32.1	32.4	39.8	40.2	40.7	40.9
50% POE	**MVA**	**258.7**	**234.0**	**231.6**	**232.0**	**233.0**	**225.8**	**226.8**	**228.4**	**229.7**	**230.2**	**231.1**	**232.2**	**255.7**	**257.0**	**258.6**	**259.1**
	PF	0.914	0.906	0.965	0.969	0.969	0.993	0.988	0.987	0.987	0.987	0.987	0.987	0.983	0.983	0.983	0.983

Note: Batemans Bay & Moruya North have been combined due to the constant transfer of load between the two zone substations

5.7 Denham Court STS Demand Forecast

Discussion

Denham Court STS supplies Transport for NSW's South West Rail Link which services the South West Growth Area and is supplied by feeder 93Y from Liverpool 132kV or alternately by feeder 9L5 / 9LY from Nepean 132kV.

Denham Court STS also supplies Edmondson Park ZS Transformer No.1 at 33kV on change-over from West Liverpool STS. The Edmondson Park ZS forecast is shown on West Liverpool STS.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Denham Court	1 x 60	60
Edmondson Park	2 x 35	35

Proposed Load Transfers

No Proposed Load Transfers at this location

Future Spot Loads

No Proposed Spot Load at this location

Planned Lot Releases & Redevelopment

No Lot Releases Proposed at this location

Generation

No Generation known at this location

Denham Court STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**3.8**	**4.7**														
Edmondson Park	MW	3.8	4.4														
	MVAr	0.0	1.5														
10% POE	**MVA**	**3.8**	**4.7**														
	PF	1.000	0.947														
	MW	3.8	4.4														
	MVAr	0.0	1.5														
50% POE	**MVA**	**3.8**	**4.7**														
	PF	1.000	0.947														
Actual	**MVA**	**10.8**	**15.4**	**13.3**	**12.5**	**13.7**	**15.4**										
Sydney Trains	MW	6.7	13.4	11.3	10.2	11.8	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
Edmondson Park	MVAr	8.5	7.7	7.0	7.1	6.9	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
10% POE	**MVA**	**10.8**	**15.4**	**13.3**	**12.5**	**13.7**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**
	PF	0.619	0.868	0.848	0.822	0.862	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870
	MW	6.7	13.4	11.3	10.2	11.8	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
Major customer	MVAr	8.5	7.7	7.0	7.1	6.9	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
50% POE	**MVA**	**10.8**	**15.4**	**13.3**	**12.5**	**13.7**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**
	PF	0.619	0.868	0.848	0.822	0.862	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870
Actual	**MVA**	**14.6**	**20.1**	**13.3**	**12.5**	**13.7**	**15.4**										
Undiversified	MW	10.5	17.8	11.3	10.2	11.8	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
	MVAr	8.5	9.2	7.0	7.1	6.9	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
10% POE	**MVA**	**14.6**	**20.1**	**13.3**	**12.5**	**13.7**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**
	PF	0.719	0.886	0.848	0.822	0.862	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870
	MW	10.5	17.8	11.3	10.2	11.8	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
	MVAr	8.5	9.2	7.0	7.1	6.9	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
50% POE	**MVA**	**14.6**	**20.1**	**13.3**	**12.5**	**13.7**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**	**15.4**
	PF	0.719	0.886	0.848	0.822	0.862	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870	0.870
Actual	**MVA**	**12.4**	**18.1**	**16.3**	**14.9**	**14.1**	**15.7**										
Diversified	MW	7.6	16.4	14.7	12.8	11.9	13.9	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
	MVAr	9.9	7.6	7.0	7.7	7.7	8.2	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
10% POE	**MVA**	**12.4**	**18.1**	**16.3**	**14.9**	**14.1**	**16.1**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**
	PF	0.610	0.906	0.902	0.855	0.840	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
	MW	7.6	16.4	14.7	12.8	11.9	13.9	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
	MVAr	9.9	7.6	7.0	7.7	7.7	8.2	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
50% POE	**MVA**	**12.4**	**18.1**	**16.3**	**14.9**	**14.1**	**16.1**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**
	PF	0.610	0.906	0.902	0.855	0.840	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
Est. System Normal																	
	MVA				**12.5**	**13.0**	**13.4**										

Note: #Diversified values which are greater than undiversified values are due to line losses.

5.8 Fairfax Lane STS Demand Forecast

Discussion

Fairfax Lane Sub-Transmission Substation has three 60MVA 132/33kV transformers providing a firm capacity of 120MVA.

Wingecarribee Shire Council's (WSC) proposed 800ha Moss Vale Enterprise Zone is vying for the opportunity to become a major distribution centre and inland port for goods arriving at Port Kembla. The Moss Vale project is proposed to take approximately 25 years to develop and has the benefits of being located on the main transportation link of the Hume Highway. The area also benefits from a proposed rail link – which will circumvent the need to traverse a cumbersome arrangement of road patterns from Port Kembla to Moss Vale.

The early stages of the Moss Vale Enterprise Zone have started with developments proposed around Berrima Junction ZS. Berrima Junction is a temporary zone substation and will need to be upgraded to a permanent firm substation to supply the Enterprise Zone.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Fairfax Lane	3 x 60 (132/66kV)	180
Berrima Junction	1 x 15/20 (33/11kV)	20
Bowral	2 x 10 + 1 x 12.5	32.5
Mittagong	2 x 12.5 + 1 x 15	40
Moss Vale	2 x 25	50
Ringwood	2 x 12.5	25
Robertson	2 x 3.75	7.5

Proposed Load Transfers

No Proposed Load Transfers at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Berrima_junction	NCl1699 Lot 40 Douglas Rd, Moss Vale - Stage 1-1	2023	2.21	0.45	2.25
Berrima_junction	NCl1699-2 Lot 40 Douglas Rd, Moss Vale - Stage 1-2	2024	2.21	0.45	2.25
Berrima_junction	NCl1699-3 Lot 40 Douglas Rd, Moss Vale - Stage 1-3	2025	2.21	0.45	2.25
Berrima_junction	NCl1699-4 Lot 40 Douglas Rd, Moss Vale - Stage 1-4	2026	2.21	0.45	2.25
Bowral	NCL1775 203 Horderns Road BOWRAL.	2024	0.38	0.08	0.39
Bowral	NRL13869 220 Woodlands Rd, Woodlands	2023	0.01	0.00	0.01
Bowral	NRL14933 381 Sproules Ln, Glenquarry - 2 new	2023	0.02	0.00	0.02
Bowral	NRL15237 3410 Wombeyan Caves Road BULLIO 25KVA TX	2023	0.02	0.00	0.02
Mittagong	NRL14830 233 Railway Pde, Balmoral	2023	0.02	0.00	0.02
Mittagong	UCL11097 16 Drapers Road Braemar	2023	0.59	0.12	0.61
Mittagong	UCL9016 98 Bowral Rd, Mittagong	2023	0.30	0.00	0.30
Mittagong	UIL5953 10 Tyree Pl, Braemar - Tyree	2023	0.53	0.17	0.56
Mittagong	UIL6059 22 Drapers Rd, Braemar	2023	0.16	0.05	0.17
Mittagong	UIL6098 Old Hume Hwy, Mittagong	2023	0.13	0.04	0.14
Mittagong	UIL6137 UIL6137 - 17 Pikkat Drive BRAEMAR 1 lot, 21 light industrial units	2023	0.12	0.02	0.12
Mittagong	UIS0919 Pikkat Dr, Braemar - 8 industrial lots - left out large lot	2023	0.34	0.11	0.36
Mittagong	URS22700 Renwick Dr, Renwick	2023	0.07	0.02	0.07
Moss_Vale	NCL1674 141A Yarrawa Rd, Moss Vale - Sales office	2023	0.04	0.00	0.04
Moss_Vale	NCL1712 Bendooley Estate	2023	0.41	0.00	0.41
Moss_Vale	NCL1721 560 Green Hills Rd, Berrima	2024	0.03	0.01	0.03
Moss_Vale	NCL1767 526 Meryla Road, Moss Vale	2023	0.04	0.01	0.04
Moss_Vale	NCL1777 27B Kennedy Cl, MOSS VALE - increase in load	2023	0.42	0.09	0.43
Moss_Vale	NLL0226 205 Berrima Rd, Moss Vale	2023	0.08	0.00	0.08
Moss_Vale	NRL14612 1028 Nowra Rd, Fitzroy Falls	2023	0.01	0.00	0.01
Moss_Vale	NRL14807 Bowral, Rural Resi. Load	2023	0.07	0.00	0.07
Moss_Vale	NRL14921 41 Wilkinson St, Berrima	2023	0.01	0.00	0.01
Moss_Vale	NRL14991 59 Old Mandemar Rd, Berrima	2023	0.04	0.01	0.04
Moss_Vale	NRL14991 59 Old Mandemar Rd, Berrima	2023	0.01	0.00	0.01
Moss_Vale	NRL15465 450 Nowra Rd Moss Vale	2023	0.06	0.01	0.06
Moss_Vale	NRL15469 10 Railway Road, Burradoo	2024	0.06	0.01	0.06
Moss_Vale	NRL15533 NRL15533 - 5910 Illawarra Highway AVOCA	2024	0.07	0.01	0.07
Moss_Vale	NRS3464 Rural Subdivision	2023	0.05	0.00	0.05
Moss_Vale	NRS3499 32 586-592 Moss Vale Road BURRADOO	2023	0.07	0.01	0.07
Moss_Vale	UCL10557 229 Argyle St, Moss Vale	2023	0.10	0.00	0.10
Moss_Vale	UCL11121 563-645 Moss Vale Road BURRADOO	2023	0.68	0.14	0.69
Moss_Vale	UIL6101 McCourt Rd, Moss Vale	2023	0.18	0.06	0.19
Moss_Vale	UIL6210 1 Red Fields Rd Moss Vale	2023	0.78	0.16	0.80
Moss_Vale	ULL2983 12 Browley St, Moss Vale - Moss Vale PS	2023	0.10	0.00	0.10
Moss_Vale	ULL3305 Medway Dam - decom HVC30463	2024	0.02	0.00	0.03
Ringwood	NCL1724 2500 Canyonleigh Rd, Canyonleigh	2023	0.04	0.00	0.04
Ringwood	NCL1733 2595 Canyonleigh Rd, Canyonleigh	2023	0.02	0.00	0.02
Ringwood	NRL13231 1701 Canyonleigh Rd, Canyonleigh	2023	0.01	0.00	0.01
Ringwood	NRL13699 251 Ferndale Rd, Bundanoon	2023	0.01	0.00	0.01
Ringwood	NRL14401 1701 Canyonleigh Rd, Canyonleigh	2023	0.01	0.00	0.01
Ringwood	NRL14455 588 Sallys Corner Rd, Exeter	2023	0.01	0.00	0.01
Ringwood	NRL15159 1751 Tugalong Road CANYONLEIGH	2023	0.03	0.01	0.03
Ringwood	NRS3330 Greasons Rd Bundanoon	2023	0.01	0.00	0.01
Ringwood	NRS3549 7 lots - 50 Bumballa Road WINGELLO	2023	0.04	0.01	0.04
Ringwood	UCL10441 Hume Hwy, Marulan - EV charger	2023	0.59	0.08	0.60
Ringwood	URS21707 58 Greasons Rd, Bundanoon	2024	0.08	0.00	0.08
Ringwood	URS24533 6-8 Bromhall Rd, Bundanoon	2024	0.06	0.00	0.06
Ringwood	URS26394 616 Sallys Corner Road EXETER	2023	0.09	0.02	0.09
Robertson	NRL10575 16 Elliot-Little Ln - Wildes Meadow 63KVA TX	2023	0.04	0.01	0.04
Robertson	NRL14644 174 Yeola Rd, Robertson (8kva existing)	2023	0.04	0.00	0.04
Robertson	NRL15205 43 Old Kangaloon Road, Robertson. New 200TX replace PS31174	2023	0.11	0.02	0.11
Water_Board_Dams_F	UUL1982 Nepean Dam Forestry 33kV HVC 30766	2023	0.12	0.02	0.12

Planned Lot Releases & Redevelopment

Zone Substation	Description	Year	Years	MVA
Berrima_junction	UIS0802 40 Douglas Rd, Moss Vale - 11 very large industrial lots	2022	3	7.80
Bowral	NCL1739 434 Wombeyan Caves Road WOODLANDS 200kVA sub remove 31922	2023	1	0.07
Bowral	NRL14461 NRL14461 - 75 Jack Emery Lane Kangaloon	2023	1	0.07
Bowral	NRL14774 Black Springs Rd, High Range	2023	1	0.01
Bowral	NRL15126 NRL15126 - 1, 2951 Wombeyan Caves Road BULLIO 50kVA	2023	1	0.03
Bowral	NRL15151 NRL15151 - 1 Pheasant Gully Road BULLIO	2023	1	0.03
Bowral	NRL15167 1800 Wombeyan Caves Road HIGH RANGE	2024	1	0.01928
Bowral	NRL15188 220 Kells Creek Road Woodlands	2023	1	0.03
Bowral	NRL15244 NRL15244 2830 Old Hume HWY	2023	1	0.10
Bowral	NRL15427 232 Kells Creek Road Woodlands	2023	1	0.032
Bowral	UCL11081 Motel with Ev chargers 62 David St Bowral	2023	1	0.84
Bowral	UML9250 444 Moss Vale Rd, Bowral - 45 residential apartments	2023	2	0.35
Bowral	UML9374 1, 2-18 Centennial Rd, Bowral	2023	3	0.54
Mittagong	UIL6139 3 Gantry Place, BRAEMAR	2023	1	0.183
Mittagong	UIS0837 Owen St, Mittagong industrial subdivision	2021	2	0.25
Mittagong	UIS0892 Tyree Pl, Braemar - Stage 2	2023	1	0.88
Mittagong	URS23542 Ferguson Cres, Mittagong	2023	1	0.16
Moss_Vale	Chelsea Gardens - holder	2024	7	6.48
Moss_Vale	ENL4306 Burradoo, Eridge Rd	2024	10	2.70
Moss_Vale	ENL4306 Burradoo, Eridge Rd	2026	10	8.10
Moss_Vale	NRL15222 43 Golden Vale Road Sutton Forest	2023	1	0.07
Moss_Vale	NRL15291 493 Belanglo Road Belanglo.	2023	1	0.04
Moss_Vale	UCL10172 Yarrawa Rd, Moss Vale - RACF	2021	3	0.43
Moss_Vale	UIL6174 UIL6174 19 Red Fields Rd Moss Vale 500->1000kva uprate TX	2023	1	0.15
Moss_Vale	UIS0548 24 Douglas Rd, Moss Vale - 18 large industrial lots	2022	3	1.90
Moss_Vale	ULL3292 ULL3292 Moss Vale Train Station	2023	1	0.16
Moss_Vale	UML9864 Throsby St, Moss Vale	2022	2	0.09
Moss_Vale	URS24756-8 312 Stage 1A-C 32 Lovelle Street MOSS VALE (176Lots)	2024	2	0.95
Ringwood	NCL1736 NCL1736 - 4 7945 Illawarra Highway SUTTON FOREST 63kVA TX	2023	1	0.05
Ringwood	NCL1748 532 Hanging Rock Road SUTTON FOREST	2023	1	0.03
Ringwood	NCL1756 NCL1756 200 Kareela Rd Penrose	2023	1	0.06
Ringwood	NCL1758 NCL1758 - 24 SALLYS CORNER ROAD EXETER - EV charger	2023	1	0.55
Ringwood	NRS3235 Exeter Rd, Exeter - 18 residential lots (Back calc ADMD)	2023	1	0.13
Ringwood	UCL11008 20 Hill St Bundanoon 50 multidwelling complex	2024	1	0.27
Ringwood	UCL11027 8, 13-33 Ellsmore Road BUNDANOON	2023	1	0.16

Generation

No Generation known at this location

Fairfax Lane STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**23.5**	**23.3**	**23.6**	**23.7**	**23.8**	**24.2**										
BCSC Berrima	MW	22.4	22.2	22.4	21.9	21.9	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1
	MVAr	6.8	7.2	7.3	9.2	9.2	2.4	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
10% POE	**MVA**	**23.5**	**23.3**	**23.6**	**23.7**	**23.8**	**24.2**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**
	PF	0.957	0.951	0.951	0.921	0.922	0.995	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949
Major customer	MW	22.4	22.2	22.4	21.9	21.9	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1
	MVAr	6.8	7.2	7.3	9.2	9.2	2.4	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
50% POE	**MVA**	**23.5**	**23.3**	**23.6**	**23.7**	**23.8**	**24.2**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**	**25.4**
	PF	0.957	0.951	0.951	0.921	0.922	0.995	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949
Actual	**MVA**	**1.3**	**1.5**	**1.9**	**1.6**	**1.5**	**1.5**										
Berrima Junction	MW	1.2	1.4	1.9	1.6	1.5	1.5	6.7	9.9	11.7	13.5	13.5	13.5	13.5	13.5	13.5	13.5
	MVAr	0.4	0.5	0.2	0.1	0.1	0.1	0.6	0.9	1.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2
10% POE	**MVA**	**1.3**	**1.5**	**1.9**	**1.6**	**1.5**	**1.5**	**6.7**	**9.9**	**11.7**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**
	PF	0.950	0.950	0.995	0.996	0.997	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	1.2	1.4	1.9	1.6	1.5	1.5	6.7	9.9	11.7	13.5	13.5	13.5	13.5	13.5	13.5	13.5
	MVAr	0.4	0.5	0.2	0.1	0.1	0.1	0.6	0.9	1.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2
50% POE	**MVA**	**1.3**	**1.5**	**1.9**	**1.6**	**1.5**	**1.5**	**6.7**	**9.9**	**11.7**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**	**13.5**
	PF	0.950	0.950	0.995	0.996	0.997	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	**MVA**	**18.2**	**17.0**	**17.8**	**21.5**	**16.3**	**13.2**										
Bowral	MW	15.9	15.8	16.6	17.7	17.5	17.6	18.8	19.4	19.7	19.5	19.7	19.8	20.1	20.3	20.7	21.1
	MVAr	4.2	4.1	3.6	3.2	2.4	0.1	1.8	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1
10% POE	**MVA**	**16.4**	**16.3**	**17.0**	**18.0**	**17.7**	**17.6**	**18.8**	**19.5**	**19.8**	**19.6**	**19.8**	**19.9**	**20.2**	**20.4**	**20.8**	**21.2**
	PF	0.967	0.968	0.978	0.984	0.991	1.000	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
	MW	14.1	13.8	14.6	15.2	15.1	15.3	16.4	17.0	17.3	17.2	17.3	17.5	17.7	18.0	18.4	18.8
	MVAr	3.7	3.6	3.2	2.8	2.1	0.1	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8
50% POE	**MVA**	**14.6**	**14.3**	**14.9**	**15.4**	**15.2**	**15.3**	**16.5**	**17.1**	**17.4**	**17.3**	**17.4**	**17.6**	**17.8**	**18.1**	**18.5**	**18.9**
	PF	0.967	0.968	0.978	0.984	0.991	1.000	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Actual	**MVA**	**19.1**	**15.1**	**16.8**	**19.1**	**15.5**	**12.7**										
Mittagong	MW	16.4	14.9	16.9	16.1	16.5	16.6	19.3	19.2	19.3	19.1	19.1	19.2	19.3	19.4	19.7	19.9
	MVAr	1.8	3.5	1.0	2.9	2.5	0.3	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9
10% POE	**MVA**	**16.5**	**15.3**	**17.0**	**16.4**	**16.6**	**16.6**	**19.5**	**19.4**	**19.5**	**19.3**	**19.3**	**19.4**	**19.5**	**19.6**	**19.9**	**20.1**
	PF	0.994	0.973	0.998	0.984	0.989	1.000	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
	MW	14.8	13.2	14.9	14.1	14.5	14.7	17.5	17.4	17.5	17.3	17.3	17.3	17.5	17.6	17.8	18.0
	MVAr	1.7	3.1	0.9	2.6	2.2	0.3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6
50% POE	**MVA**	**14.9**	**13.6**	**15.0**	**14.3**	**14.7**	**14.7**	**17.6**	**17.5**	**17.7**	**17.4**	**17.5**	**17.5**	**17.6**	**17.8**	**18.0**	**18.2**
	PF	0.994	0.973	0.998	0.984	0.989	1.000	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
Actual	**MVA**	**17.7**	**15.0**	**17.0**	**18.4**	**16.7**	**14.7**										
Moss Vale	MW	15.3	15.0	17.5	16.7	16.7	16.6	19.5	20.1	21.4	22.7	24.8	27.0	29.1	31.0	32.7	34.1
	MVAr	3.3	1.9	2.3	3.1	0.5	0.4	2.7	2.8	2.9	3.1	3.4	3.7	4.0	4.3	4.5	4.7
10% POE	**MVA**	**15.7**	**15.1**	**17.7**	**17.0**	**16.7**	**16.6**	**19.6**	**20.3**	**21.6**	**22.9**	**25.0**	**27.3**	**29.4**	**31.3**	**33.0**	**34.4**
	PF	0.978	0.992	0.992	0.983	1.000	1.000	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991
	MW	14.3	13.7	15.8	14.9	15.0	15.0	17.8	18.6	19.9	21.1	23.3	25.5	27.6	29.5	31.2	32.6
	MVAr	3.1	1.8	2.0	2.8	0.4	0.3	2.4	2.6	2.7	2.9	3.2	3.5	3.8	4.0	4.3	4.5
50% POE	**MVA**	**14.6**	**13.8**	**15.9**	**15.2**	**15.0**	**15.0**	**18.0**	**18.8**	**20.1**	**21.3**	**23.5**	**25.7**	**27.9**	**29.8**	**31.5**	**32.9**
	PF	0.978	0.992	0.992	0.983	1.000	1.000	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991
Actual	**MVA**	**5.7**	**5.4**	**6.1**	**7.4**	**5.8**	**5.5**										
Ringwood	MW	5.0	5.0	5.8	5.4	5.6	5.7	7.1	7.4	7.4	7.4	7.4	7.4	7.5	7.6	7.7	7.8
	MVAr	1.1	1.0	1.1	1.0	0.6	0.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3
10% POE	**MVA**	**5.1**	**5.1**	**5.9**	**5.5**	**5.7**	**5.7**	**7.2**	**7.5**	**7.5**	**7.5**	**7.5**	**7.5**	**7.6**	**7.7**	**7.8**	**7.9**
	PF	0.978	0.979	0.984	0.985	0.995	1.000	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
	MW	4.6	4.5	5.2	4.9	5.1	5.2	6.6	6.9	7.0	6.9	6.9	7.0	7.0	7.1	7.2	7.3
	MVAr	1.0	0.9	1.0	0.9	0.5	0.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2
50% POE	**MVA**	**4.7**	**4.6**	**5.3**	**5.0**	**5.1**	**5.2**	**6.7**	**7.0**	**7.1**	**7.0**	**7.0**	**7.0**	**7.1**	**7.2**	**7.3**	**7.4**
	PF	0.978	0.979	0.984	0.985	0.995	1.000	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**3.9**	**3.5**	**3.5**	**4.2**	**4.1**	**4.7**										
Robertson	MW	3.7	3.3	3.3	4.0	3.9	4.5	4.5	4.5	4.5	4.5	4.6	4.7	4.8	4.9	5.0	5.2
	MVAr	1.2	1.1	1.1	1.3	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.7	1.7
10% POE	**MVA**	**3.9**	**3.5**	**3.5**	**4.2**	**4.1**	**4.7**	**4.7**	**4.7**	**4.8**	**4.8**	**4.8**	**4.9**	**5.0**	**5.1**	**5.3**	**5.5**
	PF	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
	MW	3.7	3.3	3.3	4.0	3.9	4.5	4.5	4.5	4.5	4.5	4.6	4.7	4.8	4.9	5.0	5.2
	MVAr	1.2	1.1	1.1	1.3	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.7	1.7
50% POE	**MVA**	**3.9**	**3.5**	**3.5**	**4.2**	**4.1**	**4.7**	**4.7**	**4.7**	**4.8**	**4.8**	**4.8**	**4.9**	**5.0**	**5.1**	**5.3**	**5.5**
	PF	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**	**1.2**	**1.0**	**0.8**	**1.3**	**1.1**	**1.2**										
Tyree & Tycan	MW	1.1	0.7	0.7	1.2	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Major customer	MVAr	0.3	0.6	0.4	0.3	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
10% POE	**MVA**	**1.2**	**1.0**	**0.8**	**1.3**	**1.1**	**1.2**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**
	PF	0.956	0.770	0.855	0.978	0.998	0.995	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925
	MW	1.1	0.7	0.7	1.2	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	MVAr	0.3	0.6	0.4	0.3	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
50% POE	**MVA**	**1.2**	**1.0**	**0.8**	**1.3**	**1.1**	**1.2**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**
	PF	0.956	0.770	0.855	0.978	0.998	0.995	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925
Actual	**MVA**	**1.9**	**1.7**	**2.2**	**3.5**	**0.9**	**2.7**										
Water Board Dams	MW	1.8	1.6	2.1	3.2	0.8	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Major customer	MVAr	0.6	0.5	0.6	1.2	0.5	1.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
10% POE	**MVA**	**1.9**	**1.7**	**2.2**	**3.5**	**0.9**	**2.7**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**
	PF	0.950	0.950	0.958	0.936	0.824	0.798	0.903	0.903	0.903	0.903	0.903	0.903	0.903	0.903	0.903	0.903
	MW	1.8	1.6	2.1	3.2	0.8	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	MVAr	0.6	0.5	0.6	1.2	0.5	1.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
50% POE	**MVA**	**1.9**	**1.7**	**2.2**	**3.5**	**0.9**	**2.7**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**
	PF	0.950	0.950	0.958	0.936	0.824	0.798	0.903	0.903	0.903	0.903	0.903	0.903	0.903	0.903	0.903	0.903
Actual	**MVA**	**92.4**	**83.4**	**89.6**	**100.7**	**85.7**	**80.5**										
Undiversified	MW	82.8	79.9	87.3	87.9	85.5	90.0	103.3	108.0	111.6	114.2	116.6	119.2	121.8	124.2	126.8	129.1
	MVAr	19.7	20.5	17.6	22.4	17.1	6.6	20.0	20.5	20.9	21.2	21.5	21.9	22.3	22.6	23.0	23.3
10% POE	**MVA**	**85.3**	**82.7**	**89.5**	**91.2**	**88.1**	**90.9**	**105.8**	**110.4**	**114.1**	**116.7**	**119.1**	**121.7**	**124.3**	**126.8**	**129.5**	**131.7**
	PF	0.970	0.965	0.975	0.964	0.970	0.990	0.977	0.978	0.978	0.978	0.979	0.979	0.979	0.979	0.980	0.980
	MW	78.0	74.4	80.9	81.0	78.8	83.6	97.0	101.8	105.4	108.0	110.4	112.9	115.5	118.0	120.6	122.9
	MVAr	18.8	19.3	16.7	21.2	16.4	6.5	19.2	19.7	20.1	20.4	20.7	21.1	21.5	21.8	22.2	22.5
50% POE	**MVA**	**80.4**	**77.2**	**83.0**	**84.2**	**81.4**	**84.6**	**99.4**	**104.2**	**107.8**	**110.4**	**112.8**	**115.5**	**118.1**	**120.6**	**123.2**	**125.5**
	PF	0.970	0.965	0.974	0.963	0.969	0.989	0.976	0.977	0.977	0.978	0.978	0.978	0.979	0.979	0.979	0.979
Actual	**MVA**	**71.9**	**69.3**	**74.1**	**78.3**	**72.4**	**72.0**										
Diversified	MW	71.8	69.3	73.6	78.3	72.4	72.0	88.9	92.9	96.0	98.2	100.3	102.5	104.7	106.9	109.1	111.0
(Meter)	MVAr	3.2	0.2	8.3	0.5	2.0	3.1	4.8	5.0	5.1	5.3	5.4	5.5	5.6	5.7	5.9	6.0
10% POE	**MVA**	**71.9**	**69.3**	**74.0**	**78.3**	**72.4**	**72.0**	**89.0**	**93.0**	**96.2**	**98.4**	**100.4**	**102.7**	**104.9**	**107.0**	**109.2**	**111.2**
	PF	0.999	1.000	0.994	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	71.8	69.3	73.6	78.3	72.4	72.0	83.4	87.5	90.7	92.9	94.9	97.2	99.4	101.5	103.7	105.7
	MVAr	3.2	0.2	8.3	0.5	2.0	3.1	4.5	4.7	4.9	5.0	5.1	5.2	5.3	5.4	5.6	5.7
50% POE	**MVA**	**71.9**	**69.3**	**74.0**	**78.3**	**72.4**	**72.0**	**83.6**	**87.7**	**90.8**	**93.0**	**95.1**	**97.3**	**99.5**	**101.7**	**103.9**	**105.8**
	PF	0.999	1.000	0.994	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999

Note: * Tycan's forecast load has been accounted for under Tyree

5.9 Guildford STS Demand Forecast

Discussion

Guildford STS has three 120MVA 132/33kV transformers providing a firm capacity of 240MVA.

Marubeni generation used to supply 160MW and 60MVAr to the 33kV busbar at Guildford but ceased operations from mid 2017 and is now owned by Visy Power Generation.

There is 88 MVAr of capacitors installed on the 33kV busbar.

Comalco (Alcoa) also ceased operations at Yennora and has been demolished.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Guildford	3 x 120 (132/33kV)	360
Cabramatta	2 x 15/19/25	50
Carramar	2 x 15/19/25	50
Fairfield	3 x 25	75
Sherwood	2 x 25	50
Smithfield	3 x 15/20/25	75
South Granville	2 x 25	50
Woodpark	2 x 15/19/25	50
Yennora	2 x 25	50

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2024	Greystanes	Blacktown	Fairfield	Guildford	0.40
2024	Greystanes	Blacktown	Woodpark	Guildford	1.80
2024	Holroyd	Blacktown	Sherwood	Guildford	0.60
2024	Sherwood	Guildford	Fairfield	Guildford	0.40
2024	Granville_132kV	Holroyd_132kV	Sherwood	Guildford	0.35
2023	Fairfield	Liverpool_STS	Yennora	Guildford	1.10

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Cabramatta	ENL4217 34-35, 17 Longfield St Cabramatta	2023	1.08	0.22	1.10
Carramar	ULL3054 1-3 Hamilton Rd Fairfield	2023	0.52	0.25	0.58
Carramar	UUL1962 Sydney Water - Vine St Fairfield	2023	0.29	0.06	0.30
Fairfield	UIL5525 fairfield rd near hunt st	2023	0.23	0.11	0.25
Fairfield	UIL5681-2 McCredie Rd Smithfield	2023	0.76	0.37	0.84
Fairfield	UIL5707 Kiora Cres Yennora 80%	2023	0.14	0.07	0.16
Fairfield	UIL5840 Loftus Rd Yennora 80%	2023	0.94	0.45	1.04
Fairfield	UIL6031 Norrie St Yennora 80%	2024	1.77	0.86	1.97
Fairfield	UIL6138 Kiora Cres Yennora 80%	2023	0.26	0.05	0.27
Fairfield	UIL6245 28 Nelson Rd Yennora	2023	2.89	0.59	2.95
Fairfield	UML7234 10 Court Rd Fairfield	2024	0.47	0.23	0.53
Fairfield	UML9998 Sackville & Hardy St Fairfield	2023	0.19	0.04	0.19
Sherwood	UCL10472 Railway terrance Switching will transfer load from Sherwood to FF	2024	0.45	0.22	0.50
Sherwood	UML8131 Guildford Rd - 35 units	2023	0.10	0.05	0.12
Sherwood	UML9673 Units and commercial	2024	0.52	0.25	0.57
Sherwood	UML9820 33 units Bursill st	2024	0.11	0.02	0.11
South_Granville	UCL10424 20 units	2024	0.06	0.03	0.07
South_Granville	UIL5995 62 Ferndell st 80% diversity.	2024	0.72	0.35	0.80
South_Granville	UIL6235 Ferndell Rd Industrila load upgrade 80%	2024	0.71	0.14	0.72
South_Granville	UML9204 18 units pegalr st	2024	0.05	0.03	0.06
South_Granville	UML9288 31 units	2024	0.09	0.04	0.10
South_Granville	UML9776 35 units	2023	0.10	0.05	0.12
South_Granville	URS25932 6 lots	2023	0.03	0.01	0.03
Woodpark	ENL4122 Remaining capacity for Vinidex 3031 N-1 load	2023	1.57	0.32	1.60
Woodpark	UIL5918 177 woodpark rd smithfield (60%)	2024	0.45	0.22	0.50
Woodpark	UIL5941 long st Smithfield load upgrade	2024	0.18	0.09	0.20
Woodpark	UIL6091-2 half of 1.75MVA for warren Rd industrial	2023	0.54	0.11	0.55
Woodpark	UIL6103 55 long st 60%	2023	1.96	0.40	2.00
Woodpark	UIL6215 4.8MVA Visypak 60%	2024	2.94	0.60	3.00
Yennora	UCL10991 No.40 Lisbon St Fairfield East	2023	0.20	0.04	0.21
Yennora	UIL5538 No.760 Woodville Rd Fairfield East Factory Unit	2023	0.41	0.08	0.42
Yennora	UIL6146 18 Seville St Fairfield East	2024	0.40	0.08	0.41
Yennora	UIL6153 61-67 Mandarin St Fairfield East	2023	0.36	0.07	0.37
Yennora	UIL6272 63-69 Mandarin St Fairfield East	2023	0.64	0.13	0.65

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Fairfield	UIL5939 26-28 Nelson Rd Yennora Warehouses x 8	2023	1	1.73
Fairfield	UIL6245 28 Nelson Rd Yennora Warehouse	2023	1	1.48
Fairfield	UML9281 356 - 358 The Horsley Drive Fairfield	2024	3	1.26
Yennora	UML7066 117 Units Villawood Place Villawood - Sub 22086	2023	2	0.76

Generation

Zone Substation	Name	Description	Date
Guildford	36402 Visy Power Generation	3 x 45.4 + 77.5MW (Generates into 33kV busbar)	Installed
Guildford	18732 Southern Paper Converters	1 x 6MW (absorbed by customer)	Installed

Guildford STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**19.9**	**19.1**	**17.4**	**18.5**	**18.0**	**15.8**										
Cabramatta	MW	19.5	19.3	18.7	18.7	18.8	18.6	18.9	18.4	18.1	17.8	17.7	17.7	17.7	17.8	18.0	18.1
	MVAr	0.7	6.7	0.6	2.1	3.6	0.8	3.2	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
10% POE	**MVA**	**19.5**	**20.4**	**18.7**	**18.8**	**19.2**	**18.6**	**19.2**	**18.7**	**18.4**	**18.0**	**17.9**	**17.9**	**18.0**	**18.1**	**18.2**	**18.3**
	PF	0.999	0.944	0.999	0.994	0.982	0.999	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986
	MW	17.6	17.3	16.6	16.7	17.0	16.8	17.1	16.7	16.4	16.1	15.9	15.9	16.0	16.1	16.2	16.4
	MVAr	0.6	6.0	0.6	1.9	3.3	0.7	2.9	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
50% POE	**MVA**	**17.7**	**18.3**	**16.6**	**16.8**	**17.3**	**16.8**	**17.4**	**16.9**	**16.6**	**16.3**	**16.2**	**16.2**	**16.2**	**16.3**	**16.4**	**16.6**
	PF	0.999	0.944	0.999	0.994	0.982	0.999	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986
Actual	**MVA**	**16.4**	**16.4**	**17.7**	**17.6**	**15.9**	**14.2**										
Carramar	MW	17.1	17.1	17.5	16.8	17.1	16.6	16.9	16.6	16.6	16.3	16.3	16.4	16.6	16.9	17.2	17.6
	MVAr	0.0	0.0	6.6	6.3	0.0	2.2	3.7	3.6	3.6	3.6	3.5	3.6	3.6	3.7	3.8	3.8
10% POE	**MVA**	**17.1**	**17.1**	**18.7**	**17.9**	**17.1**	**16.8**	**17.3**	**17.0**	**17.0**	**16.7**	**16.6**	**16.8**	**17.0**	**17.3**	**17.6**	**18.0**
	PF	1.000	1.000	0.935	0.935	1.000	0.992	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977
	MW	15.6	15.4	15.8	15.1	15.6	15.1	15.4	15.1	15.1	14.8	14.7	14.9	15.1	15.4	15.8	16.2
	MVAr	0.0	0.0	6.0	5.7	0.0	2.0	3.4	3.3	3.3	3.2	3.2	3.2	3.3	3.4	3.4	3.5
50% POE	**MVA**	**15.6**	**15.4**	**16.9**	**16.2**	**15.6**	**15.2**	**15.8**	**15.5**	**15.4**	**15.1**	**15.1**	**15.2**	**15.5**	**15.7**	**16.1**	**16.5**
	PF	1.000	1.000	0.935	0.935	1.000	0.992	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977
Actual	**MVA**	**26.8**	**26.0**	**27.2**	**27.0**	**25.4**	**27.8**										
Fairfield	MW	26.6	26.0	27.1	27.0	25.3	27.8	34.5	36.8	37.3	37.1	37.0	37.0	37.1	37.2	37.3	37.4
	MVAr	3.2	2.0	1.8	0.0	0.9	0.7	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
10% POE	**MVA**	**26.8**	**26.0**	**27.2**	**27.0**	**25.4**	**27.8**	**34.5**	**36.9**	**37.3**	**37.2**	**37.0**	**37.0**	**37.1**	**37.2**	**37.3**	**37.5**
	PF	0.993	0.997	0.998	1.000	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	MW	26.6	26.0	27.1	27.0	25.3	27.8	34.5	36.8	37.3	37.1	37.0	37.0	37.1	37.2	37.3	37.4
	MVAr	3.2	2.0	1.8	0.0	0.9	0.7	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
50% POE	**MVA**	**26.8**	**26.0**	**27.2**	**27.0**	**25.4**	**27.8**	**34.5**	**36.9**	**37.3**	**37.2**	**37.0**	**37.0**	**37.1**	**37.2**	**37.3**	**37.5**
	PF	0.993	0.997	0.998	1.000	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Actual	**MVA**	**30.4**	**26.2**	**27.8**	**27.8**	**22.3**	**21.1**										
Sherwood	MW	28.7	26.2	30.5	26.1	26.3	26.6	27.0	27.6	27.6	27.2	27.2	27.3	27.7	28.0	28.4	28.9
	MVAr	0.0	0.0	1.2	6.2	1.5	0.6	3.8	3.8	3.8	3.8	3.8	3.8	3.9	3.9	4.0	4.0
10% POE	**MVA**	**28.7**	**26.2**	**30.5**	**26.8**	**26.4**	**26.6**	**27.3**	**27.9**	**27.9**	**27.5**	**27.4**	**27.6**	**27.9**	**28.3**	**28.7**	**29.2**
	PF	1.000	1.000	0.999	0.973	0.998	1.000	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
	MW	25.8	23.8	26.5	22.5	23.0	23.4	23.7	24.3	24.3	23.9	23.9	24.1	24.4	24.7	25.2	25.6
	MVAr	0.0	0.0	1.0	5.3	1.3	0.5	3.3	3.4	3.4	3.3	3.3	3.3	3.4	3.4	3.5	3.6
50% POE	**MVA**	**25.8**	**23.8**	**26.5**	**23.1**	**23.0**	**23.4**	**23.9**	**24.5**	**24.6**	**24.1**	**24.1**	**24.3**	**24.6**	**24.9**	**25.4**	**25.9**
	PF	1.000	1.000	0.999	0.973	0.998	1.000	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
Actual	**MVA**	**39.3**	**35.2**	**37.2**	**40.1**	**35.4**	**34.1**										
Smithfield	MW	39.7	35.9	40.7	36.2	37.6	37.8	37.3	36.9	36.8	36.3	36.2	36.4	36.8	37.1	37.7	38.2
	MVAr	2.9	3.1	3.7	2.4	2.3	3.0	2.6	2.6	2.6	2.5	2.5	2.5	2.6	2.6	2.6	2.7
10% POE	**MVA**	**39.8**	**36.1**	**40.8**	**36.3**	**37.7**	**37.9**	**37.4**	**37.0**	**36.9**	**36.4**	**36.3**	**36.5**	**36.9**	**37.2**	**37.8**	**38.3**
	PF	0.997	0.996	0.996	0.998	0.998	0.997	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
	MW	33.9	31.9	35.9	32.1	33.6	33.9	33.5	33.0	33.0	32.4	32.3	32.5	32.9	33.3	33.8	34.3
	MVAr	2.5	2.8	3.2	2.2	2.1	2.7	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4
50% POE	**MVA**	**34.0**	**32.0**	**36.1**	**32.2**	**33.7**	**34.0**	**33.5**	**33.1**	**33.0**	**32.5**	**32.4**	**32.6**	**33.0**	**33.4**	**33.9**	**34.4**
	PF	0.997	0.996	0.996	0.998	0.998	0.997	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
Actual	**MVA**	**19.6**	**17.8**	**18.6**	**20.7**	**18.8**	**21.0**										
South Granville	MW	18.7	18.1	19.4	20.4	20.7	21.3	21.0	21.9	21.7	21.3	21.3	21.4	21.7	22.2	22.8	23.4
	MVAr	4.7	4.1	4.2	3.9	3.4	3.4	4.3	4.5	4.5	4.4	4.4	4.4	4.5	4.6	4.7	4.8
10% POE	**MVA**	**19.3**	**18.6**	**19.8**	**20.8**	**20.9**	**21.6**	**21.4**	**22.4**	**22.2**	**21.8**	**21.7**	**21.9**	**22.2**	**22.7**	**23.3**	**23.9**
	PF	0.970	0.975	0.977	0.982	0.986	0.987	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
	MW	16.7	15.9	17.0	18.0	18.5	19.2	18.9	19.8	19.6	19.2	19.2	19.3	19.8	20.2	20.8	21.5
	MVAr	4.2	3.6	3.7	3.5	3.1	3.1	3.9	4.1	4.0	3.9	3.9	4.0	4.1	4.1	4.3	4.4
50% POE	**MVA**	**17.2**	**16.3**	**17.4**	**18.4**	**18.8**	**19.5**	**19.3**	**20.2**	**20.0**	**19.6**	**19.6**	**19.7**	**20.2**	**20.6**	**21.3**	**21.9**
	PF	0.970	0.975	0.977	0.982	0.986	0.987	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**20.5**	**20.4**	**20.7**	**21.2**	**21.4**	**22.1**										
Visy Paper	MW	18.7	19.1	19.4	19.6	19.9	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
	MVAr	8.4	7.1	7.2	8.3	7.7	8.5	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
10% POE	**MVA**	**20.5**	**20.4**	**20.6**	**21.2**	**21.4**	**22.2**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**
	PF	0.913	0.937	0.938	0.921	0.932	0.923	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929
Major customer	MW	18.7	19.1	19.4	19.6	19.9	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
	MVAr	8.4	7.1	7.2	8.3	7.7	8.5	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
50% POE	**MVA**	**20.5**	**20.4**	**20.6**	**21.2**	**21.4**	**22.2**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**	**22.1**
	PF	0.913	0.937	0.938	0.921	0.932	0.923	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929
Actual	**MVA**	**22.6**	**20.5**	**19.7**	**19.4**	**17.8**	**26.0**										
Woodpark	MW	21.0	19.1	19.6	19.4	17.7	24.1	27.2	31.7	31.7	31.6	31.6	31.6	31.7	31.7	31.8	31.8
	MVAr	8.3	7.6	2.5	1.6	1.2	9.7	7.7	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
10% POE	**MVA**	**22.6**	**20.5**	**19.7**	**19.4**	**17.8**	**26.0**	**28.3**	**33.0**	**32.9**	**32.9**	**32.9**	**32.9**	**32.9**	**33.0**	**33.0**	**33.1**
	PF	0.930	0.929	0.992	0.997	0.998	0.927	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
	MW	21.0	19.1	19.6	19.4	17.7	24.1	27.2	31.7	31.7	31.6	31.6	31.6	31.7	31.7	31.8	31.8
	MVAr	8.3	7.6	2.5	1.6	1.2	9.7	7.7	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
50% POE	**MVA**	**22.6**	**20.5**	**19.7**	**19.4**	**17.8**	**26.0**	**28.3**	**33.0**	**32.9**	**32.9**	**32.9**	**32.9**	**32.9**	**33.0**	**33.0**	**33.1**
	PF	0.930	0.929	0.992	0.997	0.998	0.927	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
Actual	**MVA**	**20.6**	**19.9**	**19.6**	**19.5**	**18.2**	**19.3**										
Yennora	MW	20.9	19.8	20.3	20.0	20.3	20.5	21.5	21.7	21.3	20.9	20.7	20.7	20.9	21.1	21.4	21.7
	MVAr	1.7	0.0	0.0	0.2	1.9	4.4	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2
10% POE	**MVA**	**20.9**	**19.8**	**20.3**	**20.0**	**20.4**	**21.0**	**21.7**	**21.8**	**21.5**	**21.0**	**20.8**	**20.8**	**21.0**	**21.2**	**21.5**	**21.8**
	PF	0.997	1.000	1.000	1.000	0.996	0.978	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
	MW	19.0	18.0	18.4	18.1	18.5	18.7	19.7	19.8	19.5	19.1	18.9	18.9	19.1	19.3	19.7	20.0
	MVAr	1.5	0.0	0.0	0.2	1.7	4.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0
50% POE	**MVA**	**19.1**	**18.0**	**18.4**	**18.1**	**18.5**	**19.1**	**19.8**	**19.9**	**19.6**	**19.2**	**19.0**	**19.0**	**19.2**	**19.4**	**19.8**	**20.1**
	PF	0.997	1.000	1.000	1.000	0.996	0.978	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Actual	**MVA**	**25.7**	**19.7**	**26.3**	**24.8**	**23.2**	**22.1**										
Guildford	MW	24.1	18.6	25.1	23.5	22.2	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4
(Ausgrid)	MVAr	9.1	6.7	8.1	7.8	6.8	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10% POE	**MVA**	**25.7**	**19.7**	**26.3**	**24.8**	**23.2**	**22.1**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**
	PF	0.935	0.941	0.951	0.950	0.957	0.967	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW	24.1	18.6	25.1	23.5	22.2	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4
	MVAr	9.1	6.7	8.1	7.8	6.8	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50% POE	**MVA**	**25.7**	**19.7**	**26.3**	**24.8**	**23.2**	**22.1**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**	**22.5**
	PF	0.935	0.941	0.951	0.950	0.957	0.967	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**	**241.9**	**221.2**	**232.2**	**236.4**	**216.4**	**223.5**										
Undiversified	MW	234.9	219.0	238.1	227.6	226.1	235.3	246.3	253.6	253.1	250.4	249.8	250.4	252.2	253.9	256.5	259.1
	MVAr	39.1	37.4	35.9	38.8	29.4	39.0	43.5	45.0	44.8	44.5	44.4	44.5	44.8	45.0	45.4	45.8
10% POE	**MVA**	**241.0**	**224.8**	**242.7**	**233.0**	**229.4**	**240.6**	**251.7**	**259.1**	**258.6**	**255.9**	**255.3**	**255.9**	**257.7**	**259.4**	**262.1**	**264.7**
	PF	0.975	0.975	0.981	0.977	0.985	0.978	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
	MW	218.9	205.0	221.4	212.0	211.4	220.9	231.9	239.2	238.7	236.1	235.5	236.1	238.0	239.7	242.4	245.1
	MVAr	37.9	35.9	34.1	36.4	28.1	37.7	41.6	43.0	42.9	42.5	42.5	42.5	42.8	43.1	43.5	43.9
50% POE	**MVA**	**224.9**	**210.5**	**225.8**	**217.2**	**214.7**	**226.2**	**237.1**	**244.6**	**244.1**	**241.4**	**240.8**	**241.4**	**243.3**	**245.1**	**247.8**	**250.6**
	PF	0.974	0.974	0.980	0.976	0.985	0.977	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978
Actual	**MVA**	**211.0**	**227.8**	**183.6**	**192.7**	**185.1**	**182.2**										
Diversified#	MW	217.3	193.5	196.8	209.3	208.5	206.8	212.3	218.6	218.1	215.9	215.4	215.8	217.4	218.8	221.1	223.3
	MVAr	59.8	27.1	46.0	17.5	8.1	41.3	42.4	43.6	43.6	43.1	43.0	43.1	43.4	43.7	44.1	44.6
10% POE	**MVA**	**225.4**	**195.4**	**202.1**	**210.0**	**208.6**	**210.9**	**216.5**	**222.9**	**222.4**	**220.1**	**219.6**	**220.1**	**221.7**	**223.2**	**225.5**	**227.7**
	PF	0.964	0.990	0.974	0.997	0.999	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
(Meter)	MW	198.6	175.4	175.6	191.1	191.3	190.4	199.9	206.2	205.8	203.5	203.0	203.5	205.1	206.6	209.0	211.3
	MVAr	54.7	24.6	41.0	16.0	7.4	38.0	39.9	41.2	41.1	40.6	40.5	40.6	41.0	41.3	41.7	42.2
50% POE	**MVA**	**206.0**	**177.1**	**180.3**	**191.8**	**191.4**	**194.2**	**203.9**	**210.3**	**209.8**	**207.5**	**207.0**	**207.5**	**209.2**	**210.7**	**213.1**	**215.5**
	PF	0.964	0.990	0.974	0.997	0.999	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981

Note: Diversified# Refers to the transformer metering values plus the generation output.

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Marubeni	MW							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Generator	MVAr							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10% POE	**MVA**							**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
	PF							1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Actual	**MVA**																
Undiversified+	MW							246.3	253.6	253.1	250.4	249.8	250.4	252.2	253.9	256.5	259.1
	MVAr							51.6	53.3	53.1	52.7	52.6	52.7	53.0	53.3	53.7	54.2
10% POE	**MVA**							**251.7**	**259.1**	**258.6**	**255.9**	**255.3**	**255.9**	**257.7**	**259.4**	**262.1**	**264.7**
	PF							0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
	MW							231.9	239.2	238.7	236.1	235.5	236.1	238.0	239.7	242.4	245.1
	MVAr							48.6	50.2	50.1	49.7	49.6	49.7	50.0	50.3	50.8	51.3
50% POE	**MVA**							**237.0**	**244.4**	**243.9**	**241.3**	**240.7**	**241.3**	**243.2**	**244.9**	**247.7**	**250.4**
	PF							0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
Actual	**MVA**																
Diversified+	MW							212.3	218.6	218.1	215.9	215.4	215.8	217.4	218.8	221.1	223.3
	MVAr							42.4	43.6	43.6	43.1	43.0	43.1	43.4	43.7	44.1	44.6
10% POE	**MVA**							**216.5**	**222.9**	**222.4**	**220.1**	**219.6**	**220.1**	**221.7**	**223.2**	**225.5**	**227.7**
	PF							0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
	MW							199.9	206.2	205.8	203.5	203.0	203.5	205.1	206.6	209.0	211.3
	MVAr							39.9	41.2	41.1	40.6	40.5	40.6	41.0	41.3	41.7	42.2
50% POE	**MVA**							**203.9**	**210.3**	**209.8**	**207.5**	**207.0**	**207.5**	**209.2**	**210.7**	**213.1**	**215.5**
	PF							0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981

Note: Diversified+/Undiversified+ Refers to the generation output at Marubeni being subtracted from Undiversified or Diversified#

5.10 Hawkesbury STS Demand Forecast

Discussion

Hawkesbury STS has three 120 MVA 132 / 33kV transformers providing a firm capacity of 240MVA. It supplies North Richmond, Kurrajong, East Richmond, Glossodia, Riverstone, Wisemans, South Windsor, Windsor, Cattai and Glenorie zone substations.

There is 30 MVAr of capacitor banks installed on the 33kV busbar to Hawkesbury. The historical and forecast loads have been adjusted to show this power factor correction. East Richmond zone substation has now replaced the existing Richmond ZS. East Richmond zone substation has addressed existing load at risk constraints in the Richmond area and has allowed load to be transferred from North Richmond ZS.

North Richmond ZS has a large development (Redbank Estate) which will be connected to over the next three years. There is a large amount of residential gowth forecasted for Riverstone area over the next 10- 15 years.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Hawkesbury	3 x 120	360
Cattai	1 x 10/12.5/15 + 1 x 15/25	40
East Richmond	2 x 35	70
Glossodia	2 x 25	50
Glenorie	1 x 10/12.5/15	15
Kurrajong	2 x 15	30
North Richmond	2 x 25	50
Riverstone	2 x 15/19/25	50
South Windsor	3 x 15/19/25	75
Windsor	2 x 22/27/35	70
Wisemans	1 x 12.5	12.5

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2025	South_Windsor	Hawkesbury	Box_Hill	Vineyard	3.50
2022	Wisemans	Hawkesbury	Glenorie	Hawkesbury	0.50

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Cattai	NRL15226 632 Lower Colo Road, Lower Portland	2024	0.12	0.02	0.12
Cattai	NRS3263 405 Wisemans Rd, Cattai	2023	0.06	0.01	0.06
Cattai	NRS3427 546 Sackville Ferry Rd, Sackville North	2023	0.03	0.01	0.03
Cattai	NRS3461 600-620 Wisemans Ferry Rd, South Maroota	2023	0.12	0.06	0.13
Cattai	NRS3524 72 Mitchells Rd, Sackville North	2024	0.10	0.02	0.10
East_Richmond	NCL1727 Additonal 500KVA load Hawkesbury UWS 80%	2023	0.39	0.08	0.40
East_Richmond	NRL14932 Rural residential load	2023	0.07	0.01	0.07
East_Richmond	UCL10468 Windsor St, Richmond	2023	0.21	0.10	0.23
East_Richmond	ULL3152 Londonderry School, Londonderry Rd	2023	0.15	0.07	0.17
Glossodia	NUL0659 4 Coorang Road, East Kurrajong	2023	0.04	0.01	0.04
Kurrajong	NRL12850 Cabbage Tree Rd, Grose Vale	2023	0.02	0.01	0.02
Kurrajong	UCL10482 Chapel Reception Berambing Cres Berambing	2023	0.17	0.08	0.19
North_Richmond	NCL1648 177 Grose Vale Rd, North Richmond	2024	0.25	0.05	0.25
North_Richmond	UCL10259 Alchoholic beverages production - William St, North Richmond	2023	0.06	0.03	0.06
North_Richmond	UUL1974 Grose Vale Rd, North Richmond	2023	0.10	0.02	0.10
Riverstone	ARP4846 Garfiled Rd east	2024	0.00	0.00	0.00
Riverstone	ENL4162 Vineyard chapman rd Windsor RD 11kv 200kVA	2024	0.00	0.00	0.00
Riverstone	Riverstone East - 550 residential dwellings (1/2)	2028	1.34	0.65	1.49
Riverstone	Riverstone East - 600 residential dwellings (1/2)	2025	1.46	0.71	1.62
Riverstone	Riverstone East - 600 residential dwellings (1/2)	2026	1.46	0.71	1.62
Riverstone	Riverstone East - 600 residential dwellings (1/2)	2027	1.46	0.71	1.62
Riverstone	Riverstone Precinct - 400 residential dwellings (1/2)	2025	0.97	0.47	1.08
Riverstone	Riverstone Precinct - 400 residential dwellings (1/2)	2026	0.97	0.47	1.08
Riverstone	Riverstone Precinct - 400 residential dwellings (1/2)	2027	0.97	0.47	1.08
Riverstone	Riverstone Precinct - 400 residential dwellings (1/2)	2028	0.97	0.47	1.08
Riverstone	Riverstone West - 88 hectares of employment land	2025	0.54	0.26	0.60

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Riverstone	Riverstone West - 88 hectares of employment land	2026	0.54	0.26	0.60
Riverstone	Riverstone West - 88 hectares of employment land	2027	0.54	0.26	0.60
Riverstone	Riverstone West - 88 hectares of employment land	2028	0.54	0.26	0.60
Riverstone	Riverstone West - 88 hectares of employment land	2029	0.54	0.26	0.60
Riverstone	Riverstone West - 88 hectares of employment land	2030	0.54	0.26	0.60
Riverstone	Riverstone West - 88 hectares of employment land	2031	0.54	0.26	0.60
Riverstone	Riverstone West - 88 hectares of employment land	2032	0.54	0.26	0.60
Riverstone	Riverstone West Industrial	2033	0.54	0.26	0.60
Riverstone	Riverstone West Industrial	2034	0.54	0.26	0.60
Riverstone	Riverstone West Industrial	2035	0.54	0.26	0.60
Riverstone	Riverstone West Industrial	2036	0.54	0.26	0.60
Riverstone	Riverstone West Industrial	2037	0.54	0.26	0.60
Riverstone	Riverstone West Industrial	2038	0.54	0.26	0.60
Riverstone	Riverstone West Industrial	2039	0.54	0.26	0.60
Riverstone	UC11219 Comms	2023	0.16	0.03	0.16
Riverstone	UCL11219 Telco 231kVA - 60%	2024	0.14	0.03	0.14
Riverstone	UCL11228 Farm Rd school upgrade	2024	0.59	0.12	0.60
Riverstone	UIL5866 48 Edward st	2024	0.18	0.09	0.20
Riverstone	ULL3372 Firestation on walker/robert st	2023	0.06	0.01	0.06
Riverstone	URS19294 Off Windsor Rd	2024	0.58	0.28	0.64
Riverstone	URS19295 Off Windsor Rd	2024	0.41	0.20	0.45
Riverstone	URS20129 Grange Ave - 28 dwellings	2025	0.14	0.07	0.15
Riverstone	URS20230 Crown St Riverstone	2024	0.18	0.09	0.20
Riverstone	URS20231 Campbell St Riverstone	2024	0.15	0.07	0.16
Riverstone	URS20274 Garfield Rd East 35 lots	2025	0.17	0.08	0.19
Riverstone	URS20316 Edmund St	2025	0.21	0.10	0.23
Riverstone	URS20833 231 Garfield Rd East Riverstone	2024	0.15	0.07	0.16
Riverstone	URS21299 Garfield Rd East	2025	0.19	0.04	0.19
Riverstone	URS21416 Crown st development	2024	0.05	0.02	0.05
Riverstone	URS21631 Marsden park 28 lots, Excelsior avenue. A052 Riverstone	2024	0.14	0.07	0.15
Riverstone	URS21632 Marsden park 90 excelsior avenue A052 Riverstone 19 lots	2024	0.09	0.04	0.10
Riverstone	URS21885 161 Crown St, Riverstone	2025	0.21	0.10	0.24
Riverstone	URS22257 38 lots Clarke St Riverstone. SC 1204 Schofields to A053 Riverstone	2024	0.18	0.09	0.21
Riverstone	URS22739 Lot Development Riverstone Pde URS22739-URS22743	2025	0.96	0.46	1.06
Riverstone	URS22743 Lot Development Riverstone Pde URS22739-URS22743	2025	0.53	0.26	0.59
Riverstone	URS23064 Regent st Riverstone	2025	0.24	0.12	0.27
Riverstone	URS23322 Regent st riverstone	2025	0.17	0.08	0.18
Riverstone	URS24221 69 lots 70 Riverstone rd	2024	0.31	0.15	0.35
Riverstone	URS26190 Rivo east dweelings	2024	0.32	0.06	0.32
Riverstone	URS26190 Rivo east dweelings	2024	0.32	0.06	0.32
Riverstone	URS26190 Rivo east dweelings	2024	0.32	0.06	0.32
Riverstone	URS26448 Residential subdivision 20 lots	2024	0.10	0.02	0.10
Riverstone	URS26599 Edmund St	2025	0.41	0.08	0.42
Riverstone	UUL1964 Syd water	2025	5.88	1.19	6.00
Riverstone	UUL1964 Sydney water	2023	2.82	0.57	2.88
South_Windsor	UCL10551 Electric bus charging station Mulgrave	2025	0.18	0.09	0.20
South_Windsor	UCL10960 32 Industry Rd - Commercial Dev. (60% utilization)	2024	0.31	0.06	0.32
South_Windsor	UCL11141 Install 500kVA padmount sub	2024	0.34	0.07	0.35
South_Windsor	UIL6081 126 Ham St, South Windsor	2023	0.50	0.16	0.53
South_Windsor	UIL6222 Elf Farm Supplies, Mulgrave Rd, Mulgrave	2023	0.74	0.15	0.75
South_Windsor	UIL6277 54 Fairey St, South Windsor	2025	0.22	0.05	0.23
South_Windsor	Vineyard Precinct - 200 residential dwellings	2023	0.97	0.47	1.08
South_Windsor	Vineyard Precinct - 200 residential dwellings	2024	0.97	0.47	1.08
Windsor_	NCL1553 Rickaby St, Clarendon	2024	0.10	0.05	0.11
Windsor_	NCL1634 Freemans Reach Rd, Freemans	2023	0.14	0.07	0.15
Wisemans	ENL3682 Old Norhtern Rd, Wisemans Ferry	2025	2.83	1.37	3.14
Wisemans	NCL1743 2526 River Rd, Wisemans Ferry	2023	0.05	0.01	0.05
Wisemans	NIL0315 311 Old Telegraph Rd, Maroota	2024	0.63	0.31	0.70
Wisemans	NRL15214 1253 River Rd, Lower Portland	2023	0.01	0.00	0.01
Wisemans	NRS3472 4922 Old Northern Rd, Maroota	2023	0.05	0.03	0.06

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Cattai	ENL3713 Residential and hotel load - O'Briens Rd, Cattai	2024	3	0.81
Cattai	NRS3335 Maguires Rd, Maraylya	2021	2	0.05
Cattai	NRS3339 Wisemans Ferry Rd, South Maroota	2022	2	0.05
Cattai	NRS3348 282 Halcrows Road, Glenorie	2024	2	0.02
Cattai	URS23245 458-462 Sackville Ferry Rd, Sackville North	2022	2	0.04
Kurrajong	URS21948 Kurrajong Rd, Kurrajong	2022	2	0.20
North_Richmond	Department of Planning predicted load growth (Redbank?)	2022	11	5.75

Generation

No Generation known at this location

Configuration Changes

No configuration change

Hawkesbury STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**14.2**	**14.1**	**14.1**	**15.9**	**14.7**	**12.2**										
Cattai	MW	12.9	13.4	14.2	14.2	14.8	14.8	14.8	15.1	15.5	15.6	15.6	15.7	15.8	16.0	16.2	16.4
	MVAr	4.5	4.2	4.5	4.1	4.2	3.4	4.4	4.5	4.6	4.7	4.7	4.7	4.7	4.8	4.8	4.9
10% POE	**MVA**	**13.6**	**14.0**	**14.9**	**14.8**	**15.4**	**15.2**	**15.5**	**15.7**	**16.2**	**16.2**	**16.3**	**16.4**	**16.5**	**16.7**	**16.9**	**17.1**
	PF	0.943	0.953	0.954	0.960	0.963	0.974	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958
	MW	11.4	11.9	12.5	12.4	13.2	13.2	13.2	13.5	13.9	13.9	14.0	14.1	14.2	14.4	14.6	14.8
	MVAr	4.0	3.7	3.9	3.6	3.7	3.1	3.9	4.0	4.2	4.2	4.2	4.2	4.3	4.3	4.4	4.4
50% POE	**MVA**	**12.0**	**12.4**	**13.1**	**13.0**	**13.8**	**13.6**	**13.8**	**14.1**	**14.5**	**14.6**	**14.6**	**14.7**	**14.9**	**15.0**	**15.2**	**15.4**
	PF	0.943	0.953	0.954	0.960	0.963	0.974	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958
Actual	**MVA**	**21.3**	**18.9**	**18.4**	**20.7**	**17.7**	**14.8**										
Glossodia	MW	18.8	18.3	20.0	18.7	19.1	19.3	19.3	19.3	19.3	19.2	19.2	19.4	19.5	19.7	19.9	20.1
	MVAr	6.4	5.6	5.8	5.8	5.1	3.9	5.6	5.6	5.6	5.5	5.5	5.6	5.6	5.7	5.7	5.8
10% POE	**MVA**	**19.8**	**19.1**	**20.8**	**19.6**	**19.7**	**19.7**	**20.1**	**20.0**	**20.1**	**20.0**	**20.0**	**20.1**	**20.3**	**20.5**	**20.7**	**21.0**
	PF	0.947	0.956	0.960	0.955	0.966	0.980	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961
	MW	16.4	16.1	17.7	16.4	16.9	17.2	17.1	17.1	17.2	17.0	17.1	17.2	17.4	17.5	17.7	18.0
	MVAr	5.5	4.9	5.1	5.1	4.5	3.5	4.9	4.9	4.9	4.9	4.9	5.0	5.0	5.1	5.1	5.2
50% POE	**MVA**	**17.3**	**16.8**	**18.5**	**17.2**	**17.5**	**17.5**	**17.8**	**17.8**	**17.9**	**17.7**	**17.8**	**17.9**	**18.1**	**18.2**	**18.5**	**18.7**
	PF	0.947	0.956	0.960	0.955	0.966	0.980	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961
Actual	**MVA**	**7.1**	**6.6**	**7.5**	**6.6**	**6.8**	**6.0**										
Glenorie	MW	6.8	6.4	7.2	6.4	6.6	5.9	5.8	5.8	5.9	5.8	5.9	5.9	5.9	6.0	6.0	6.1
	MVAr	2.0	1.7	2.0	1.5	1.5	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
10% POE	**MVA**	**7.1**	**6.6**	**7.5**	**6.6**	**6.8**	**6.0**	**5.9**	**5.9**	**6.0**	**5.9**	**6.0**	**6.0**	**6.0**	**6.1**	**6.1**	**6.2**
	PF	0.959	0.966	0.964	0.974	0.976	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
	MW	6.8	6.4	7.2	6.4	6.6	5.9	5.8	5.8	5.9	5.8	5.9	5.9	5.9	6.0	6.0	6.1
	MVAr	2.0	1.7	2.0	1.5	1.5	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
50% POE	**MVA**	**7.1**	**6.6**	**7.5**	**6.6**	**6.8**	**6.0**	**5.9**	**5.9**	**6.0**	**5.9**	**6.0**	**6.0**	**6.0**	**6.1**	**6.1**	**6.2**
	PF	0.959	0.966	0.964	0.974	0.976	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
Actual	**MVA**	**29.5**	**27.9**	**27.0**	**27.0**	**24.2**	**22.4**										
East Richmond	MW	27.5	27.2	27.7	27.0	26.6	27.2	27.6	27.3	27.1	26.8	26.7	26.6	26.7	26.7	26.8	26.9
	MVAr	6.7	7.4	7.0	6.2	6.4	5.7	6.7	6.6	6.6	6.5	6.4	6.4	6.4	6.5	6.5	6.5
10% POE	**MVA**	**28.3**	**28.2**	**28.6**	**27.7**	**27.4**	**27.8**	**28.4**	**28.0**	**27.9**	**27.6**	**27.4**	**27.4**	**27.4**	**27.5**	**27.6**	**27.7**
	PF	0.972	0.965	0.969	0.975	0.972	0.979	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972
	MW	25.5	25.0	25.5	24.4	24.0	24.6	24.9	24.6	24.5	24.2	24.0	24.0	24.1	24.1	24.2	24.3
	MVAr	6.2	6.8	6.5	5.6	5.8	5.1	6.0	6.0	5.9	5.8	5.8	5.8	5.8	5.8	5.8	5.9
50% POE	**MVA**	**26.2**	**25.9**	**26.3**	**25.0**	**24.7**	**25.2**	**25.7**	**25.4**	**25.2**	**24.9**	**24.7**	**24.7**	**24.7**	**24.8**	**24.9**	**25.0**
	PF	0.972	0.965	0.969	0.975	0.972	0.979	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972
Actual	**MVA**	**4.4**	**3.8**	**3.5**	**3.5**	**3.3**	**3.5**										
Sydney Trains Hawkesbury	MW	4.1	3.6	3.5	3.4	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
	MVAr	1.6	1.6	0.5	0.5	0.4	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
10% POE	**MVA**	**4.4**	**3.9**	**3.5**	**3.5**	**3.3**	**3.5**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**
	PF	0.932	0.911	0.989	0.989	0.991	0.989	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
Major customer	MW	4.1	3.6	3.5	3.4	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
	MVAr	1.6	1.6	0.5	0.5	0.4	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
50% POE	**MVA**	**4.4**	**3.9**	**3.5**	**3.5**	**3.3**	**3.5**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**
	PF	0.932	0.911	0.989	0.989	0.991	0.989	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
Actual	**MVA**	**15.2**	**10.6**	**14.9**	**16.3**	**13.3**	**11.5**										
Kurrajong	MW	13.4	10.6	15.9	14.4	13.5	13.3	13.5	13.5	13.6	13.4	13.5	13.6	13.9	14.1	14.4	14.7
	MVAr	4.2	2.9	4.5	4.0	3.2	2.7	3.6	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.8	3.9
10% POE	**MVA**	**14.0**	**11.0**	**16.5**	**15.0**	**13.8**	**13.6**	**14.0**	**13.9**	**14.0**	**13.9**	**14.0**	**14.1**	**14.4**	**14.6**	**14.9**	**15.2**
	PF	0.955	0.964	0.962	0.964	0.973	0.981	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
	MW	11.5	9.1	13.6	12.3	11.9	11.8	12.0	11.9	12.0	11.9	11.9	12.1	12.3	12.5	12.8	13.1
	MVAr	3.6	2.5	3.8	3.4	2.8	2.4	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3	3.4	3.5
50% POE	**MVA**	**12.0**	**9.4**	**14.1**	**12.8**	**12.2**	**12.0**	**12.4**	**12.3**	**12.4**	**12.3**	**12.4**	**12.5**	**12.7**	**13.0**	**13.3**	**13.6**
	PF	0.955	0.964	0.962	0.964	0.973	0.981	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
Actual	**MVA**	**16.6**	**16.5**	**16.8**	**16.7**	**17.1**	**13.8**										
North Richmond	MW	15.8	17.0	18.5	16.7	17.1	13.6	13.9	14.4	14.9	15.5	16.3	17.1	17.8	18.3	18.7	19.0
	MVAr	5.0	0.0	4.8	1.4	1.3	2.4	2.6	2.7	2.8	2.9	3.0	3.2	3.3	3.4	3.5	3.5
10% POE	**MVA**	**16.6**	**17.0**	**19.1**	**16.7**	**17.1**	**13.8**	**14.1**	**14.6**	**15.2**	**15.7**	**16.6**	**17.4**	**18.1**	**18.6**	**19.0**	**19.3**
	PF	0.953	1.000	0.968	0.996	0.997	0.985	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
	MW	14.2	15.3	16.5	16.7	17.1	13.6	13.9	14.4	14.9	15.5	16.3	17.1	17.8	18.3	18.7	19.0
	MVAr	4.5	0.0	4.2	1.4	1.3	2.4	2.6	2.7	2.8	2.9	3.0	3.2	3.3	3.4	3.5	3.5
50% POE	**MVA**	**14.9**	**15.3**	**17.0**	**16.7**	**17.1**	**13.8**	**14.1**	**14.6**	**15.2**	**15.7**	**16.6**	**17.4**	**18.1**	**18.6**	**19.0**	**19.3**
	PF	0.953	1.000	0.968	0.996	0.997	0.985	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	21.2	14.1	22.6	17.7	17.2	16.8										
Riverstone	MW	18.8	14.7	25.0	18.8	19.3	19.0	20.9	24.0	33.8	36.0	38.4	40.8	41.3	41.8	42.5	43.1
	MVAr	2.5	1.6	1.8	4.4	2.3	1.6	2.8	3.2	4.6	4.8	5.2	5.5	5.6	5.6	5.7	5.8
10% POE	MVA	19.0	14.8	25.1	19.3	19.5	19.1	21.1	24.2	34.2	36.3	38.8	41.2	41.6	42.2	42.9	43.5
	PF	0.991	0.994	0.997	0.974	0.993	0.996	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991
	MW	17.0	13.4	22.7	16.7	17.6	17.2	19.1	22.2	32.0	34.2	36.6	39.0	39.6	40.1	40.8	41.4
	MVAr	2.3	1.4	1.7	3.9	2.1	1.5	2.6	3.0	4.3	4.6	4.9	5.2	5.3	5.4	5.5	5.6
50% POE	MVA	17.2	13.5	22.7	17.2	17.7	17.3	19.3	22.4	32.3	34.5	36.9	39.3	39.9	40.5	41.1	41.8
	PF	0.991	0.994	0.997	0.974	0.993	0.996	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991
Actual	MVA	36.1	35.6	34.2	33.8	34.8	30.7										
South Windsor	MW	36.8	34.8	37.7	35.5	37.3	37.0	38.0	38.6	35.0	34.3	33.8	33.6	33.4	33.2	33.1	33.0
	MVAr	5.3	9.1	4.0	8.1	8.7	2.2	7.1	7.2	6.5	6.4	6.3	6.2	6.2	6.2	6.2	6.1
10% POE	MVA	37.2	36.0	37.9	36.4	38.3	37.1	38.6	39.3	35.6	34.9	34.4	34.1	34.0	33.8	33.7	33.6
	PF	0.990	0.968	0.994	0.975	0.974	0.998	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
	MW	33.6	31.9	34.6	32.1	34.0	33.6	34.6	35.3	31.7	30.9	30.5	30.2	30.1	29.9	29.8	29.7
	MVAr	4.8	8.3	3.7	7.3	7.9	2.0	6.4	6.6	5.9	5.7	5.7	5.6	5.6	5.5	5.5	5.5
50% POE	MVA	33.9	33.0	34.8	32.9	34.9	33.7	35.2	35.9	32.2	31.5	31.0	30.7	30.6	30.4	30.3	30.3
	PF	0.990	0.968	0.994	0.975	0.974	0.998	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
Actual	MVA	23.4	24.5	24.2	24.4	21.5	20.7										
Windsor	MW	23.1	24.0	25.4	24.0	23.6	23.8	23.6	23.3	23.2	22.9	22.9	22.9	23.0	23.0	23.2	23.3
	MVAr	6.9	7.1	7.3	6.5	5.7	5.1	6.4	6.3	6.3	6.2	6.2	6.2	6.2	6.2	6.3	6.3
10% POE	MVA	24.1	25.0	26.4	24.9	24.3	24.3	24.4	24.2	24.0	23.8	23.7	23.7	23.8	23.9	24.0	24.1
	PF	0.958	0.959	0.961	0.965	0.972	0.978	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
	MW	22.9	21.8	23.2	21.4	21.2	21.3	21.1	20.9	20.8	20.5	20.4	20.4	20.5	20.6	20.7	20.9
	MVAr	6.9	6.4	6.7	5.8	5.2	4.6	5.7	5.6	5.6	5.5	5.5	5.5	5.5	5.6	5.6	5.6
50% POE	MVA	23.9	22.7	24.1	22.2	21.8	21.8	21.9	21.7	21.5	21.3	21.2	21.2	21.3	21.3	21.5	21.6
	PF	0.958	0.959	0.961	0.965	0.972	0.978	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Actual	MVA	6.4	6.1	6.1	5.2	6.1	5.8										
Wisemans	MW	6.1	5.9	5.9	5.1	6.0	5.6	5.5	5.9	8.2	8.1	8.0	8.0	8.0	8.1	8.1	8.2
	MVAr	1.9	1.4	1.5	1.1	1.3	1.4	1.4	1.5	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1
10% POE	MVA	6.4	6.1	6.1	5.2	6.1	5.8	5.7	6.1	8.5	8.3	8.3	8.3	8.3	8.3	8.4	8.5
	PF	0.954	0.973	0.967	0.977	0.977	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
	MW	6.1	5.9	5.9	5.1	6.0	5.6	5.5	5.9	8.2	8.1	8.0	8.0	8.0	8.1	8.1	8.2
	MVAr	1.9	1.4	1.5	1.1	1.3	1.4	1.4	1.5	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1
50% POE	MVA	6.4	6.1	6.1	5.2	6.1	5.8	5.7	6.1	8.5	8.3	8.3	8.3	8.3	8.3	8.4	8.5
	PF	0.954	0.973	0.967	0.977	0.977	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Actual	MVA	195.4	178.8	189.1	187.7	176.7	158.2										
Undiversified	MW	184.0	175.8	201.0	184.3	187.2	183.1	186.4	190.6	200.0	201.0	203.7	206.9	208.7	210.3	212.4	214.3
	MVAr	47.0	42.6	43.7	43.6	40.1	30.1	42.5	43.1	44.5	44.6	44.9	45.4	45.8	46.1	46.6	47.0
10% POE	MVA	190.5	181.6	206.4	189.7	191.7	186.0	191.4	195.6	205.2	206.2	208.9	212.2	214.0	215.6	217.7	219.7
	PF	0.966	0.968	0.974	0.972	0.976	0.985	0.974	0.974	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
	MW	169.4	160.3	182.8	167.4	171.7	167.6	170.8	175.0	184.4	185.5	188.2	191.4	193.3	194.9	197.0	198.9
	MVAr	43.3	38.9	39.7	39.2	36.5	27.5	38.8	39.4	40.9	40.9	41.2	41.7	42.1	42.5	42.9	43.3
50% POE	MVA	175.4	165.7	187.7	172.2	175.8	170.2	175.4	179.6	189.2	190.2	192.9	196.2	198.1	199.8	201.9	203.9
	PF	0.966	0.968	0.974	0.972	0.976	0.985	0.974	0.974	0.975	0.975	0.975	0.976	0.976	0.976	0.976	0.976
Actual	MVA	181.0	168.9	172.6	179.1	173.5	146.1										
Diversified (Meter)	MW	171.4	170.3	179.2	176.9	185.5	184.8	185.2	189.4	198.7	199.8	202.5	205.6	207.4	209.0	211.0	212.9
	MVAr	37.7	24.4	18.1	31.6	38.9	47.6	47.7	48.8	51.2	51.5	52.2	53.0	53.4	53.9	54.4	54.9
10% POE	MVA	175.5	172.1	180.1	179.7	189.5	190.8	191.3	195.6	205.2	206.3	209.1	212.3	214.2	215.8	217.9	219.9
	PF	0.977	0.990	0.995	0.984	0.979	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
	MW	156.5	155.1	160.8	158.3	167.4	166.5	169.8	173.9	183.3	184.4	187.0	190.2	192.1	193.7	195.7	197.6
	MVAr	34.4	22.3	16.2	28.3	35.1	42.9	43.8	44.8	47.2	47.5	48.2	49.0	49.5	49.9	50.4	50.9
50% POE	MVA	160.2	156.7	161.6	160.8	171.0	172.0	175.3	179.6	189.3	190.4	193.1	196.4	198.3	200.0	202.1	204.1
	PF	0.977	0.990	0.995	0.984	0.979	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
Est System Normal																	
	MVA																

5.11 Holroyd 132kV Demand Forecast

Discussion

Holroyd Bulk Supply Point was developed by TransGrid to off-load the Sydney West 132kV busbar. Transferred load includes Guildford, Camellia, Granville, East Parramatta SS, North Parramatta and West Parramatta.

The Parramatta region has significant planned development over the next 10 years. A large amount of commercial and high density residential around Parramatta Square is planned and will add significant load increases to West Parramatta and North Parramatta zone substations.

West Wetherill Park STS and Wetherill Park Zone Substation can be supplied from Holroyd BSP via Guildford STS if required.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Granville 132kV	2 x 30/45	90
North Parramatta	2 x 45/55	110
West Parramatta	3 x 30/45	135

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2024	Westmead	Baulkham_Hills	Wmead_132KV	Holroyd_132kV	24.57
2024	Rosehill	Camellia	Equinix_Data_Centre	Holroyd_132kV	20.02
2023	Rosehill	Camellia	West_Parramatta	Holroyd_132kV	1.49
2024	Granville_132kV	Holroyd_132kV	Sherwood	Guildford	0.35
2023	North_Parramatta	Holroyd_132kV	Dundas	Carlingford	1.02
2024	North_Parramatta	Holroyd_132kV	West_Parramatta	Holroyd_132kV	0.60
2023	West_Parramatta	Holroyd_132kV	Lennox	Camellia	1.43
2023	West_Parramatta	Holroyd_132kV	Lennox	Camellia	0.86
2025	West_Parramatta	Holroyd_132kV	Lennox	Camellia	3.10
2023	West_Parramatta	Holroyd_132kV	North_Parramatta	Holroyd_132kV	0.67
2024	West_Parramatta	Holroyd_132kV	North_Parramatta	Holroyd_132kV	0.90

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Equinix_Data_Centre	UIL5887 Equinix Data Centre Y3	2024	17.61	3.58	17.97
Equinix_Data_Centre	UIL5887 Equinix Data Centre Y4	2026	14.11	2.87	14.40
Equinix_Data_Centre	UIL5887 Equinix Data Centre Y5	2027	14.11	2.87	14.40
Equinix_Data_Centre	UIL5887 Equinix Data Centre Y6	2028	14.01	2.85	14.30
Equinix_Data_Centre	UIL5887 Equinix Data Centre Y7 (Final)	2030	3.82	0.78	3.90
Granville_132kV	DBL2521 Building supply 249 merrylands rd - 60%	2024	0.81	0.39	0.90
Granville_132kV	UIL6147 1 Woodville Rd, Granville	2023	0.15	0.03	0.15
Granville_132kV	ULL2881 Granville Stadium (Amended back calc ADMD, orig ADMD: 2.5)	2023	1.30	0.63	1.44
Granville_132kV	ULL3334 School upgrade load (60%	2024	0.13	0.03	0.13
Granville_132kV	UML10303a half of 359 units	2025	0.58	0.12	0.59
Granville_132kV	UML10303b half of 359 units	2025	0.58	0.12	0.59
Granville_132kV	UML8559 14-38 Cowper St, Granville	2024	2.22	1.07	2.46
Granville_132kV	UML9649 Merrlands rd development stage 1	2023	2.97	1.44	3.30
Granville_132kV	UML9686 34-42 East St, Granville	2024	0.34	0.16	0.37
Granville_132kV	UML9749 242 -252 Pitt st with diversity	2023	1.26	0.61	1.40
Granville_132kV	uml9763 merrylands rd development stage 2	2024	1.80	0.87	2.00
Granville_132kV	UML9763 merylands rd	2024	0.72	0.35	0.80
North_Parramatta	North Parramatta Urban Renewal	2026	0.83	0.40	0.92
North_Parramatta	North Parramatta Urban Renewal	2027	0.83	0.40	0.92
North_Parramatta	North Parramatta Urban Renewal	2028	0.83	0.40	0.92
North_Parramatta	North Parramatta Urban Renewal	2029	0.89	0.43	0.99
North_Parramatta	North Parramatta Urban Renewal	2030	0.89	0.43	0.99
North_Parramatta	North Parramatta Urban Renewal	2031	0.89	0.43	0.99
North_Parramatta	North Parramatta Urban Renewal	2032	0.89	0.43	0.99
North_Parramatta	UCL10949 59-59A Belmore St, Oatlands	2024	0.19	0.04	0.19
North_Parramatta	UUL1844 PLR TPS 2, North Parramatta	2024	2.46	0.50	2.51
West_Parramatta	ARP3883-2 14-20 Parkes St, Harris Park (TBS, related UML8883)	2023	0.22	0.10	0.24
West_Parramatta	ARP4095 37-39 Smith St, Parramatta	2023	-0.23	0.11	-0.25
West_Parramatta	ARP4186 Sydney Metro West - Parramatta Site existing subs removal	2023	-0.90	0.43	-1.00
West_Parramatta	ARP4186 Sydney Metro West - Parramatta Site existing subs removal	2023	-1.19	0.58	-1.33
West_Parramatta	C/I est 2026	2026	4.44	0.90	4.53
West_Parramatta	C/I est 2027	2027	6.83	1.39	6.97
West_Parramatta	C/I est 2028	2028	6.12	1.24	6.24

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
West_Parramatta	C/I est 2029	2029	5.40	1.10	5.51
West_Parramatta	C/I est 2030	2030	4.67	0.95	4.77
West_Parramatta	C/I est 2031	2031	3.96	0.80	4.04
West_Parramatta	C/I est 2032	2032	3.23	0.66	3.30
West_Parramatta	Res load 2026	2026	2.66	0.54	2.71
West_Parramatta	Res load 2027	2027	1.67	0.34	1.70
West_Parramatta	Res load 2028	2028	2.45	0.50	2.50
West_Parramatta	Res load 2029	2029	2.22	0.45	2.26
West_Parramatta	Res load 2030	2030	1.32	0.27	1.34
West_Parramatta	Res load 2031	2031	1.55	0.31	1.58
West_Parramatta	Res load 2032	2032	1.58	0.32	1.62
West_Parramatta	UCL10311 Sydney Metro West - Parramatta Site (End)	2026	-3.60	1.74	-4.00
West_Parramatta	UCL10311 Sydney Metro West - Parramatta Site (Start)	2023	3.60	1.74	4.00
West_Parramatta	UCL10313 Sydney Metro West - Westmead Site (End)	2026	-5.40	2.62	-6.00
West_Parramatta	UCL10313 Sydney Metro West - Westmead Site (Start)	2023	5.40	2.62	6.00
West_Parramatta	UCL10493 85-97 Macquarie St, Parramatta	2024	0.54	0.26	0.60
West_Parramatta	UCL11278 Sydney Metro West - Westmead Site permanent supply	2027	3.43	0.70	3.50
West_Parramatta	UCL11279 Sydney Metro West - Parramatta Station permanent supply	2027	3.43	0.70	3.50
West_Parramatta	UCL8766 89 George St, Parramatta	2023	1.08	0.52	1.20
West_Parramatta	UCL9959 37-39 Smith St, Parramatta	2023	0.79	0.38	0.88
West_Parramatta	ULL3058 Parramatta Police Station	2026	0.21	0.10	0.24
West_Parramatta	UML9227 11-13 Aird St, Parramatta	2024	0.43	0.21	0.48
West_Parramatta	UUL1845 PLR TPS 3, Parramatta	2024	2.18	0.31	2.20
Wmead_132KV	Westmead Hospital FY24	2024	1.70	0.82	1.89
Wmead_132KV	Westmead Hospital FY25	2025	2.57	1.24	2.85
Wmead_132KV	Westmead Hospital FY26	2026	2.30	1.11	2.55
Wmead_132KV	Westmead Hospital FY27	2027	6.97	3.37	7.74
Wmead_132KV	Westmead Hospital FY28	2028	5.76	2.79	6.40
Wmead_132KV	Westmead Hospital FY29	2029	4.35	2.11	4.83
Wmead_132KV	Westmead Hospital FY30	2030	2.55	1.23	2.83
Wmead_132KV	Westmead Hospital FY31	2031	2.56	1.24	2.84
Wmead_132KV	Westmead Hospital FY32	2032	0.54	0.26	0.60

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Granville_132kV	Granville / Merrylands Strategic Opportunities Site - 1175 Apartments	2019	6	2.91
Granville_132kV	UML9335 134-142 Parramatta Rd, Granville	2024	3	1.64
Granville_132kV	UML9902 2-6 Cowper St, Granville	2024	2	0.87
North_Parramatta	ULL3028 Powerhouse Museum	2024	2	3.31
North_Parramatta	UML8834-1 180 George St, Parramatta	2023	3	0.891
West_Parramatta	UCL7860 Parramatta Square 4PS	2021	4	6.30
West_Parramatta	UCL8919 Parramatta Square 3PS	2021	3	4.40
West_Parramatta	UCL9225-1 Parramatta Square 6PS	2023	3	3.59
West_Parramatta	UCL9225-2 Parramatta Square 8PS	2023	3	4.78
West_Parramatta	UCL9350 32 Smith St, Parramatta	2022	2	2.50
West_Parramatta	UCL9966 2-6 Hassall St, Parramatta	2023	2	2.1
West_Parramatta	ULL2932 Parramatta Square PS5 & PS7	2023	2	1.80
West_Parramatta	UML10072 12 Hassall St, Parramatta	2025	2	1.77
West_Parramatta	UML6139 The Lennox	2023	3	4.39
West_Parramatta	UML8126 189 Macquarie St, Parramatta	2025	3	1.56
West_Parramatta	UML8566 2-10 Phillip St, Parramatta	2024	2	4.06
West_Parramatta	UML8834-2 180 George St, Parramatta	2023	4	2.59
West_Parramatta	UML9560 5-7 Charles St, Parramatta	2024	3	2.52

Generation

No Generation known at this location

Configuration Changes

Year	Zone / HVC	From STS	To STS
2015	North Parramatta	Sydney West 132kV	Holroyd 132kV
2015	West Parramatta	Sydney West 132kV	Holroyd 132kV
2016	Granville 132kV	Sydney West 132kV	Holroyd 132kV

Holroyd 132kV Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**28.4**	**30.3**	**28.8**	**31.0**	**28.0**	**29.0**										
Granville 132kV	MW	26.3	25.8	29.1	29.7	29.1	29.4	34.2	39.5	41.3	41.0	40.7	40.6	40.5	40.4	40.4	40.4
	MVAr	1.7	3.6	3.1	3.0	0.2	0.7	3.0	3.4	3.6	3.6	3.5	3.5	3.5	3.5	3.5	3.5
10% POE	**MVA**	**26.3**	**26.1**	**29.2**	**29.8**	**29.1**	**29.4**	**34.3**	**39.6**	**41.4**	**41.1**	**40.9**	**40.7**	**40.6**	**40.6**	**40.6**	**40.6**
	PF	0.998	0.990	0.994	0.995	1.000	1.000	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	24.7	23.9	27.0	27.0	26.7	27.0	31.8	37.0	38.8	38.5	38.3	38.1	38.1	38.0	38.1	38.2
	MVAr	1.6	3.3	2.9	2.7	0.2	0.7	2.8	3.2	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3
50% POE	**MVA**	**24.7**	**24.1**	**27.1**	**27.1**	**26.7**	**27.0**	**31.9**	**37.2**	**39.0**	**38.7**	**38.4**	**38.3**	**38.2**	**38.1**	**38.2**	**38.4**
	PF	0.998	0.990	0.994	0.995	1.000	1.000	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	**MVA**	**32.6**	**30.3**	**33.1**	**34.7**	**29.8**	**22.5**										
North Parramatta	MW	33.2	31.1	33.7	32.8	32.7	27.9	27.2	30.9	32.2	32.4	33.0	33.8	34.7	35.8	37.1	38.4
	MVAr	0.0	0.0	3.4	1.9	1.6	4.0	2.1	2.4	2.5	2.5	2.6	2.6	2.7	2.8	2.9	3.0
10% POE	**MVA**	**33.2**	**31.1**	**33.9**	**32.9**	**32.7**	**28.2**	**27.3**	**31.0**	**32.3**	**32.5**	**33.1**	**33.9**	**34.8**	**35.9**	**37.2**	**38.5**
	PF	1.000	1.000	0.995	0.998	0.999	0.990	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
	MW	29.8	28.2	30.3	29.3	29.6	24.9	24.2	27.9	29.2	29.4	30.0	30.8	31.8	32.9	34.2	35.5
	MVAr	0.0	0.0	3.1	1.7	1.4	3.5	1.9	2.2	2.3	2.3	2.3	2.4	2.5	2.6	2.7	2.8
50% POE	**MVA**	**29.8**	**28.2**	**30.5**	**29.4**	**29.6**	**25.1**	**24.3**	**27.9**	**29.3**	**29.5**	**30.1**	**30.9**	**31.9**	**33.0**	**34.3**	**35.6**
	PF	1.000	1.000	0.995	0.998	0.999	0.990	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
Actual	**MVA**	**53.1**	**51.9**	**51.1**	**51.9**	**45.7**	**42.7**										
West Parramatta	MW	51.6	49.4	50.6	51.6	48.7	46.5	59.7	72.5	76.1	76.0	88.7	95.6	101.8	106.6	111.2	115.1
	MVAr	9.9	10.9	11.1	4.8	9.2	3.3	10.4	12.6	13.3	13.3	15.4	16.7	17.7	18.6	19.4	20.1
10% POE	**MVA**	**52.5**	**50.6**	**51.8**	**51.8**	**49.6**	**46.7**	**60.6**	**73.5**	**77.2**	**77.2**	**90.0**	**97.0**	**103.3**	**108.2**	**112.8**	**116.9**
	PF	0.982	0.977	0.977	0.996	0.983	0.998	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985
	MW	48.9	47.2	48.0	48.5	45.9	43.8	56.9	69.7	73.3	73.3	85.9	92.8	99.0	103.9	108.4	112.4
	MVAr	9.4	10.4	10.6	4.5	8.7	3.1	9.9	12.1	12.8	12.8	15.0	16.2	17.3	18.1	18.9	19.6
50% POE	**MVA**	**49.8**	**48.3**	**49.2**	**48.7**	**46.7**	**43.9**	**57.8**	**70.7**	**74.4**	**74.4**	**87.2**	**94.2**	**100.5**	**105.4**	**110.0**	**114.1**
	PF	0.982	0.977	0.977	0.996	0.983	0.998	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985
Actual	**MVA**																
Wmead_132KV	MW								24.8	26.9	28.9	34.8	39.6	43.3	45.4	47.6	48.1
	MVAr								8.1	8.9	9.5	11.4	13.0	14.2	14.9	15.6	15.8
10% POE	**MVA**								**26.1**	**28.4**	**30.4**	**36.6**	**41.7**	**45.6**	**47.8**	**50.1**	**50.6**
	PF								0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major_Customer	MW								24.8	26.9	28.9	34.8	39.6	43.3	45.4	47.6	48.1
	MVAr								8.1	8.9	9.5	11.4	13.0	14.2	14.9	15.6	15.8
50% POE	**MVA**								**26.1**	**28.4**	**30.4**	**36.6**	**41.7**	**45.6**	**47.8**	**50.1**	**50.6**
	PF								0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**																
Equinix_DC	MW								30.9	30.9	41.3	51.7	62.0	62.0	64.8	64.8	64.8
Major_Customer	MVAr								15.0	15.0	20.0	25.0	30.0	30.0	31.4	31.4	31.4
10% POE	**MVA**								**34.4**	**34.4**	**45.9**	**57.4**	**68.9**	**68.9**	**72.0**	**72.0**	**72.0**
	PF								0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
	MW								30.9	30.9	41.3	51.7	62.0	62.0	64.8	64.8	64.8
	MVAr								15.0	15.0	20.0	25.0	30.0	30.0	31.4	31.4	31.4
50% POE	**MVA**								**34.4**	**34.4**	**45.9**	**57.4**	**68.9**	**68.9**	**72.0**	**72.0**	**72.0**
	PF								0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Actual	**MVA**	**114.0**	**112.5**	**113.0**	**117.6**	**103.4**	**94.1**										
Undiversified	MW	111.0	106.4	113.4	114.1	110.5	103.9	121.1	198.5	207.5	219.6	248.8	271.5	282.2	293.0	301.0	306.8
	MVAr	11.6	14.5	17.6	9.7	11.1	8.0	15.5	41.6	43.2	48.8	58.0	65.8	68.2	71.2	72.8	73.7
10% POE	**MVA**	**112.0**	**107.9**	**114.9**	**114.5**	**111.4**	**104.3**	**122.2**	**204.6**	**213.7**	**227.1**	**258.0**	**282.2**	**293.2**	**304.5**	**312.7**	**318.5**
	PF	0.991	0.987	0.987	0.996	0.992	0.996	0.991	0.970	0.971	0.967	0.964	0.962	0.963	0.962	0.963	0.963
	MW	103.3	99.3	105.3	104.8	102.2	95.6	112.9	190.3	199.2	211.4	240.6	263.3	274.1	285.0	293.1	298.9
	MVAr	11.0	13.7	16.5	9.0	10.4	7.3	14.6	40.7	42.3	47.9	57.1	64.9	67.3	70.3	71.9	72.8
50% POE	**MVA**	**104.3**	**100.6**	**106.8**	**105.2**	**103.1**	**96.0**	**114.0**	**196.3**	**205.4**	**218.9**	**249.7**	**273.9**	**285.0**	**296.3**	**304.7**	**310.6**
	PF	0.991	0.986	0.986	0.996	0.992	0.996	0.991	0.969	0.970	0.966	0.964	0.961	0.962	0.962	0.962	0.962

5.12 Ilford STS Demand Forecast

Discussion

Ilford STS has a single 60MVA 132/66kV transformer. Ilford STS supplies Ilford Hall, Bylong and Kandos zone substations.

Load application in Ilford STS area NIL0208 Kepco Coal Mine, for 18MVA has been deferred, due to local community's opposition.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Ilford	1 x 40/60 (132/66kV)	60
Bylong	2 x 1.5	3
Ilford Hall	1 x 2.5	2.5
Kandos	2 x 5	10

Proposed Load Transfers

No Load Transfers Proposed at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Bowden_Silvermine	NIL0318 Bowden Silvermine	2025	17.10	5.62	18.00
Kandos	NCL1759 1245 Coxs Creek Rd, Coxs Creek	2023	0.10	0.02	0.10
Kandos	NRL14575 Genowland Rd, Glen Allice	2023	0.01	0.01	0.02
Kandos	NRL15125 Coopers Dr, Clandulla	2024	0.01	0.00	0.01

Planned Lot Releases & Redevelopment

No Lot Releases Proposed at this location

Generation

No Generation known at this location

Ilford STS Demand Forecast

Location		Actual							Forecast								
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**0.4**	**0.5**	**0.4**	**0.4**	**0.2**	**0.2**										
Bylong	MW	0.4	0.5	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	MVAr	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10% POE	**MVA**	**0.4**	**0.5**	**0.4**	**0.4**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
	PF	0.970	0.962	0.976	0.973	1.000	0.965	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974
	MW	0.4	0.5	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	MVAr	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50% POE	**MVA**	**0.4**	**0.5**	**0.4**	**0.4**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
	PF	0.970	0.962	0.976	0.973	1.000	0.965	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974
Actual	**MVA**																
Bowden	MW									13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Silvermine	MVAr									6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
10% POE	**MVA**									**14.4**	**14.4**	**14.4**	**14.4**	**14.4**	**14.4**	**14.4**	**14.4**
	PF									0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
	MW									13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
	MVAr									6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
50% POE	**MVA**									**14.4**	**14.4**	**14.4**	**14.4**	**14.4**	**14.4**	**14.4**	**14.4**
	PF									0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Actual	**MVA**	**0.4**	**0.5**	**0.4**	**0.4**	**0.2**	**0.2**										
Ilford Hall	MW	0.4	0.4	0.3	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5
	MVAr	0.2	0.2	0.2	0.2	0.4	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
10% POE	**MVA**	**0.4**	**0.4**	**0.4**	**0.5**	**0.6**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
	PF	0.900	0.882	0.811	0.946	0.822	0.995	0.893	0.893	0.893	0.893	0.893	0.893	0.893	0.893	0.893	0.893
	MW	0.4	0.4	0.3	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5
	MVAr	0.2	0.2	0.2	0.2	0.4	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
50% POE	**MVA**	**0.4**	**0.4**	**0.4**	**0.5**	**0.6**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
	PF	0.900	0.882	0.811	0.946	0.822	0.995	0.893	0.893	0.893	0.893	0.893	0.893	0.893	0.893	0.893	0.893
Actual	**MVA**	**4.3**	**3.7**	**3.9**	**4.4**	**3.5**	**5.0**										
Kandos	MW	3.9	3.3	3.9	4.4	3.5	5.0	5.1	5.0	5.1	5.1	5.1	5.3	5.5	5.7	6.0	6.2
	MVAr	1.9	1.6	0.5	0.4	0.3	0.5	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.6	1.7	1.7
10% POE	**MVA**	**4.3**	**3.7**	**3.9**	**4.4**	**3.5**	**5.0**	**5.3**	**5.2**	**5.3**	**5.3**	**5.3**	**5.5**	**5.7**	**5.9**	**6.2**	**6.5**
	PF	0.900	0.900	0.992	0.995	0.996	0.994	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963
	MW	3.9	3.3	3.9	4.4	3.5	5.0	5.1	5.0	5.1	5.1	5.1	5.3	5.5	5.7	6.0	6.2
	MVAr	1.9	1.6	0.5	0.4	0.3	0.5	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.6	1.7	1.7
50% POE	**MVA**	**4.3**	**3.7**	**3.9**	**4.4**	**3.5**	**5.0**	**5.3**	**5.2**	**5.3**	**5.3**	**5.3**	**5.5**	**5.7**	**5.9**	**6.2**	**6.5**
	PF	0.900	0.900	0.992	0.995	0.996	0.994	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963
Actual	**MVA**	**5.2**	**4.6**	**4.7**	**5.2**	**4.1**	**5.6**										
Undiversified	MW	4.7	4.2	4.6	5.2	4.2	5.6	5.6	5.6	18.6	18.6	18.7	18.8	19.1	19.3	19.6	19.9
	MVAr	2.2	1.9	0.8	0.7	0.7	0.6	1.7	1.7	7.9	7.9	8.0	8.0	8.1	8.1	8.2	8.3
10% POE	**MVA**	**5.2**	**4.6**	**4.7**	**5.2**	**4.4**	**5.6**	**5.9**	**5.9**	**20.3**	**20.3**	**20.4**	**20.5**	**20.8**	**21.0**	**21.3**	**21.6**
	PF	0.906	0.905	0.976	0.989	0.971	0.993	0.958	0.958	0.917	0.917	0.917	0.917	0.918	0.918	0.919	0.919
	MW	4.7	4.2	4.6	5.2	4.2	5.6	5.6	5.6	18.6	18.6	18.7	18.8	19.1	19.3	19.6	19.9
	MVAr	2.2	1.9	0.8	0.7	0.7	0.6	1.7	1.7	7.9	7.9	8.0	8.0	8.1	8.1	8.2	8.3
50% POE	**MVA**	**5.2**	**4.6**	**4.7**	**5.2**	**4.4**	**5.6**	**5.9**	**5.9**	**20.3**	**20.3**	**20.4**	**20.5**	**20.8**	**21.0**	**21.3**	**21.6**
	PF	0.906	0.905	0.976	0.989	0.971	0.993	0.958	0.958	0.917	0.917	0.917	0.917	0.918	0.918	0.919	0.919
Actual	**MVA**	**5.3**	**4.9**	**4.6**	**4.8**	**3.9**	**5.4**										
Diversified#	MW	5.1	4.8	4.6	5.2	3.9	5.3	5.3	5.3	17.6	17.6	17.6	17.8	18.0	18.2	18.5	18.8
(Meter)	MVAr	1.3	1.2	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10% POE	**MVA**	**5.3**	**4.9**	**4.6**	**5.2**	**3.9**	**5.3**	**5.3**	**5.3**	**17.6**	**17.6**	**17.6**	**17.8**	**18.0**	**18.2**	**18.5**	**18.8**
	PF	0.970	0.970	1.000	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	MW	5.1	4.8	4.6	5.2	3.9	5.3	5.3	5.3	17.6	17.6	17.6	17.8	18.0	18.2	18.5	18.8
	MVAr	1.3	1.2	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50% POE	**MVA**	**5.3**	**4.9**	**4.6**	**5.2**	**3.9**	**5.3**	**5.3**	**5.3**	**17.6**	**17.6**	**17.6**	**17.8**	**18.0**	**18.2**	**18.5**	**18.8**
	PF	0.970	0.970	1.000	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Est. System Normal																	
	MVA																

5.13 Ingleburn STS Demand Forecast

Discussion

Planned land releases in the Glenfield area could see a large amount of growth around the Macquarie Fields Zone Substation catchment. However, the majority will be supplied by Casula ZS (Liverpool STS) to avoid the need for major works at Macquarie Fields.

Over the longer term, the Department of Planning & Environment has identified large areas in Ingleburn and Macquarie Fields for urban renewal. These areas will be supplied by Bow Bowing, Macquarie Fields and Minto.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Ingleburn	2 x 250	500
Bow Bowing	3 x 22/26/35	105
Macquarie Fields	2 x 20/27/33	66
Minto	2 x 20/27/33 + 1 x 22/26/35	101

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2023	Minto	Ingleburn	Campbelltown	Macarthur_66kV	0.40

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Bow_Bowing	Ingleburn urban renewal	2023	0.12	0.00	0.12
Bow_Bowing	Ingleburn urban renewal	2024	0.15	0.00	0.15
Bow_Bowing	Ingleburn urban renewal	2025	0.17	0.00	0.17
Bow_Bowing	Ingleburn urban renewal	2026	0.12	0.00	0.12
Bow_Bowing	Ingleburn urban renewal	2027	0.12	0.00	0.12
Bow_Bowing	Ingleburn urban renewal	2028	0.12	0.00	0.12
Bow_Bowing	Ingleburn urban renewal	2029	0.12	0.00	0.12
Bow_Bowing	Ingleburn urban renewal	2030	0.12	0.00	0.12
Bow_Bowing	Ingleburn urban renewal	2031	0.12	0.00	0.12
Bow_Bowing	Ingleburn urban renewal	2032	0.12	0.00	0.12
Bow_Bowing	UIL6123-1 Williamson Rd, Ingleburn - IS 13633	2023	1.90	0.62	2.00
Bow_Bowing	UIL6123-2 Williamson Rd, Ingleburn - IS 13416	2023	1.99	0.65	2.09
Bow_Bowing	UIL6154 34-36 York Rd, Ingleburn - 2 crushers	2023	0.78	0.16	0.80
Bow_Bowing	UIL6158 38 York Rd Ingleburn - crusher	2023	0.29	0.06	0.30
Macquarie_Fields	Glenfield urban renewal	2024	0.32	0.00	0.32
Macquarie_Fields	Glenfield urban renewal	2025	0.32	0.00	0.32
Macquarie_Fields	Glenfield urban renewal	2026	0.32	0.00	0.32
Macquarie_Fields	Glenfield urban renewal	2027	0.32	0.00	0.32
Macquarie_Fields	Glenfield urban renewal	2028	0.32	0.00	0.32
Macquarie_Fields	Glenfield urban renewal	2029	0.32	0.00	0.32
Macquarie_Fields	Glenfield urban renewal	2030	0.32	0.00	0.32
Macquarie_Fields	Glenfield urban renewal	2031	0.32	0.00	0.32
Macquarie_Fields	Ingleburn urban renewal	2023	0.15	0.00	0.15
Macquarie_Fields	Ingleburn urban renewal	2024	0.17	0.00	0.17
Macquarie_Fields	Ingleburn urban renewal	2025	0.12	0.00	0.12
Macquarie_Fields	Ingleburn urban renewal	2026	0.12	0.00	0.12
Macquarie_Fields	Ingleburn urban renewal	2027	0.12	0.00	0.12
Macquarie_Fields	Ingleburn urban renewal	2028	0.12	0.00	0.12
Macquarie_Fields	Ingleburn urban renewal	2029	0.12	0.00	0.12
Macquarie_Fields	Ingleburn urban renewal	2030	0.12	0.00	0.12
Macquarie_Fields	Ingleburn urban renewal	2031	0.12	0.00	0.12
Macquarie_Fields	Macquarie Fields urban renewal	2023	0.05	0.00	0.05
Macquarie_Fields	Macquarie Fields urban renewal	2023	0.05	0.00	0.05
Macquarie_Fields	Macquarie Fields urban renewal	2024	0.06	0.00	0.06
Macquarie_Fields	Macquarie Fields urban renewal	2025	0.06	0.00	0.06
Macquarie_Fields	Macquarie Fields urban renewal	2026	0.06	0.00	0.06
Macquarie_Fields	Macquarie Fields urban renewal	2027	0.06	0.00	0.06
Macquarie_Fields	Macquarie Fields urban renewal	2028	0.06	0.00	0.06
Macquarie_Fields	Macquarie Fields urban renewal	2029	0.06	0.00	0.06
Macquarie_Fields	Macquarie Fields urban renewal	2030	0.06	0.00	0.06
Macquarie_Fields	Macquarie Fields urban renewal	2031	0.06	0.00	0.06
Macquarie_Fields	UCL UCL11355 - Café, gym, child care etc	2024	0.12	0.02	0.13

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Macquarie_Fields	ULL3215 8 Fawcett Street GLENFIELD	2024	0.05	0.01	0.05
Minto	Claymore LAHC redevelopment	2023	0.28	0.00	0.28
Minto	Claymore LAHC redevelopment	2023	0.04	0.00	0.04
Minto	Claymore LAHC redevelopment	2024	0.09	0.00	0.09
Minto	Claymore LAHC redevelopment	2025	0.11	0.00	0.11
Minto	Claymore LAHC redevelopment	2026	0.18	0.00	0.18
Minto	Minto urban renewal	2023	0.07	0.00	0.07
Minto	Minto urban renewal	2024	0.08	0.00	0.08
Minto	Minto urban renewal	2025	0.08	0.00	0.08
Minto	Minto urban renewal	2026	0.08	0.00	0.08
Minto	Minto urban renewal	2027	0.08	0.00	0.08
Minto	Minto urban renewal	2028	0.08	0.00	0.08
Minto	Minto urban renewal	2029	0.08	0.00	0.08
Minto	Minto urban renewal	2030	0.08	0.00	0.08
Minto	Minto urban renewal	2031	0.08	0.00	0.08
Minto	UCL10660 7 Montore Rd, Minto	2024	0.74	0.24	0.77
Minto	UCL11189 10 Brookfield Road MINTO	2023	0.48	0.10	0.49
Minto	UIL6188 395 Pembroke Road MINTO 1000kVA PM	2023	0.78	0.00	0.78
Minto	UIS0972 Lot 1- 2 Culverstone Road MINTO	2023	0.42	0.09	0.43
Minto	UIS0972 Lot 2 - 2 Culverstone Road MINTO	2023	0.54	0.11	0.55
Minto	ULL2729 Leumeah PS	2023	0.26	0.00	0.26

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Bow_Bowing	UIL5810 8 Williamson Rd, Ingleburn - Viridian	2021	3	2.60
Bow_Bowing	UIL6273 3 warehouses 35-47 STENNETT STREET INGLEBURN 3 warehouses	2023	2	1.381

Generation

No Generation known at this location

Ingleburn STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**46.7**	**52.2**	**44.5**	**43.3**	**39.8**	**40.3**										
Bow Bowing	MW	46.2	52.2	44.1	43.2	39.8	40.0	44.9	45.3	45.3	45.1	45.1	45.2	45.3	45.4	45.5	45.7
	MVAr	6.6	0.8	5.7	1.8	1.7	4.4	4.2	4.3	4.3	4.2	4.2	4.2	4.3	4.3	4.3	4.3
10% POE	**MVA**	**46.7**	**52.2**	**44.4**	**43.3**	**39.8**	**40.3**	**45.1**	**45.5**	**45.5**	**45.3**	**45.3**	**45.4**	**45.5**	**45.6**	**45.7**	**45.9**
	PF	0.990	1.000	0.992	0.999	0.999	0.994	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	46.2	52.2	44.1	43.2	39.8	40.0	44.9	45.3	45.3	45.1	45.1	45.2	45.3	45.4	45.5	45.7
	MVAr	6.6	0.8	5.7	1.8	1.7	4.4	4.2	4.3	4.3	4.2	4.2	4.2	4.3	4.3	4.3	4.3
50% POE	**MVA**	**46.7**	**52.2**	**44.4**	**43.3**	**39.8**	**40.3**	**45.1**	**45.5**	**45.5**	**45.3**	**45.3**	**45.4**	**45.5**	**45.6**	**45.7**	**45.9**
	PF	0.990	1.000	0.992	0.999	0.999	0.994	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	**MVA**	**28.3**	**26.0**	**27.4**	**30.8**	**26.4**	**25.6**										
Macquarie Fields	MW	27.3	26.3	30.3	28.1	28.4	29.2	28.9	29.0	29.3	29.1	29.4	30.0	30.8	31.6	32.6	33.2
	MVAr	1.8	6.0	6.8	12.0	0.8	1.2	6.1	6.2	6.2	6.2	6.3	6.4	6.5	6.7	6.9	7.1
10% POE	**MVA**	**27.4**	**26.9**	**31.0**	**30.6**	**28.4**	**29.2**	**29.5**	**29.6**	**29.9**	**29.7**	**30.1**	**30.7**	**31.5**	**32.3**	**33.3**	**34.0**
	PF	0.998	0.975	0.976	0.920	1.000	1.001	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978
	MW	24.1	23.1	26.3	24.7	25.1	26.0	25.7	25.8	26.1	25.9	26.3	26.9	27.7	28.6	29.6	30.2
	MVAr	1.6	5.3	5.9	10.5	0.7	1.0	5.5	5.5	5.5	5.5	5.6	5.7	5.9	6.1	6.3	6.4
50% POE	**MVA**	**24.1**	**23.7**	**26.9**	**26.8**	**25.1**	**26.0**	**26.3**	**26.4**	**26.6**	**26.5**	**26.9**	**27.5**	**28.3**	**29.2**	**30.3**	**30.9**
	PF	0.998	0.975	0.976	0.920	1.000	1.001	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978
Actual	**MVA**	**68.4**	**63.4**	**63.9**	**61.8**	**57.1**	**55.9**										
Minto	MW	63.8	63.2	64.7	63.1	64.4	63.9	65.1	64.9	64.8	64.3	64.1	64.2	64.4	64.7	65.0	65.3
	MVAr	6.6	0.0	11.3	8.7	1.5	2.6	6.6	6.6	6.6	6.5	6.5	6.5	6.5	6.6	6.6	6.6
10% POE	**MVA**	**64.1**	**63.2**	**65.7**	**63.7**	**64.4**	**64.0**	**65.5**	**65.2**	**65.1**	**64.6**	**64.5**	**64.5**	**64.8**	**65.0**	**65.3**	**65.6**
	PF	0.995	1.000	0.985	0.991	1.000	0.999	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
	MW	57.8	57.9	58.0	56.6	58.1	57.9	59.1	58.9	58.9	58.3	58.2	58.3	58.5	58.7	59.1	59.4
	MVAr	6.0	0.0	10.2	7.8	1.4	2.3	6.0	6.0	6.0	5.9	5.9	5.9	5.9	6.0	6.0	6.0
50% POE	**MVA**	**58.2**	**57.9**	**58.9**	**57.2**	**58.1**	**57.9**	**59.4**	**59.2**	**59.2**	**58.6**	**58.5**	**58.6**	**58.8**	**59.0**	**59.4**	**59.7**
	PF	0.995	1.000	0.985	0.991	1.000	0.999	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Actual	**MVA**	**143.3**	**141.6**	**135.7**	**135.8**	**123.3**	**121.8**										
Undiversified	MW	137.3	141.7	139.1	134.5	132.5	133.1	138.9	139.2	139.4	138.5	138.7	139.4	140.5	141.6	143.2	144.2
	MVAr	15.0	6.8	23.8	22.4	4.0	8.2	17.0	17.0	17.0	16.9	17.0	17.1	17.3	17.5	17.8	18.0
10% POE	**MVA**	**138.2**	**142.3**	**141.2**	**137.5**	**132.6**	**133.4**	**140.1**	**140.4**	**140.5**	**139.7**	**139.9**	**140.6**	**141.7**	**142.9**	**144.4**	**145.5**
	PF	0.994	0.995	0.985	0.978	1.000	0.998	0.992	0.992	0.992	0.992	0.992	0.991	0.991	0.991	0.991	0.991
	MW	128.2	133.2	128.4	124.5	123.0	123.9	129.7	130.0	130.2	129.4	129.6	130.3	131.5	132.7	134.2	135.3
	MVAr	14.2	6.1	21.8	20.0	3.8	7.8	15.7	15.7	15.8	15.7	15.7	15.9	16.1	16.3	16.6	16.7
50% POE	**MVA**	**129.0**	**133.8**	**130.3**	**127.2**	**123.0**	**124.2**	**130.8**	**131.1**	**131.3**	**130.5**	**130.7**	**131.4**	**132.6**	**133.8**	**135.4**	**136.5**
	PF	0.994	0.995	0.985	0.979	0.999	0.998	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.991	0.991	0.991
Actual	**MVA**	**170.5**	**138.7**	**132.8**	**135.2**	**122.3**	**120.9**										
Diversified#	MW	139.7	135.1	138.6	137.9	137.4	136.6	135.6	135.9	136.0	135.1	135.3	136.0	137.1	138.2	139.7	140.8
(Meter)	MVAr	14.4	53.1	37.6	37.5	32.5	28.5	35.2	35.3	35.3	35.1	35.1	35.3	35.6	35.9	36.3	36.5
10% POE	**MVA**	**140.4**	**145.2**	**143.6**	**142.9**	**141.2**	**139.5**	**140.1**	**140.4**	**140.5**	**139.6**	**139.8**	**140.5**	**141.7**	**142.8**	**144.3**	**145.4**
	PF	0.995	0.931	0.965	0.965	0.973	0.979	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
	MW	124.6	121.7	124.8	124.3	124.4	123.9	126.6	126.8	127.1	126.3	126.5	127.1	128.3	129.5	131.0	132.0
	MVAr	12.9	47.8	33.8	33.8	29.5	25.8	32.8	32.9	33.0	32.8	32.8	33.0	33.3	33.6	34.0	34.3
50% POE	**MVA**	**125.2**	**130.8**	**129.3**	**128.8**	**127.8**	**126.6**	**130.8**	**131.0**	**131.3**	**130.5**	**130.7**	**131.3**	**132.6**	**133.8**	**135.3**	**136.4**
	PF	0.995	0.931	0.965	0.965	0.973	0.979	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968

5.14 Katoomba North STS Demand Forecast

Discussion

Katoomba North STS has two tail ended 60MVA 132/66kV transformers, providing firm capacity of 60MVA. It supplies Blackheath, Katoomba and Wentworth Falls zone substations.

There are no significant developments in the foreseeable future that will affect the load growth of the Katoomba North STS supply area.

Rating Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Katoomba North	2 x 60 (132/66kV)	120
Blackheath	2 x 5/7	14
Katoomba	2 x 25	50
Wentworth Falls	1 x 8/10	10

Proposed Load Transfers

No Load Transfers Proposed at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Blackheath	UCL10799 17 Station St, Mt Victoria	2023	0.32	0.15	0.35
Blackheath	UCL10804 257-263 Great Western Hwy Blackheath	2024	0.09	0.02	0.09
Katoomba	UCL10711 203-223 Leura Mall, Leura	2023	0.39	0.19	0.43
Katoomba	UCL9342 Additional load to RSL - Lurline St, Katoomba	2023	0.06	0.03	0.07
Wentworth_Falls	NUL0629 Sydney Water Blaxland Rd, Wentworth Falls	2023	0.05	0.03	0.06
Wentworth_Falls	UUL1880 Sydney Water Willow Ave, Leura	2024	0.11	0.02	0.11

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Katoomba	URS23392 24 residential lots at Narrow Neck Rd, Katoomba	2022	2	0.13

Generation

No Generation known at this location

Katoomba North STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**4.4**	**4.6**	**4.7**	**4.6**	**5.1**	**5.3**										
Blackheath	MW	4.3	4.6	4.6	4.6	5.0	5.3	5.5	5.5	5.6	5.5	5.5	5.5	5.7	5.8	5.9	6.1
	MVAr	0.7	0.6	0.8	0.4	0.5	0.3	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8
10% POE	**MVA**	**4.4**	**4.6**	**4.7**	**4.6**	**5.1**	**5.3**	**5.5**	**5.5**	**5.6**	**5.5**	**5.5**	**5.6**	**5.7**	**5.8**	**6.0**	**6.1**
	PF	0.987	0.991	0.985	0.997	0.995	0.999	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
	MW	4.3	4.6	4.6	4.6	5.0	5.3	5.5	5.5	5.6	5.5	5.5	5.5	5.7	5.8	5.9	6.1
	MVAr	0.7	0.6	0.8	0.4	0.5	0.3	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8
50% POE	**MVA**	**4.4**	**4.6**	**4.7**	**4.6**	**5.1**	**5.3**	**5.5**	**5.5**	**5.6**	**5.5**	**5.5**	**5.6**	**5.7**	**5.8**	**6.0**	**6.1**
	PF	0.987	0.991	0.985	0.997	0.995	0.999	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Actual	**MVA**	**13.9**	**13.0**	**13.8**	**12.9**	**12.3**	**12.9**										
Katoomba	MW	13.4	12.7	13.7	12.9	12.2	12.9	13.2	13.1	13.2	13.0	13.0	13.1	13.3	13.4	13.7	14.0
	MVAr	3.6	3.2	1.6	1.1	1.0	0.6	2.2	2.1	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.3
10% POE	**MVA**	**13.9**	**13.0**	**13.7**	**12.9**	**12.3**	**12.9**	**13.4**	**13.3**	**13.4**	**13.2**	**13.2**	**13.3**	**13.5**	**13.6**	**13.9**	**14.1**
	PF	0.966	0.970	0.993	0.997	0.997	0.999	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
	MW	13.4	12.7	13.7	12.9	12.2	12.9	13.2	13.1	13.2	13.0	13.0	13.1	13.3	13.4	13.7	14.0
	MVAr	3.6	3.2	1.6	1.1	1.0	0.6	2.2	2.1	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.3
50% POE	**MVA**	**13.9**	**13.0**	**13.7**	**12.9**	**12.3**	**12.9**	**13.4**	**13.3**	**13.4**	**13.2**	**13.2**	**13.3**	**13.5**	**13.6**	**13.9**	**14.1**
	PF	0.966	0.970	0.993	0.997	0.997	0.999	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
Actual	**MVA**	**4.8**	**4.6**	**5.1**	**5.8**	**4.8**	**4.7**										
Wentworth Falls	MW	4.7	4.6	5.1	5.7	4.8	4.7	4.8	4.8	4.9	4.8	4.8	4.9	4.9	5.0	5.1	5.2
	MVAr	1.0	0.1	0.3	0.9	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
10% POE	**MVA**	**4.8**	**4.6**	**5.1**	**5.8**	**4.8**	**4.7**	**4.8**	**4.8**	**4.9**	**4.8**	**4.8**	**4.9**	**5.0**	**5.0**	**5.1**	**5.2**
	PF	0.978	1.000	0.998	0.988	1.000	1.000	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	4.7	4.6	5.1	5.7	4.8	4.7	4.8	4.8	4.9	4.8	4.8	4.9	4.9	5.0	5.1	5.2
	MVAr	1.0	0.1	0.3	0.9	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
50% POE	**MVA**	**4.8**	**4.6**	**5.1**	**5.8**	**4.8**	**4.7**	**4.8**	**4.8**	**4.9**	**4.8**	**4.8**	**4.9**	**5.0**	**5.0**	**5.1**	**5.2**
	PF	0.978	1.000	0.998	0.988	1.000	1.000	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**23.1**	**22.3**	**23.6**	**23.4**	**22.1**	**22.9**										
Undiversified	MW	22.4	21.9	23.4	23.2	22.1	22.9	23.4	23.4	23.7	23.2	23.3	23.5	23.9	24.2	24.7	25.2
	MVAr	5.3	4.0	2.7	2.4	1.5	0.9	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.6	3.6
10% POE	**MVA**	**23.1**	**22.3**	**23.6**	**23.4**	**22.1**	**22.9**	**23.7**	**23.7**	**23.9**	**23.5**	**23.6**	**23.8**	**24.1**	**24.5**	**25.0**	**25.5**
	PF	0.972	0.980	0.993	0.994	0.997	0.999	0.989	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
	MW	22.4	21.9	23.4	23.2	22.1	22.9	23.4	23.4	23.7	23.2	23.3	23.5	23.9	24.2	24.7	25.2
	MVAr	5.3	4.0	2.7	2.4	1.5	0.9	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.6	3.6
50% POE	**MVA**	**23.1**	**22.3**	**23.6**	**23.4**	**22.1**	**22.9**	**23.7**	**23.7**	**23.9**	**23.5**	**23.6**	**23.8**	**24.1**	**24.5**	**25.0**	**25.5**
	PF	0.972	0.980	0.993	0.994	0.997	0.999	0.989	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
Actual	**MVA**	**23.3**	**18.6**	**14.8**	**13.8**	**12.7**	**13.7**										
Diversified	MW	22.5	18.4	14.8	13.7	12.6	13.6	16.5	16.5	16.7	16.4	16.4	16.6	16.8	17.1	17.4	17.8
(Meter)	MVAr	6.0	2.8	0.0	2.2	1.1	1.3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.7
10% POE	**MVA**	**23.3**	**18.6**	**14.8**	**13.8**	**12.7**	**13.7**	**16.7**	**16.7**	**16.9**	**16.6**	**16.6**	**16.8**	**17.0**	**17.2**	**17.6**	**18.0**
	PF	0.966	0.989	1.000	0.988	0.996	0.996	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	22.5	18.4	14.8	13.7	12.6	13.6	16.5	16.5	16.7	16.4	16.4	16.6	16.8	17.1	17.4	17.8
	MVAr	6.0	2.8	0.0	2.2	1.1	1.3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.7
50% POE	**MVA**	**23.3**	**18.6**	**14.8**	**13.8**	**12.7**	**13.7**	**16.7**	**16.7**	**16.9**	**16.6**	**16.6**	**16.8**	**17.0**	**17.2**	**17.6**	**18.0**
	PF	0.966	0.989	1.000	0.988	0.996	0.996	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989

5.15 Lawson STS Demand Forecast

Discussion

Lawson STS has two 52MVA 132/66kV transformers, providing firm capacity of 52MVA. It supplies Hazelbrook zone substation and rail network.

There are no significant developments in the foreseeable future that will affect the load growth of the Lawson STS supply area.

Sydney Trains have proposed change of configuration for some of their 66kV feeders, to reduce maintenance costs. This has been assessed and it will not significantly affect Endeavour Energy network. Sydney Trains are allowed to proceed, if acceptable to them.

Rating Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Lawson	2 x 52	104
Hazelbrook	2 x 16/18.5/25	50

Proposed Load Transfers

No Load Transfers Proposed at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Hazelbrook	UIL5565 Cascade St, Lawson	2023	0.57	0.27	0.63

Planned Lot Releases & Redevelopment

No Lot Releases Proposed at this location

Generation

No Generation known at this location

Lawson STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**8.7**	**8.4**	**8.7**	**10.1**	**7.4**	**6.7**										
Hazelbrook	MW	8.7	8.4	8.6	10.0	7.4	6.7	7.1	7.0	7.1	7.0	7.0	7.2	7.3	7.5	7.8	8.0
	MVAr	0.6	0.0	1.2	1.3	0.5	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
10% POE	**MVA**	**8.7**	**8.4**	**8.7**	**10.1**	**7.4**	**6.7**	**7.1**	**7.1**	**7.2**	**7.0**	**7.1**	**7.2**	**7.4**	**7.5**	**7.8**	**8.1**
	PF	0.998	1.000	0.990	0.991	0.998	0.998	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	8.7	8.4	8.6	10.0	7.4	6.7	7.1	7.0	7.1	7.0	7.0	7.2	7.3	7.5	7.8	8.0
	MVAr	0.6	0.0	1.2	1.3	0.5	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
50% POE	**MVA**	**8.7**	**8.4**	**8.7**	**10.1**	**7.4**	**6.7**	**7.1**	**7.1**	**7.2**	**7.0**	**7.1**	**7.2**	**7.4**	**7.5**	**7.8**	**8.1**
	PF	0.998	1.000	0.990	0.991	0.998	0.998	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	**MVA**	**15.0**	**13.9**	**13.9**	**14.1**	**10.9**	**9.5**										
Sydney Trains	MW	15.0	13.8	13.5	13.9	10.8	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Lawson	MVAr	1.5	1.7	1.7	2.1	1.3	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
10% POE	**MVA**	**15.0**	**13.9**	**13.6**	**14.1**	**10.9**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**
	PF	0.995	0.992	0.992	0.989	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
Major customer	MW	15.0	13.8	13.5	13.9	10.8	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
	MVAr	1.5	1.7	1.7	2.1	1.3	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
50% POE	**MVA**	**15.0**	**13.9**	**13.6**	**14.1**	**10.9**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**
	PF	0.995	0.992	0.992	0.989	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
Actual	**MVA**	**23.8**	**22.3**	**22.6**	**24.1**	**18.3**	**16.2**										
Undiversified	MW	23.7	22.2	22.1	23.9	18.2	16.1	16.6	16.5	16.6	16.5	16.5	16.6	16.8	17.0	17.2	17.5
	MVAr	2.1	1.7	2.9	3.4	1.8	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9
10% POE	**MVA**	**23.8**	**22.3**	**22.3**	**24.1**	**18.3**	**16.2**	**16.7**	**16.6**	**16.7**	**16.6**	**16.6**	**16.7**	**16.9**	**17.1**	**17.3**	**17.6**
	PF	0.996	0.995	0.991	0.990	0.995	0.995	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	23.7	22.2	22.1	23.9	18.2	16.1	16.6	16.5	16.6	16.5	16.5	16.6	16.8	17.0	17.2	17.5
	MVAr	2.1	1.7	2.9	3.4	1.8	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9
50% POE	**MVA**	**23.8**	**22.3**	**22.3**	**24.1**	**18.3**	**16.2**	**16.7**	**16.6**	**16.7**	**16.6**	**16.6**	**16.7**	**16.9**	**17.1**	**17.3**	**17.6**
	PF	0.996	0.995	0.991	0.990	0.995	0.995	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**27.3**	**30.1**	**22.0**	**27.8**	**24.4**	**15.3**										
Diversified	MW	26.9	29.6	21.9	27.6	21.8	15.3	16.3	16.2	16.3	16.2	16.2	16.3	16.5	16.7	16.9	17.2
(Meter)	MVAr	4.7	5.2	2.6	3.3	10.9	0.9	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.8	3.9	3.9
10% POE	**MVA**	**27.3**	**30.1**	**22.0**	**27.8**	**24.4**	**15.3**	**16.7**	**16.6**	**16.7**	**16.6**	**16.6**	**16.8**	**16.9**	**17.1**	**17.4**	**17.6**
	PF	0.985	0.985	0.993	0.993	0.895	0.998	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
	MW	26.9	29.6	21.9	27.6	21.8	15.3	16.3	16.2	16.3	16.2	16.2	16.3	16.5	16.7	16.9	17.2
	MVAr	4.7	5.2	2.6	3.3	10.9	0.9	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.8	3.9	3.9
50% POE	**MVA**	**27.3**	**30.1**	**22.0**	**27.8**	**24.4**	**15.3**	**16.7**	**16.6**	**16.7**	**16.6**	**16.6**	**16.8**	**16.9**	**17.1**	**17.4**	**17.6**
	PF	0.985	0.985	0.993	0.993	0.895	0.998	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
Est. System Normal																	
	MVA				**17.7**	**11.4**											

Note: #Diversified values which are greater than undiversified values are due to abnormal switching.

5.16 Liverpool 132kV STS Demand Forecast

Discussion

Liverpool 132kV is supplied from TransGrid's Liverpool BSP and is the point from which Endeavour Energy takes 132kV bulk supply for the Liverpool area. It is situated at the West Liverpool STS site.

West Liverpool STS is supplied directly from the Liverpool 132kV busbar and supplies the outer Liverpool areas with various 33kV satellite zone substations.

Liverpool STS is supplied by feeders 23L and 93G from Liverpool 132kV and supplies the inner Liverpool areas including the CBD with various 33kV satellite zone substations.

Denham Court STS is supplied by feeder 93Y from Liverpool 132kV and supplies the South West Rail Link - HVC and Endeavour Energy's Edmondson Park ZS at 33kV. Denham Court's forecast is shown on Denham Court STS.

Abbotsbury ZS is supplied by 93W from Liverpool 132kV with alternate supply from 93U Sydney West BSP.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Abbotsbury	2 x 45 (132/11)	90
Denham Court	1 x 60 (132/33)	60

Proposed Load Transfers

No Load Transfers Proposed at this location

Future Spot Loads

No Proposed Spot Load at this location

Planned Lot Releases & Redevelopment

No Lot Releases Proposed at this location

Liverpool 132kV STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**42.7**	**36.2**	**37.4**	**40.3**	**35.3**	**31.8**										
Abbotsbury	MW	40.9	34.9	36.0	39.2	34.3	31.1	30.6	30.1	29.9	29.4	29.2	29.2	29.4	29.5	29.8	30.0
	MVAr	12.4	9.8	10.0	9.6	8.2	6.6	8.0	7.9	7.8	7.7	7.6	7.6	7.7	7.7	7.8	7.9
10% POE	**MVA**	**42.7**	**36.2**	**37.4**	**40.3**	**35.3**	**31.8**	**31.6**	**31.1**	**30.9**	**30.4**	**30.2**	**30.2**	**30.4**	**30.5**	**30.8**	**31.0**
	PF	0.957	0.962	0.964	0.971	0.972	0.978	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
	MW	40.9	34.9	36.0	39.2	34.3	31.1	30.6	30.1	29.9	29.4	29.2	29.2	29.4	29.5	29.8	30.0
	MVAr	12.4	9.8	10.0	9.6	8.2	6.6	8.0	7.9	7.8	7.7	7.6	7.6	7.7	7.7	7.8	7.9
50% POE	**MVA**	**42.7**	**36.2**	**37.4**	**40.3**	**35.3**	**31.8**	**31.6**	**31.1**	**30.9**	**30.4**	**30.2**	**30.2**	**30.4**	**30.5**	**30.8**	**31.0**
	PF	0.957	0.962	0.964	0.971	0.972	0.978	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
Actual	**MVA**	**42.7**	**36.2**	**37.4**	**40.3**	**35.3**	**31.8**										
Undiversified	MW	40.9	34.9	36.0	39.2	34.3	31.1	30.6	30.1	29.9	29.4	29.2	29.2	29.4	29.5	29.8	30.0
	MVAr	12.4	9.8	10.0	9.6	8.2	6.6	8.0	7.9	7.8	7.7	7.6	7.6	7.7	7.7	7.8	7.9
10% POE	**MVA**	**42.7**	**36.2**	**37.4**	**40.3**	**35.3**	**31.8**	**31.6**	**31.1**	**30.9**	**30.4**	**30.2**	**30.2**	**30.4**	**30.5**	**30.8**	**31.0**
	PF	0.957	0.962	0.964	0.971	0.972	0.978	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
	MW	40.9	34.9	36.0	39.2	34.3	31.1	30.6	30.1	29.9	29.4	29.2	29.2	29.4	29.5	29.8	30.0
	MVAr	12.4	9.8	10.0	9.6	8.2	6.6	8.0	7.9	7.8	7.7	7.6	7.6	7.7	7.7	7.8	7.9
50% POE	**MVA**	**42.7**	**36.2**	**37.4**	**40.3**	**35.3**	**31.8**	**31.6**	**31.1**	**30.9**	**30.4**	**30.2**	**30.2**	**30.4**	**30.5**	**30.8**	**31.0**
	PF	0.957	0.962	0.964	0.971	0.972	0.978	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967

5.17 Liverpool STS Demand Forecast

Discussion

Liverpool STS is supplied at 132kV from West Liverpool STS. It supplies 33kV to Anzac Village ZS, Canley Vale ZS, Casula ZS, Chipping Norton ZS, Liverpool ZS and Moorebank ZS. The Holsworthy Defence Base HVC is supplied from the Anzac Village ZS 33kV busbar.

Holsworthy ZS is proposed as future to cater for load growth resulting from the redevelopment of ex Defence land at Moorebank into the Moorebank Logistics Park *(Intermodal Complex)* and will be supplied from Liverpool STS.

Redevelopment of the Liverpool CBD over the next 30 years will lead to the need to establish Collimore Park ZS.

Collimore Park will mainly supply the core CBD area including the retail, commercial and health precincts. The high density residential and industrial sectors to the north and south of the CBD core and the urban areas beyond will continue to be serviced by Homepride ZS and Liverpool ZS.

An International Technology Park is proposed to be developed at the *Cable Makers* site adjacent to the Georges River on the Moorebank side of Liverpool CBD. This development will increase commercial and residential demand on Moorebank ZS.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Liverpool STS	3 x 120	360
Anzac Village	3 x 25	75
Casula	2 x 35	70
Canley Vale	3 x 25	75
Chipping Norton	2 x 35	70
Liverpool Zone	3 x 22/26/35	105
Moorebank	2 x 22/35 + 1 x 22/29/35	105

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2026	Anzac_Village	Liverpool_STS	MB_Logistics_Park	Liverpool_STS	6.80
2026	Anzac_Village	Liverpool_STS	MB_Logistics_Park	Liverpool_STS	6.80
2023	Campbelltown	Liverpool_STS	Kentlyn	Macarthur_66kV	0.38
2023	Fairfield	Liverpool_STS	Yennora	Guildford	1.10
2023	Lennox	Liverpool_STS	Rosehill	Camellia	0.40
2023	Mamre	Liverpool_STS	South_Erskine_Park	Sydney_West_132kV	4.21
2023	Mungerie_Park	Liverpool_STS	Trifalga_Data_Centre	Vineyard	5.00
2023	Mungerie_Park	Liverpool_STS	Trifalga_Data_Centre	Vineyard	5.00
2024	Riverstone	Liverpool_STS	Box_Hill	Vineyard	2.00

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Anzac_Village	UCL10583 Goodman Fielders Bakers	2023	2.68	1.30	2.98
Canley_Vale	UCL10224 Cabra Vale Diggers Club	2024	3.15	1.53	3.50
Canley_Vale	UML9638 32-40 Kiors St Canley Heights	2023	0.13	0.06	0.14
Casula	UIL6074 Wonga Rd Prestons Warehouse Complex	2024	0.55	0.11	0.56
Casula	UML9916 29 Townhouses No.10-12 Lang Rd Casula	2023	0.13	0.06	0.15
Chipping_Norton	UCL10680 37 Governor Macquarie Dr Chipping Norton	2023	0.43	0.21	0.48
Chipping_Norton	UCL9126 47 Newbridge Rd Chipping Norton Fuel Station & Factory Units	2023	0.24	0.12	0.27
Liverpool	DBL2439 Temporary Builders Supply for UCL10531	2023	0.75	0.36	0.83
Liverpool	ENL3301-1 Liverpool Hospital Expansion - Part 1	2024	3.96	1.92	4.40
Liverpool	UCL10325 No.23 Scott St Liverpool CBD (23 Storey Building)	2024	2.66	1.29	2.95
Liverpool	UCL10531 52 Scott St Liverpool CBD - LCC and Library x 0.8	2024	1.98	0.96	2.20
Liverpool	UCL10986 No.2 Scott St Liverpool CBD - The Railway Hotel	2023	0.21	0.04	0.21
Liverpool	UCL11365 IBIS Hotel Hume HWY Casula	2024	0.80	0.16	0.82
Liverpool	ULL2492 Whitlam Liesure Centre Liverpool (CBD)	2023	0.51	0.25	0.57
Liverpool	ULL2962 66 Hill Rd Lurnea - Community Centre and Park	2023	0.26	0.13	0.29
Liverpool	UUL1944 Sydney Water Pump Station - Shepherd St Liverpool	2024	0.32	0.07	0.33
Liverpool_Military_Area	UUL2087-3 Liverpool Military Area	2024	2.81	1.36	3.13
Liverpool_Military_Area	UUL2087-4 Liverpool Military Area	2026	2.81	1.36	3.13
MB_Logistics_Park	ENL9999 MLP - QUBE Last Stage	2026	9.80	1.99	10.00
MB_Logistics_Park	UIL5922 Project BELL by QUBE	2023	14.70	2.98	15.00
Moorebank	UCL11348 23 Centenary Ave Moorebank	2024	1.44	0.29	1.47
Moorebank	UIL5321 3 Field Close Moorebank - 2 Industrial Units	2024	0.06	0.03	0.06
Moorebank	UIL5990 Cunningham St Moorebank	2023	0.50	0.24	0.55
Moorebank	UIL6182 Tacca Industries Deadman Rd Moorebank Stage 2	2024	1.43	0.29	1.46

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Anzac_Village	Pleasure Point - 250 Lots (revised from 1234 lots + high density)	2024	10	1.35
Anzac_Village	UIL4692-1 SIMTA - Sydney Intermodal Terminal Alliance A	2022	2	8.50
Anzac_Village	UIL4692-2 SIMTA - Sydney Intermodal Terminal Alliance B	2022	2	8.50
Canley_Vale	UCL10196 Ascot St Canley Vale 73 residential units	2023	1	0.3805
Casula	Glenfield Redevelopment Area of 470 Dwellings	2021	6	1.41
Casula	Glenfield urban renewal	2021	3	0.09
Casula	Glenfield urban renewal	2024	3	0.17
Casula	Glenfield urban renewal	2024	3	0.36
Casula	Glenfield urban renewal	2025	3	0.65
Casula	Glenfield urban renewal	2026	3	0.65
Casula	Glenfield urban renewal	2027	3	0.65
Casula	Glenfield urban renewal	2028	3	0.65
Casula	Glenfield urban renewal	2029	3	0.65
Casula	Glenfield urban renewal	2030	3	0.65
Casula	Glenfield urban renewal	2031	3	0.65
Casula	Glenfield urban renewal	2032	3	0.65
Casula	UML8540 Glenfield Rd Glenfield (Amended back calc ADMD, orig ADMD: 3)	2021	2	0.1125
Casula	UML9628 No.7 Old Glenfield Rd Glenfield	2022	3	0.18
Casula	URS20358 Maple Rd Casula	2020	3	0.16
Casula	URS23828 30 Box Rd Casula	2022	3	0.11
Casula	URS26431 Skipton Lane 43 Lots	2023	2	0.2322
Chipping_Norton	UIL6183 42 Factory Units No.61 Gov Macquarie Dr Chipping Norton	2024	2	0.29
Liverpool	Liverpool CBD South (City Centre Plan) Residential & Commercial	2011	35	37.50
Liverpool	UCL11172 Retail and Residential CBD Building	2025	1	0.212
Liverpool	ULL3310 Liverpool West Primary School	2024	1	0.54
Liverpool	UML9171 No.32 Shepherd St Liverpool	2023	3	0.66
Moorebank	UML10321 101 Nuwarra Rd Moorebank	2024	2	0.7238

Generation

No Generation known at this location

Configuration Changes

Year	Zone / HVC	From STS	To STS
2015	Canley Vale	West Liverpool	Liverpool TS

Liverpool STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	27.3	23.3	23.4	27.7	22.8	22.6										
Anzac Village	MW	25.0	24.2	25.7	25.3	25.6	26.0	34.6	34.1	34.0	20.3	20.4	20.6	21.0	21.2	21.6	21.9
	MVAr	6.0	5.5	0.0	5.7	4.5	4.1	6.5	6.5	6.4	3.9	3.9	3.9	4.0	4.0	4.1	4.1
10% POE	MVA	25.7	24.8	25.7	25.9	26.0	26.3	35.2	34.8	34.6	20.7	20.8	21.0	21.3	21.6	22.0	22.3
	PF	0.972	0.975	1.000	0.975	0.985	0.988	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
	MW	21.6	20.7	21.9	21.7	22.2	22.8	31.3	30.9	30.8	17.2	17.2	17.5	17.8	18.1	18.5	18.8
	MVAr	5.2	4.7	0.0	4.9	3.9	3.6	5.9	5.9	5.8	3.3	3.3	3.3	3.4	3.4	3.5	3.6
50% POE	MVA	22.2	21.2	21.9	22.2	22.6	23.1	31.9	31.5	31.3	17.5	17.6	17.8	18.1	18.4	18.8	19.1
	PF	0.972	0.975	1.000	0.975	0.985	0.988	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
Actual	MVA	32.9	31.5	34.6	37.8	29.1	26.4										
Canley Vale	MW	29.4	28.9	37.3	33.7	32.6	33.2	33.2	35.5	35.4	34.8	34.7	34.8	35.2	35.5	36.0	36.5
	MVAr	1.8	1.4	2.2	1.6	4.2	0.5	0.5	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6
10% POE	MVA	29.5	28.9	37.3	33.7	32.9	33.2	33.1	35.5	35.4	34.8	34.7	34.8	35.2	35.5	36.0	36.5
	PF	0.998	0.999	0.998	0.999	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	MW	26.2	25.9	32.2	29.1	28.3	29.0	28.9	31.3	31.2	30.6	30.5	30.6	31.0	31.3	31.8	32.3
	MVAr	1.6	1.3	1.9	1.4	3.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
50% POE	MVA	26.3	25.9	32.3	29.2	28.5	29.0	28.9	31.3	31.2	30.6	30.5	30.6	31.0	31.3	31.8	32.3
	PF	0.998	0.999	0.998	0.999	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Actual	MVA	33.1	30.7	31.3	29.1	30.9	28.2										
Casula	MW	32.1	30.0	30.5	28.6	30.5	27.8	27.7	28.2	28.6	28.7	29.1	29.7	30.5	31.3	32.1	33.0
	MVAr	8.0	6.5	6.9	5.6	5.4	4.9	4.9	4.9	5.0	5.0	5.1	5.2	5.3	5.5	5.6	5.8
10% POE	MVA	33.1	30.7	31.3	29.1	30.9	28.2	28.1	28.6	29.0	29.1	29.5	30.2	31.0	31.7	32.6	33.5
	PF	0.970	0.977	0.976	0.981	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985
	MW	32.1	30.0	30.5	28.6	30.5	27.8	27.7	28.2	28.6	28.7	29.1	29.7	30.5	31.3	32.1	33.0
	MVAr	8.0	6.5	6.9	5.6	5.4	4.9	4.9	4.9	5.0	5.0	5.1	5.2	5.3	5.5	5.6	5.8
50% POE	MVA	33.1	30.7	31.3	29.1	30.9	28.2	28.1	28.6	29.0	29.1	29.5	30.2	31.0	31.7	32.6	33.5
	PF	0.970	0.977	0.976	0.981	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985
Actual	MVA	21.2	21.1	25.8	20.2	18.2	19.9										
Chipping Norton	MW	20.5	20.1	24.9	19.6	17.9	19.6	19.8	19.6	19.5	19.2	19.0	19.0	19.1	19.1	19.2	19.3
	MVAr	5.5	6.6	7.0	4.6	3.3	3.7	3.7	3.7	3.6	3.6	3.5	3.5	3.6	3.6	3.6	3.6
10% POE	MVA	21.2	21.1	25.8	20.1	18.2	19.9	20.2	20.0	19.9	19.5	19.4	19.4	19.4	19.5	19.6	19.7
	PF	0.966	0.949	0.963	0.974	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
	MW	20.5	20.1	24.9	19.6	17.9	19.6	19.8	19.6	19.5	19.2	19.0	19.0	19.1	19.1	19.2	19.3
	MVAr	5.5	6.6	7.0	4.6	3.3	3.7	3.7	3.7	3.6	3.6	3.5	3.5	3.6	3.6	3.6	3.6
50% POE	MVA	21.2	21.1	25.8	20.1	18.2	19.9	20.2	20.0	19.9	19.5	19.4	19.4	19.4	19.5	19.6	19.7
	PF	0.966	0.949	0.963	0.974	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
Actual	MVA	8.0	6.9	5.4	7.2	6.3	6.0										
Liverpool Military Area	MW	8.0	6.9	5.4	7.0	6.1	6.0	6.0	8.4	8.4	10.9	10.9	10.9	10.9	10.9	10.9	10.9
	MVAr	0.0	2.3	0.3	1.7	1.3	0.6	1.3	1.8	1.8	2.3	2.3	2.3	2.3	2.3	2.3	2.3
10% POE	MVA	8.0	7.3	5.4	7.2	6.3	6.0	6.1	8.6	8.6	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	PF	1.000	0.950	0.998	0.972	0.978	0.995	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
Major customer	MW	8.0	6.9	5.4	7.0	6.1	6.0	6.0	8.4	8.4	10.9	10.9	10.9	10.9	10.9	10.9	10.9
	MVAr	0.0	2.3	0.3	1.7	1.3	0.6	1.3	1.8	1.8	2.3	2.3	2.3	2.3	2.3	2.3	2.3
50% POE	MVA	8.0	7.3	5.4	7.2	6.3	6.0	6.1	8.6	8.6	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	PF	1.000	0.950	0.998	0.972	0.978	0.995	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
Actual	MVA																
MB_Logistics Park	MW							11.4	11.4	11.4	31.9	31.9	31.9	31.9	31.9	31.9	31.9
	MVAr							3.7	3.7	3.7	10.5	10.5	10.5	10.5	10.5	10.5	10.5
10% POE	MVA							12.0	12.0	12.0	33.6	33.6	33.6	33.6	33.6	33.6	33.6
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW							11.4	11.4	11.4	31.9	31.9	31.9	31.9	31.9	31.9	31.9
	MVAr							3.7	3.7	3.7	10.5	10.5	10.5	10.5	10.5	10.5	10.5
50% POE	MVA							12.0	12.0	12.0	33.6	33.6	33.6	33.6	33.6	33.6	33.6
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	MVA	38.0	37.1	39.4	37.5	35.3	37.9										
Liverpool	MW	37.2	38.9	41.2	38.1	38.5	39.3	41.6	51.7	53.2	54.2	55.7	57.5	59.4	61.2	63.0	64.7
	MVAr	9.9	2.8	5.3	3.0	5.0	7.5	6.6	8.2	8.4	8.6	8.8	9.1	9.4	9.7	10.0	10.2
10% POE	MVA	38.5	39.0	41.5	38.3	38.8	40.0	42.1	52.3	53.9	54.9	56.4	58.2	60.1	61.9	63.8	65.5
	PF	0.966	0.997	0.992	0.997	0.992	0.982	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988
	MW	34.1	35.5	37.6	34.7	35.3	36.0	38.4	48.4	50.0	51.0	52.5	54.2	56.1	57.9	59.7	61.5
	MVAr	9.1	2.6	4.8	2.7	4.6	6.9	6.1	7.7	7.9	8.1	8.3	8.6	8.9	9.2	9.5	9.7
50% POE	MVA	35.3	35.6	37.9	34.8	35.6	36.7	38.8	49.0	50.6	51.6	53.1	54.9	56.8	58.6	60.5	62.2
	PF	0.966	0.997	0.992	0.997	0.992	0.982	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988
Actual	MVA	30.5	27.2	24.6	23.7	21.1	22.4										
Moorebank	MW	30.5	26.0	24.5	23.7	21.1	22.0	21.8	24.4	24.6	24.6	24.5	24.4	24.4	24.3	24.2	24.1
	MVAr	0.2	7.9	2.3	1.4	1.6	4.1	3.3	3.7	3.8	3.8	3.8	3.7	3.7	3.7	3.7	3.7
10% POE	MVA	30.5	27.2	24.6	23.7	21.1	22.4	22.0	24.7	24.9	24.9	24.8	24.7	24.6	24.6	24.5	24.4
	PF	1.000	0.957	0.996	0.998	0.997	0.983	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988
	MW	30.5	26.0	24.5	23.7	21.1	22.0	21.8	24.4	24.6	24.6	24.5	24.4	24.4	24.3	24.2	24.1
	MVAr	0.2	7.9	2.3	1.4	1.6	4.1	3.3	3.7	3.8	3.8	3.8	3.7	3.7	3.7	3.7	3.7
50% POE	MVA	30.5	27.2	24.6	23.7	21.1	22.4	22.0	24.7	24.9	24.9	24.8	24.7	24.6	24.6	24.5	24.4
	PF	1.000	0.957	0.996	0.998	0.997	0.983	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**191.0**	**177.8**	**184.5**	**183.2**	**163.7**	**163.4**										
Undiversified	MW	182.7	174.9	189.4	175.9	172.2	173.9	184.6	213.3	215.3	224.6	226.3	228.9	232.3	235.4	238.9	242.3
	MVAr	31.5	33.1	24.0	23.7	25.2	25.3	26.8	33.1	33.4	38.1	38.4	38.8	39.3	39.8	40.3	40.8
10% POE	**MVA**	**186.5**	**179.0**	**191.6**	**178.0**	**174.2**	**176.1**	**186.9**	**216.4**	**218.4**	**228.6**	**230.3**	**233.0**	**236.4**	**239.5**	**243.1**	**246.6**
	PF	0.980	0.977	0.988	0.988	0.989	0.988	0.988	0.986	0.986	0.982	0.983	0.983	0.983	0.983	0.983	0.983
	MW	172.9	165.0	177.1	164.3	161.4	163.3	173.9	202.7	204.6	214.0	215.7	218.3	221.7	224.8	228.3	231.8
	MVAr	29.7	31.9	23.2	22.4	23.7	24.1	25.6	31.9	32.2	36.9	37.2	37.6	38.2	38.6	39.2	39.7
50% POE	**MVA**	**176.5**	**169.0**	**179.3**	**166.3**	**163.2**	**165.4**	**176.1**	**205.7**	**207.6**	**217.9**	**219.6**	**222.3**	**225.7**	**228.8**	**232.4**	**235.9**
	PF	0.980	0.977	0.988	0.988	0.989	0.987	0.988	0.985	0.986	0.982	0.982	0.982	0.982	0.982	0.982	0.982
Actual	**MVA**	**179.6**	**157.7**	**191.9**	**174.8**	**151.9**	**169.8**										
Diversified	MW	162.3	165.5	172.6	172.8	169.8	174.1	176.6	204.1	205.9	214.9	216.4	219.0	222.2	225.1	228.5	231.8
	MVAr	24.7	24.5	43.8	13.4	34.4	31.4	31.9	36.9	37.2	38.8	39.1	39.5	40.1	40.7	41.3	41.9
10% POE	**MVA**	**164.2**	**167.3**	**178.1**	**173.3**	**173.3**	**176.9**	**179.4**	**207.4**	**209.3**	**218.3**	**219.9**	**222.5**	**225.8**	**228.8**	**232.2**	**235.6**
	PF	0.989	0.989	0.969	0.997	0.980	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
	MW	149.3	151.5	155.7	153.7	153.0	157.5	166.4	193.9	195.7	204.7	206.3	208.8	212.1	215.0	218.4	221.7
	MVAr	22.7	22.4	39.5	11.9	31.0	28.5	30.0	35.0	35.3	37.0	37.3	37.7	38.3	38.8	39.4	40.0
50% POE	**MVA**	**151.0**	**153.2**	**160.6**	**154.2**	**156.2**	**160.1**	**169.1**	**197.0**	**198.9**	**208.0**	**209.6**	**212.2**	**215.5**	**218.5**	**222.0**	**225.3**
	PF	0.989	0.989	0.969	0.997	0.980	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
Est. System Normal																	
	MVA			**158.3**	**174.6**		**160.5**										

Note: Diversified values which are greater than undiversified values are due to abnormal switching.

5.18 Macarthur 66kV Demand Forecast

Discussion

Macarthur BSP is a 330/132/66kV TransGrid substation which was established to supply Nepean STS at 132kV and 66kV. The existing 132kV lines into Nepean STS from Sydney West BSP 93X and West Liverpool STS 93Y will be used to provide supply into the future South West Sector development.

Macarthur 66kV BSP currently has a single 330/66kV 250MVA transformer. Endeavour has undertaken joint-planning with TransGrid to organise the installation of a second transformer. The project is currently up to the PCSR stage (equivalent to Endeavour's NIO stage).

Macarthur 66kV BSP supplied Ambarvale, Campbelltown and Kentlyn zone substations, and supplies the Southern Macarthur 66kV supply area together with Nepean 66kV STS in a ring network. The Southern macarthur 66kV supply area has large scale gas embeeded generators that are supplied from the mining operations in the area.

Major customer substations at Appin Top Pit, Appin Colliery, BHP Douglas Park, Tower Colliery, Westcliff Colliery, Appin and Broughton Pass ZSs are now being supplied from Macarthur 66kV.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Macarthur 66kV	1 x 250	250
Ambarvale	2 x 21/26/35	70
Appin	1 x 15	15
Broughton Pass	2 x 12.5/17.5	35
Campbelltown	2 x 22/26/35 + 1 x 22/35	105
Kentlyn	2 x 20/27/33	66

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2023	Minto	Ingleburn	Campbelltown	Macarthur_66kV	0.40
2023	Campbelltown	Liverpool_STS	Kentlyn	Macarthur_66kV	0.38
2023	Ambarvale	Macarthur_66kV	Menangle_Park	Macarthur_66kV	0.44
2023	Ambarvale	Macarthur_66kV	Menangle_Park	Macarthur_66kV	0.69
2023	Maldon	Nepean_66kV	Appin	Macarthur_66kV	0.34
2023	Nepean_ZS	Nepean_66kV	Menangle_Park	Macarthur_66kV	0.78

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Ambarvale	DBL2636 588 APPIN ROAD GILEAD	2025	-0.07	0.01	-0.07
Ambarvale	Figtree Hill (Mt Gilead)	2023	0.44	0.00	0.44
Ambarvale	Figtree Hill (Mt Gilead)	2024	0.44	0.00	0.44
Ambarvale	Figtree Hill (Mt Gilead)	2025	1.62	0.00	1.62
Ambarvale	Figtree Hill (Mt Gilead)	2026	1.62	0.00	1.62
Ambarvale	Figtree Hill (Mt Gilead)	2027	1.62	0.00	1.62
Ambarvale	Figtree Hill (Mt Gilead)	2028	1.62	0.00	1.62
Ambarvale	Figtree Hill (Mt Gilead)	2029	1.62	0.00	1.62
Ambarvale	Figtree Hill (Mt Gilead)	2030	1.62	0.00	1.62
Ambarvale	URS22443 Menangle Park Stage 3.6 - 103 residential lots	2024	0.66	0.13	0.67
Appin	APPNAP Walker Group - Appin - Neighbourhood 1	2030	1.00	0.00	1.00
Appin	APPNAP Walker Group - Appin - Neighbourhood 7	2030	1.50	0.00	1.50
Appin	APPNAP West & North Appin redevelopment - FY26	2026	2.48	0.00	2.48
Appin	APPNAP West & North Appin redevelopment - FY27	2027	2.48	0.00	2.48
Appin	APPNAP West & North Appin redevelopment - FY28	2028	2.48	0.00	2.48
Appin	APPNAP West & North Appin redevelopment - FY29	2029	2.48	0.00	2.48
Appin	APPNAP West & North Appin redevelopment - FY30	2030	2.48	0.00	2.48
Appin	APPNAP West & North Appin redevelopment - FY31	2031	2.48	0.00	2.48
Appin	APPNAP West & North Appin redevelopment - FY32	2032	2.48	0.00	2.48
Appin	APPNAP West & North Appin redevelopment - FY33	2033	2.48	0.00	2.48
Appin	NRL13705 126 Moreton Park Rd, Douglas Park	2023	0.01	0.00	0.01
BHP_Douglas_Park	NCL1562-4 Douglas Park South 32	2025	-9.98	3.28	-10.50
BHP_Douglas_Park	VS#7-1 South 32	2024	9.50	3.12	10.00
BHP_Douglas_Park	VS#7-2 South 32	2025	7.60	2.50	8.00
BHP_Douglas_Park	VS#7-3 South 32	2025	1.90	0.62	2.00
Campbelltown	ARP4943 Appin Road AMBARVALE cctv and streetlight	2024	0.01	0.00	0.01
Campbelltown	Campbelltown urban renewal	2023	0.37	0.00	0.37

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Campbelltown	Campbelltown urban renewal	2023	0.50	0.00	0.50
Campbelltown	Campbelltown urban renewal	2024	0.48	0.00	0.48
Campbelltown	Campbelltown urban renewal	2025	0.48	0.00	0.48
Campbelltown	Campbelltown urban renewal	2026	0.35	0.00	0.35
Campbelltown	Campbelltown urban renewal	2027	0.35	0.00	0.35
Campbelltown	Campbelltown urban renewal	2028	0.35	0.00	0.35
Campbelltown	Campbelltown urban renewal	2029	0.35	0.00	0.35
Campbelltown	Campbelltown urban renewal	2030	0.35	0.00	0.35
Campbelltown	Campbelltown urban renewal	2031	0.35	0.00	0.35
Campbelltown	Claymore LAHC redevelopment	2023	0.06	0.00	0.06
Campbelltown	Claymore LAHC redevelopment	2023	0.02	0.00	0.02
Campbelltown	Claymore LAHC redevelopment	2024	0.14	0.00	0.14
Campbelltown	Claymore LAHC redevelopment	2025	0.04	0.00	0.04
Campbelltown	Claymore LAHC redevelopment	2026	0.06	0.00	0.06
Campbelltown	Claymore LAHC redevelopment	2027	0.09	0.00	0.09
Campbelltown	Macarthur Heights (UWS)	2023	0.24	0.00	0.24
Campbelltown	Macarthur Heights (UWS)	2023	0.64	0.00	0.64
Campbelltown	Macarthur Heights (UWS)	2024	0.42	0.00	0.42
Campbelltown	Macarthur Heights (UWS)	2025	0.42	0.00	0.42
Campbelltown	Macarthur Heights (UWS)	2026	0.42	0.00	0.42
Campbelltown	Macarthur Heights (UWS)	2027	0.42	0.00	0.42
Campbelltown	Macarthur Heights (UWS)	2028	0.42	0.00	0.42
Campbelltown	Macarthur Heights (UWS)	2029	0.42	0.00	0.42
Campbelltown	Macarthur Heights (UWS)	2030	0.42	0.00	0.42
Campbelltown	NUL0624 Menangle Rd, Menangle Park - Sydney Water	2023	-0.48	0.16	-0.50
Campbelltown	UCL11347 Health Centre- Camden Road CAMPBELLTOWN	2024	0.63	0.13	0.65
Campbelltown	ULL3321 Lot 3098 Goldsmith Ave CAMPBELLTOWN	2023	0.40	0.08	0.41
Campbelltown	UML10027 88 Rudd Road, Leumeah	2023	0.08	0.02	0.08
Kentlyn	Airds & Bradbury LAHC redevelopment	2023	0.41	0.00	0.41
Kentlyn	Airds & Bradbury LAHC redevelopment	2023	0.28	0.00	0.28
Kentlyn	Airds & Bradbury LAHC redevelopment	2024	0.28	0.00	0.28
Kentlyn	Airds & Bradbury LAHC redevelopment	2025	0.22	0.00	0.22
Kentlyn	Airds & Bradbury LAHC redevelopment	2026	0.17	0.00	0.17
Kentlyn	Airds & Bradbury LAHC redevelopment	2027	0.20	0.00	0.20
Kentlyn	Airds & Bradbury LAHC redevelopment	2028	0.23	0.00	0.23
Menangle_Park	Menangle Park (Dahua Group)	2023	0.27	0.00	0.27
Menangle_Park	Menangle Park (Dahua Group)	2024	0.51	0.00	0.51
Menangle_Park	Menangle Park (Dahua Group)	2025	1.31	0.00	1.31
Menangle_Park	Menangle Park (Dahua Group)	2026	0.54	0.00	0.54
Menangle_Park	Menangle Park (Dahua Group)	2027	0.54	0.00	0.54
Menangle_Park	Menangle Park (Dahua Group)	2028	1.62	0.00	1.62
Menangle_Park	Menangle Park (Dahua Group)	2029	1.62	0.00	1.62
Menangle_Park	Menangle Park (Dahua Group)	2030	1.62	0.00	1.62
Menangle_Park	Menangle Park (Dahua Group)	2031	1.62	0.00	1.62
Menangle_Park	Menangle Park (Dahua Group)	2032	1.62	0.00	1.62
Menangle_Park	Mirvac	2023	0.57	0.00	0.57
Menangle_Park	Mirvac	2024	1.00	0.00	1.00
Menangle_Park	Mirvac	2025	0.52	0.00	0.52
Menangle_Park	Mirvac	2026	0.60	0.00	0.60
Menangle_Park	Mirvac	2027	0.81	0.00	0.81
Menangle_Park	Mirvac	2028	0.81	0.00	0.81
Menangle_Park	Mirvac	2029	0.81	0.00	0.81
Menangle_Park	Mirvac	2030	0.81	0.00	0.81
Menangle_Park	Mirvac	2031	0.81	0.00	0.81
Menangle_Park	Mirvac	2032	0.81	0.00	0.81
Menangle_Park	Mirvac C&I	2023	0.26	0.00	0.26
Menangle_Park	Mirvac C&I	2025	0.62	0.00	0.62
Menangle_Park	Mt Taurus	2024	1.77	0.00	1.77
Menangle_Park	Mt Taurus	2025	0.32	0.00	0.32
Menangle_Park	Mt Taurus	2026	0.65	0.00	0.65
Menangle_Park	Mt Taurus	2027	0.65	0.00	0.65
Menangle_Park	Mt Taurus	2028	0.65	0.00	0.65
Menangle_Park	Mt Taurus	2029	2.38	0.00	2.38
Menangle_Park	Mt Taurus	2030	1.65	0.00	1.65
Menangle_Park	Mt Taurus	2031	0.65	0.00	0.65
Menangle_Park	Mt Taurus	2032	0.65	0.00	0.65
Menangle_Park	Mt Taurus - Terraces	2024	0.00	0.00	0.00
Menangle_Park	Mt Taurus - Terraces	2025	0.00	0.00	0.00
SW_Sector_Macarthur_66	Figtree Hill (Mt Gilead)	2031	1.62	0.00	1.62
SW_Sector_Macarthur_66	Figtree Hill (Mt Gilead) Commercial Area	2030	0.24	0.00	0.24
SW_Sector_Macarthur_66	Figtree Hill (Mt Gilead) Commercial Area	2031	0.24	0.00	0.24
SW_Sector_Macarthur_66	Figtree Hill (Mt Gilead) Commercial Area	2032	0.24	0.00	0.24

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Ambarvale	DBL2636 588 APPIN ROAD GILEAD	2023	1	0.07
Ambarvale	URS22438-41 URS22438-41 - Menangle Road MENANGLE PARK	2023	2	1.3975
Ambarvale	URS24237 Copperfield Dr, Rosemeadow	2023	3	0.33
Ambarvale	URS24237 Copperfield Dr, Rosemeadow	2023	3	0.16
Ambarvale	URS25425 39 Sebastian Av, Rosemeadow	2023	2	0.41
Appin	APPNAP Walker Group - Appin - Neighbourhood 6 Town Centre	2035	17	10.2
Appin	NCL1639 295 Wilton Road WILTON	2024	2	0.21
Appin	URS24306 12 Bulli Appin Rd, Appin	2023	1	0.1296
Appin	URS24503 Stage 2 Macquariedale Rd Appin - 68 lots	2024	1	0.3672
Appin	URS24504 Stage 3A Macquariedale Rd Appin - 66 lots	2024	1	0.3564
Appin	URS26606 Stage 1A Heritage Dr Appin - 47 lots	2023	1	0.2538
Appin	URS26612 Stage 3B Macquariedale Rd Appin - 78 lots	2024	1	0.4212
BHP_Douglas_Park	NCL1562-2 Douglas Park South 32	2021	3	-2.00
BHP_Douglas_Park	NCL1562-3 Douglas Park South 32	2023	2	-1.50
Campbelltown	Macarthur Gardens residential development	2021	5	1.94
Campbelltown	UCL10260 8 Dumaresq St, Campbelltown	2023	3	0.85
Campbelltown	URS20894 Claymore redevelopment - Stage 3A	2022	3	0.24
Campbelltown	URS25838 Claymore redevelopment - Stage 3C Aged + Retail later	2023	1	0.08
Campbelltown	URS26077 URS26077 192 Narellan Rd Campbelltown Stage 1 - Stgs 2-4 only 315kVA TX is enough	2023	1	0.11
Kentlyn	UML10125 22 units 88-92 Broughton Street CAMPBELLTOWN	2023	1	0.11
Kentlyn	UML9883 Hannaford St, Campbelltown - 2 homes removed, 11 new units	2023	2	0.03
Kentlyn	URS24597 Amundsen St, Leumeah	2023	1	0.20
Menangle_Park	20 Ha commercial Menangle Park Development area	2030	6	2.48
Menangle_Park	28 Ha industrial Menangle Park Development area	2030	6	3.28
Menangle_Park	ENL4222 152 - Townhouses - East Village Dahua	2028	5	0.6688
Menangle_Park	ENL4222 2026 Units - East Village - Dahua	2028	5	6.6858
Menangle_Park	Mirvac C&I	2026	15	8.12
Menangle_Park	Mt Taurus Apartments	2028	2	0.198

Generation

Zone Substation	Name	Description	Date
Nepean 66kV	Appin Colliery (EDL)	54 x 1MW (methane extraction - export to 66kV network)	Installed
Nepean 66kV	WestCliff Colliery	1 x 6MW	Installed
Nepean 66kV	Tower Colliery	40 x 1MW (methane extraction - export to 66kV network)	Installed
Nepean 66kV	Tahmoor Colliery	1 x 7MW (methane extraction - export to 66kV network)	Installed

Configuration Changes

Year	Zone / HVC	From STS	To STS
2016	Appin	Nepean 66kV	Macarthur 66kV
2016	Appin Top Pit	Nepean 66kV	Macarthur 66kV
2016	Appin Colliery	Nepean 66kV	Macarthur 66kV
2016	BHP Douglas Park	Nepean 66kV	Macarthur 66kV
2016	Broughton Pass	Nepean 66kV	Macarthur 66kV
2016	Tower Colliery	Nepean 66kV	Macarthur 66kV
2016	Westcliff Colliery	Nepean 66kV	Macarthur 66kV

Macarthur 66kV Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**26.4**	**26.5**	**28.4**	**31.2**	**26.8**	**23.7**										
Ambarvale	MW	27.2	27.5	29.6	31.5	29.8	30.2	29.9	31.5	32.6	33.6	34.9	36.2	37.7	39.2	39.5	39.8
	MVAr	2.2	0.0	1.4	0.8	1.2	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6
10% POE	**MVA**	**27.2**	**27.5**	**29.6**	**31.5**	**29.8**	**30.2**	**30.0**	**31.5**	**32.6**	**33.7**	**34.9**	**36.2**	**37.7**	**39.2**	**39.5**	**39.8**
	PF	0.997	1.000	0.999	1.000	0.999	1.001	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	22.9	23.3	25.5	27.0	25.7	26.3	26.0	27.5	28.6	29.7	30.9	32.3	33.8	35.3	35.7	36.0
	MVAr	1.8	0.0	1.2	0.7	1.0	0.9	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.4
50% POE	**MVA**	**23.0**	**23.3**	**25.5**	**27.0**	**25.8**	**26.2**	**26.0**	**27.5**	**28.6**	**29.7**	**30.9**	**32.3**	**33.8**	**35.3**	**35.7**	**36.0**
	PF	0.997	1.000	0.999	1.000	0.999	1.001	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Actual	**MVA**	**6.7**	**5.7**	**6.6**	**6.8**	**5.5**	**5.0**										
Appin	MW	5.4	5.0	5.9	6.0	6.2	6.2	6.8	7.7	7.8	9.8	11.7	13.8	15.9	19.9	22.0	24.1
	MVAr	1.6	1.4	1.5	1.5	1.4	1.1	1.7	1.9	2.0	2.4	2.9	3.4	4.0	5.0	5.5	6.0
10% POE	**MVA**	**5.6**	**5.2**	**6.1**	**6.2**	**6.3**	**6.3**	**7.0**	**8.0**	**8.1**	**10.1**	**12.1**	**14.2**	**16.3**	**20.5**	**22.6**	**24.8**
	PF	0.957	0.965	0.970	0.970	0.976	0.984	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
	MW	4.6	4.3	5.1	5.1	5.3	5.3	6.0	6.9	7.0	8.9	10.9	13.0	15.0	19.1	21.2	23.3
	MVAr	1.4	1.2	1.3	1.3	1.2	1.0	1.5	1.7	1.8	2.2	2.7	3.2	3.8	4.8	5.3	5.8
50% POE	**MVA**	**4.8**	**4.4**	**5.2**	**5.3**	**5.5**	**5.4**	**6.1**	**7.1**	**7.2**	**9.2**	**11.3**	**13.4**	**15.5**	**19.6**	**21.8**	**24.0**
	PF	0.957	0.965	0.970	0.970	0.976	0.984	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Actual	**MVA**	**4.5**	**4.0**	**4.4**	**4.3**	**4.3**	**3.6**										
Appin Top Pit	MW	3.6	3.2	3.7	3.6	3.6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	MVAr	3.0	2.4	2.5	2.4	2.4	1.8	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
10% POE	**MVA**	**4.7**	**4.0**	**4.4**	**4.3**	**4.3**	**3.6**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**
	PF	0.766	0.801	0.828	0.828	0.830	0.860	0.819	0.819	0.819	0.819	0.819	0.819	0.819	0.819	0.819	0.819
Major customer – HVC 20488	MW	3.6	3.2	3.7	3.6	3.6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	MVAr	3.0	2.4	2.5	2.4	2.4	1.8	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
50% POE	**MVA**	**4.7**	**4.0**	**4.4**	**4.3**	**4.3**	**3.6**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**	**3.8**
	PF	0.766	0.801	0.828	0.828	0.830	0.860	0.819	0.819	0.819	0.819	0.819	0.819	0.819	0.819	0.819	0.819
Actual	**MVA**	**7.1**	**6.0**	**6.9**	**7.6**	**8.6**	**7.6**										
Appin Colliery	MW	6.4	5.1	6.2	6.3	6.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
	MVAr	3.0	3.3	3.0	4.9	5.3	4.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
10% POE	**MVA**	**7.1**	**6.0**	**6.9**	**7.9**	**8.6**	**7.6**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**
	PF	0.904	0.841	0.902	0.790	0.790	0.759	0.831	0.831	0.831	0.831	0.831	0.831	0.831	0.831	0.831	0.831
Major customer – HVC 13308	MW	6.4	5.1	6.2	6.3	6.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
	MVAr	3.0	3.3	3.0	4.9	5.3	4.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
50% POE	**MVA**	**7.1**	**6.0**	**6.9**	**7.9**	**8.6**	**7.6**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**	**6.9**
	PF	0.904	0.841	0.902	0.790	0.790	0.759	0.831	0.831	0.831	0.831	0.831	0.831	0.831	0.831	0.831	0.831
Actual	**MVA**	**12.0**	**5.0**	**14.5**	**15.5**	**20.0**	**21.3**										
BHP Douglas Park	MW	11.5	4.9	14.3	15.1	18.2	19.2	18.3	25.0	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
	MVAr	3.4	0.8	2.1	3.1	9.6	9.2	8.8	12.0	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9
10% POE	**MVA**	**12.0**	**5.0**	**14.5**	**15.5**	**20.6**	**21.3**	**20.4**	**27.8**	**27.4**	**27.4**	**27.4**	**27.4**	**27.4**	**27.4**	**27.4**	**27.4**
	PF	0.958	0.988	0.989	0.979	0.885	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901
Major customer – HVC 26553	MW	11.5	4.9	14.3	15.1	18.2	19.2	18.3	25.0	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
	MVAr	3.4	0.8	2.1	3.1	9.6	9.2	8.8	12.0	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9
50% POE	**MVA**	**12.0**	**5.0**	**14.5**	**15.5**	**20.6**	**21.3**	**20.4**	**27.8**	**27.4**	**27.4**	**27.4**	**27.4**	**27.4**	**27.4**	**27.4**	**27.4**
	PF	0.958	0.988	0.989	0.979	0.885	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901	0.901
Actual	**MVA**	**5.0**	**5.0**	**4.8**	**4.7**	**4.8**	**4.8**										
Broughton Pass	MW	4.8	4.7	4.6	4.5	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
	MVAr	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
10% POE	**MVA**	**5.0**	**5.0**	**4.8**	**4.7**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**
	PF	0.953	0.953	0.958	0.955	0.956	0.956	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
Major customer	MW	4.8	4.7	4.6	4.5	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
	MVAr	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
50% POE	**MVA**	**5.0**	**5.0**	**4.8**	**4.7**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**
	PF	0.953	0.953	0.958	0.955	0.956	0.956	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
Actual	**MVA**	**54.4**	**51.3**	**50.8**	**49.4**	**47.2**	**49.1**										
Campbelltown	MW	55.8	53.3	53.8	50.5	51.4	52.0	53.7	55.2	55.8	55.8	56.1	56.4	56.9	57.4	57.7	57.6
	MVAr	5.4	4.8	1.5	1.3	1.4	1.1	3.0	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.2	3.2
10% POE	**MVA**	**56.1**	**53.5**	**53.8**	**50.5**	**51.4**	**52.0**	**53.8**	**55.3**	**55.9**	**55.9**	**56.2**	**56.5**	**57.0**	**57.5**	**57.7**	**57.7**
	PF	0.995	0.996	1.000	1.000	1.000	1.000	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
	MW	51.5	49.4	50.3	46.4	47.3	47.8	49.6	51.0	51.6	51.6	51.9	52.3	52.8	53.3	53.5	53.5
	MVAr	5.0	4.5	1.4	1.2	1.3	1.0	2.8	2.8	2.9	2.9	2.9	2.9	2.9	3.0	3.0	3.0
50% POE	**MVA**	**51.8**	**49.6**	**50.3**	**46.4**	**47.2**	**47.9**	**49.6**	**51.1**	**51.7**	**51.7**	**52.0**	**52.3**	**52.9**	**53.3**	**53.6**	**53.5**
	PF	0.995	0.996	1.000	1.000	1.000	1.000	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**38.8**	**29.7**	**34.8**	**36.2**	**29.5**	**24.7**										
Kentlyn	MW	32.8	28.5	38.2	34.2	31.3	30.4	31.1	30.9	31.0	30.5	30.5	30.7	30.9	31.1	31.4	31.8
	MVAr	7.9	1.0	0.9	1.4	0.0	0.1	3.1	3.1	3.1	3.0	3.0	3.1	3.1	3.1	3.1	3.2
10% POE	**MVA**	**33.8**	**28.5**	**38.2**	**34.2**	**31.3**	**30.4**	**31.2**	**31.0**	**31.1**	**30.6**	**30.6**	**30.8**	**31.1**	**31.2**	**31.6**	**31.9**
	PF	0.972	0.999	1.000	0.999	1.000	1.000	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
	MW	28.9	25.7	33.8	29.5	27.4	26.8	27.4	27.2	27.3	26.8	26.8	27.1	27.3	27.5	28.0	28.5
	MVAr	7.0	0.9	0.8	1.2	0.0	0.1	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.8
50% POE	**MVA**	**29.7**	**25.7**	**33.8**	**29.5**	**27.4**	**26.8**	**27.6**	**27.4**	**27.5**	**27.0**	**27.0**	**27.2**	**27.4**	**27.6**	**28.1**	**28.6**
	PF	0.972	0.999	1.000	0.999	1.000	1.000	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Actual	**MVA**																
South West Sector	MW														0.2	1.5	1.7
	MVAr														0.1	0.7	0.8
10% POE	**MVA**														**0.2**	**1.7**	**1.9**
	PF														0.900	0.900	0.900
	MW														0.2	1.5	1.7
	MVAr														0.1	0.7	0.8
50% POE	**MVA**														**0.2**	**1.7**	**1.9**
	PF														0.900	0.900	0.900
Actual	**MVA**																
Menangle_Park	MW							2.5	4.9	6.9	8.2	9.8	12.8	18.0	23.5	28.2	32.7
	MVAr							1.2	2.4	3.3	4.0	4.8	6.2	8.7	11.4	13.7	15.8
10% POE	**MVA**							**2.8**	**5.4**	**7.6**	**9.1**	**10.9**	**14.2**	**19.9**	**26.1**	**31.4**	**36.3**
	PF							0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
	MW							2.5	4.9	6.9	8.2	9.8	12.8	18.0	23.5	28.2	32.7
	MVAr							1.2	2.4	3.3	4.0	4.8	6.2	8.7	11.4	13.7	15.8
50% POE	**MVA**							**2.8**	**5.4**	**7.6**	**9.1**	**10.9**	**14.2**	**19.9**	**26.1**	**31.4**	**36.3**
	PF							0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Actual	**MVA**	**5.0**	**4.4**	**4.1**	**5.2**	**5.9**	**4.4**										
Tower Colliery	MW	3.7	3.2	3.2	4.1	4.7	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	MVAr	3.3	3.1	2.6	3.3	3.6	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
10% POE	**MVA**	**5.0**	**4.4**	**4.1**	**5.2**	**5.9**	**4.4**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**
	PF	0.746	0.723	0.779	0.783	0.799	0.789	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
Major customer – HVC 13367	MW	3.7	3.2	3.2	4.1	4.7	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	MVAr	3.3	3.1	2.6	3.3	3.6	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
50% POE	**MVA**	**5.0**	**4.4**	**4.1**	**5.2**	**5.9**	**4.4**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**
	PF	0.746	0.723	0.779	0.783	0.799	0.789	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
Actual	**MVA**	**15.3**	**13.2**	**8.2**	**10.0**	**14.9**	**13.9**										
Westcliff Colliery	MW	14.2	10.7	7.3	8.1	11.6	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	MVAr	5.6	8.0	4.5	5.8	9.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
10% POE	**MVA**	**15.3**	**13.4**	**8.6**	**10.0**	**14.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**
	PF	0.931	0.802	0.855	0.812	0.779	0.799	0.799	0.799	0.799	0.799	0.799	0.799	0.799	0.799	0.799	0.799
Major customer – HVC 13368	MW	14.2	10.7	7.3	8.1	11.6	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	MVAr	5.6	8.0	4.5	5.8	9.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
50% POE	**MVA**	**15.3**	**13.4**	**8.6**	**10.0**	**14.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**	**13.9**
	PF	0.931	0.802	0.855	0.812	0.779	0.799	0.799	0.799	0.799	0.799	0.799	0.799	0.799	0.799	0.799	0.799
Actual	**MVA**	**175.0**	**150.9**	**163.5**	**171.0**	**167.4**	**158.0**										
Undiversified	MW	165.3	146.1	166.7	163.9	168.1	166.0	170.4	183.2	186.7	190.5	195.6	202.5	212.0	223.9	232.9	240.2
	MVAr	37.0	26.2	21.3	26.0	35.6	31.9	37.7	42.4	43.3	44.4	45.7	47.8	50.9	54.8	58.3	61.1
10% POE	**MVA**	**171.7**	**152.4**	**170.9**	**170.1**	**177.9**	**174.4**	**179.0**	**192.8**	**196.5**	**200.6**	**205.9**	**213.2**	**223.3**	**236.0**	**245.8**	**253.7**
	PF	0.963	0.958	0.975	0.964	0.945	0.952	0.952	0.950	0.950	0.950	0.950	0.950	0.949	0.949	0.948	0.947
	MW	152.1	134.4	154.0	149.7	155.2	153.4	157.8	170.6	174.1	177.9	183.0	189.9	199.5	211.4	220.7	228.2
	MVAr	35.0	25.6	20.7	25.3	35.1	31.5	36.7	41.4	42.3	43.5	44.8	46.8	50.0	53.8	57.4	60.2
50% POE	**MVA**	**158.3**	**140.8**	**158.1**	**155.8**	**165.0**	**161.8**	**166.4**	**180.2**	**183.9**	**187.9**	**193.3**	**200.6**	**210.8**	**223.4**	**233.5**	**241.6**
	PF	0.961	0.955	0.974	0.960	0.941	0.948	0.948	0.947	0.947	0.947	0.947	0.947	0.946	0.946	0.945	0.945
Actual	**MVA**	**173.2**	**161.0**	**169.0**	**147.2**	**144.5**	**152.4**										
Diversified	MW	141.2	167.5	164.5	160.3	160.9	176.4	160.0	172.0	175.3	178.9	183.7	190.2	199.1	210.3	218.8	225.7
	MVAr	36.9	9.9	37.1	13.1	25.7	17.1	26.3	28.2	28.8	29.4	30.1	31.2	32.7	34.5	35.9	37.0
10% POE	**MVA**	**145.9**	**167.8**	**168.6**	**160.8**	**163.0**	**177.2**	**162.2**	**174.3**	**177.7**	**181.3**	**186.2**	**192.7**	**201.8**	**213.1**	**221.7**	**228.7**
	PF	0.968	0.998	0.976	0.997	0.988	0.995	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
	MW	124.7	147.0	143.4	143.1	144.2	160.7	148.2	160.2	163.5	167.1	171.9	178.4	187.4	198.6	207.3	214.4
	MVAr	32.6	8.7	32.3	11.7	23.0	15.6	24.3	26.3	26.8	27.4	28.2	29.3	30.7	32.6	34.0	35.2
50% POE	**MVA**	**128.9**	**147.2**	**147.0**	**143.6**	**146.0**	**161.4**	**150.2**	**162.4**	**165.7**	**169.4**	**174.2**	**180.8**	**189.9**	**201.2**	**210.0**	**217.2**
	PF	0.968	0.998	0.976	0.997	0.988	0.995	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
Generation*	MW							-28.7	-28.7	-28.7	-28.7	-28.7	-28.7	-28.7	-28.7	-28.7	-28.7
	MVAr							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max generation output	**MVA**							**-28.7**	**-28.7**	**-28.7**	**-28.7**	**-28.7**	**-28.7**	**-28.7**	**-28.7**	**-28.7**	**-28.7**
	PF							1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Est. System Normal																	
	MVA			**136.6**													

Note: Diversified values which are greater than undiversified values are due to abnormal switching.
Note: * 100% of the generation is consumed by Nepean and no generation being consumed by Macarthur

5.19 Macarthur 132kV Demand Forecast

Discussion

Macarthur BSP is a 330/132/66kV TransGrid substation which was established to supply Nepean STS at 132kV and 66kV. Macarthur BSP will provide capacity for part of the South West Growth Sector including Oran Park, Catherine Field, Maryland, Bringelly, and Leppington.

The 132kV side of Macarthur BSP currently has a single 330/132kV 375MVA transformer but is limited to its tail-ended Feeder 9L1's rating of 233MVA. Feeder 9L1 is planned to be upgraded to a rating of 243MVA. A second 330/132kV transformer at Macarthur BSP will be installed when the cost can be justified.

Demand growth in the South West Sector will dictate the need for a 132kV busbar at Transgrid's Kemps Creek BSP to supply the northern half of the growth sector, the Broader Western Sydney Employment Area (BWSEA) and the Western Sydney Airport (WSA).

Catherine Field ZS and Maryland ZS are proposed to be established to supply the new Catherine Field, and Lowes Creek & Maryland precincts, respectively.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Macarthur 132kV	1 x 375	375
Catherine Field	Proposed	Proposed
Maryland	Proposed	Proposed
Oran Park	2 x 45	90
North Leppington	2 x 45	90
South Leppington	1 x 45	45

Proposed Load Transfers

No Load Transfers Proposed at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Bringelly	AEROAP Aerotropolis City - FY26	2026	2.23	0.00	2.23
Bringelly	AEROAP Aerotropolis City - FY27	2027	2.23	0.00	2.23
Bringelly	AEROAP Aerotropolis City - FY28	2028	2.23	0.00	2.23
Bringelly	AEROAP Aerotropolis City - FY29	2029	2.23	0.00	2.23
Bringelly	AEROAP Aerotropolis City - FY30	2030	2.23	0.00	2.23
Bringelly	AEROAP Aerotropolis City - FY31	2031	2.23	0.00	2.23
Bringelly	AEROAP Aerotropolis City - FY32	2032	2.23	0.00	2.23
Bringelly	AEROAP Aerotropolis Core - FY24	2024	3.18	0.64	3.24
Bringelly	AEROAP Aerotropolis Core - FY25	2025	3.18	0.64	3.24
Bringelly	AEROAP Aerotropolis Core - FY26	2026	3.18	0.64	3.24
Bringelly	AEROAP Aerotropolis Core - FY27	2027	3.18	0.64	3.24
Bringelly	AEROAP Aerotropolis Core - FY28	2028	3.18	0.64	3.24
Bringelly	AEROAP Aerotropolis Core - FY29	2029	3.18	0.64	3.24
Bringelly	AEROAP Aerotropolis Core - FY30	2030	3.18	0.64	3.24
Bringelly	AEROAP Aerotropolis Core - FY31	2031	3.18	0.64	3.24
Bringelly	AEROAP Aerotropolis Core - FY32	2032	3.18	0.64	3.24
Bringelly	AEROAP Agribusiness South - FY27	2027	1.92	0.39	1.96
Bringelly	AEROAP Agribusiness South - FY28	2028	1.92	0.39	1.96
Bringelly	AEROAP Agribusiness South - FY29	2029	1.92	0.39	1.96
Bringelly	AEROAP Agribusiness South - FY30	2030	1.08	0.22	1.10
Bringelly	AEROAP Agribusiness South - FY31	2031	1.08	0.22	1.10
Bringelly	AEROAP Agribusiness South - FY32	2032	1.08	0.22	1.10
Bringelly	AEROAP Enterprise Southwest - FY30	2030	2.41	0.49	2.46
Bringelly	AEROAP Enterprise Southwest - FY31	2031	2.41	0.49	2.46
Bringelly	AEROAP Enterprise Southwest - FY32	2032	2.41	0.49	2.46
Bringelly	DBL0000 Airside & Landside Civils WSA Construction	2023	0.98	0.20	1.00
Bringelly	DBL0000 Airside & Landside Civils WSA Construction	2026	-0.98	0.20	-1.00
Bringelly	DBL2554-1 Metro Aerotropolis Station	2023	3.53	0.72	3.60
Bringelly	DBL2554-2 Metro Aerotropolis Station (disconnect)	2026	-3.53	0.72	-3.60
Bringelly	DBL2727-1 Metro WSA Tunnel Portal Construction Supply	2023	0.17	0.03	0.17
Bringelly	DBL2727-2 Metro WSA Tunnel Portal Construction Supply (disconnect)	2025	-0.17	0.03	-0.17
Bringelly	ENL3946-1 Sydney Water - Jersey Rd Bringelly	2023	0.18	0.09	0.20
Bringelly	ENL3946-2 Sydney Water - Jersey Rd Bringelly	2026	0.45	0.22	0.50
Bringelly	NCL1575 21 Orient Rd Greendale	2023	0.10	0.05	0.11
Bringelly	NIL0314 Holcim Concrete Plant Badgerys Creek Rd	2023	0.81	0.17	0.83

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Bringelly	UIL5931 Adams Rd Industrial Estate (Part)	2024	0.49	0.10	0.50
North_Leppington	ENL4269 Childcare Placeholder connection Dec 2022 - Louis	2023	0.10	0.02	0.10
North_Leppington	UCL10108 Rickard Rd Leppington - Shopping Centre	2024	1.90	0.00	1.90
North_Leppington	UCL10664 85 Byron Rd, Leppington - Amity College	2024	0.60	0.00	0.60
North_Leppington	UCL9771 Aged Care Centre Bringelly Rd Leppington	2023	0.35	0.17	0.39
North_Leppington	UIL5818 No.345-367 Bringelly Rd Leppington Warehouse 1	2023	0.69	0.00	0.69
North_Leppington	UIL5882 431 Bringelly Rd Rossmore	2023	0.34	0.17	0.38
North_Leppington	UIL6211 No.345-367 Bringelly Rd Leppington Warehouse 2	2024	0.75	0.15	0.76
North_Leppington	UIL6212 Stockland Wareshouse No.3	2024	0.55	0.11	0.56
North_Leppington	ULL3075 Leppington Railway Station Carpark	2023	0.71	0.14	0.72
North_Leppington	UUL1853 60 Sixth Ave West Hoxton - Sydney Water Carnes Hill	2023	0.70	0.34	0.78
Oran_Park	Catherine Fields	2030	0.54	0.00	0.54
Oran_Park	Catherine Park	2023	1.29	0.00	1.29
Oran_Park	Catherine Park	2023	0.76	0.00	0.76
Oran_Park	Catherine Park	2024	1.93	0.00	1.93
Oran_Park	Catherine Park	2025	1.08	0.00	1.08
Oran_Park	Catherine Park	2026	1.08	0.00	1.08
Oran_Park	Catherine Park	2027	1.08	0.00	1.08
Oran_Park	Catherine Park	2028	1.08	0.00	1.08
Oran_Park	Catherine Park	2029	1.08	0.00	1.08
Oran_Park	Catherine Park	2030	1.35	0.00	1.35
Oran_Park	Cobbitty	2024	1.62	0.00	1.62
Oran_Park	Cobbitty	2025	1.62	0.00	1.62
Oran_Park	Cobbitty	2026	2.37	0.00	2.37
Oran_Park	Cobbitty	2027	1.89	0.00	1.89
Oran_Park	Cobbitty	2028	1.89	0.00	1.89
Oran_Park	Cobbitty	2029	1.85	0.38	1.89
Oran_Park	Cobbitty	2030	1.89	0.00	1.89
Oran_Park	Cobbitty	2031	1.89	0.00	1.89
Oran_Park	Cobbitty	2032	2.68	0.00	2.68
Oran_Park	Harrington Grove	2023	0.41	0.00	0.41
Oran_Park	Harrington Grove	2024	0.40	0.00	0.40
Oran_Park	Harrington Grove	2025	0.22	0.00	0.22
Oran_Park	NRL14922 64 Coates Park Rd, Cobbitty	2024	0.05	0.01	0.06
Oran_Park	NUL0623 Oran Park Reservoir	2023	0.17	0.06	0.18
Oran_Park	Oran Park	2023	1.44	0.00	1.44
Oran_Park	Oran Park	2024	2.16	0.00	2.16
Oran_Park	Oran Park	2025	2.16	0.00	2.16
Oran_Park	Oran Park	2026	2.16	0.00	2.16
Oran_Park	Oran Park	2027	2.16	0.00	2.16
Oran_Park	Oran Park	2028	1.08	0.00	1.08
Oran_Park	Oran Park	2029	1.08	0.00	1.08
Oran_Park	Oran Park	2030	1.08	0.00	1.08
Oran_Park	Pondicherry	2024	1.06	0.21	1.08
Oran_Park	Pondicherry	2025	1.06	0.21	1.08
Oran_Park	Pondicherry	2026	1.06	0.21	1.08
Oran_Park	Pondicherry	2027	1.55	0.31	1.58
Oran_Park	Pondicherry	2028	1.06	0.21	1.08
Oran_Park	Pondicherry	2029	1.06	0.21	1.08
Oran_Park	Pondicherry	2030	2.53	0.51	2.58
Oran_Park	Pondicherry	2031	1.06	0.21	1.08
Oran_Park	Pondicherry	2032	1.06	0.21	1.08
Oran_Park	UCL11290 89 Central Avenue ORAN PARK - Pub, cinema etc	2024	0.74	0.15	0.75
Oran_Park	UCL11295 421 Cobbitty Rd	2024	0.04	0.01	0.04
Oran_Park	UCS0555 Longbush Precinct - Aldi & community centre	2023	0.42	0.00	0.42
Oran_Park	UUL1855 Dan Cleary Dr, Harrington Park - Sydney Water	2023	2.80	0.92	2.95
Smeaton_Grange	UIL4375-22 AWS Data Centre	2023	4.16	0.59	4.20
Smeaton_Grange	UIL4375-23 AWS Data Centre	2024	4.16	0.59	4.20
Smeaton_Grange	UIL4375-24 AWS Data Centre	2025	4.16	0.59	4.20
Smeaton_Grange	UIL4375-25 AWS Data Centre	2026	8.22	1.17	8.30
Smeaton_Grange	UIL4375-26 AWS Data Centre	2027	8.02	1.14	8.10
Smeaton_Grange	UIL4375-27 AWS Data Centre	2028	3.96	0.56	4.00
Smeaton_Grange	UIL4375-28 AWS Data Centre	2029	8.02	1.14	8.10
Smeaton_Grange	UIL4375-29 AWS Data Centre	2030	3.96	0.56	4.00
Smeaton_Grange	UIL4375-30 AWS Data Centre	2031	3.96	0.56	4.00
Smeaton_Grange	UIL4375-31 AWS Data Centre	2032	3.96	0.56	4.00
South_Leppington	UCL10527 Cnr Camden Valley Way	2023	0.37	0.18	0.41
South_Leppington	UCL11276 5 Raby Road LEPPINGTON	2023	0.78	0.16	0.80
South_Leppington	UCL9788 St Sava Community College Andrews Rd Varroville	2023	0.35	0.00	0.35
South_Leppington	URS26187 18 lots 1402 Camden Valley Way Leppington	2024	0.10	0.02	0.10

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Bringelly	Bringelly Precinct (BHL)	2026	20	21.60
Bringelly	Bringelly, Lowes Creek, Maryland 300 Lots	2030	3	1.62
North_Leppington	Austral Precinct south area - 250 Lots	2026	3	1.35
North_Leppington	Austral Precinct south area - 250 Lots	2027	3	1.35
North_Leppington	Austral Precinct south area - 250 Lots	2028	3	1.35
North_Leppington	Austral Precinct south area - 250 Lots	2029	3	1.35
North_Leppington	ENL4081 Bradfield City Initial Development South	2026	3	6.00
North_Leppington	NCL1725 Ingleburn Rd, Leppington - Shopping Mall	2024	2	0.83
North_Leppington	North Leppington Precinct High Density Residential	2024	30	33.00
North_Leppington	North Leppington Precinct Low Density Residential	2018	20	42.66
North_Leppington	North Leppington Town Centre Retail & Commercial	2024	30	21.20
North_Leppington	UIS0933 186 Ingleburn Rd, Leppington	2024	3	0.77
North_Leppington	URS26747 Stage 1+2, 143 Ingleburn Road LEPPINGTON +stage 2 (18 lots total)	2023	2	0.0972
Oran_Park	Bringelly, Lowes Creek, Maryland 7000 Lots	2025	15	37.80
Oran_Park	ENL3395 Woodstock Cobbitty	2025	8	5.40
Oran_Park	UCL10328 Dick Johnson Dr, Oran Park - RACF	2023	2	0.97
Oran_Park	UCL10958 3, 88 Podium Way ORAN PARK (EG Fuel and Mycar service centre)	2023	1	0.16
Oran_Park	UCL11021 Oran Park Podium Stage 3 Oran Park	2024	2	2.8
Oran_Park	ULL2880 2 Sir Warwick Fairfax Dr, Harrington Park	2023	1	0.33
Oran_Park	ULL2960 Catherine Park School	2022	2	0.45
Oran_Park	ULL3079 ULL3079 - 5 70 Central Avenue 1500KVA	2023	1	0.81
Oran_Park	UML8686 Podium Way, Oran Park apartment complex - 47 residential units	2022	1	0.16
Oran_Park	URS20257 Tranche 34 Stage 1, Oran Park	2022	2	0.52
Oran_Park	URS21372-3 The Northern Rd, Bringelly - 111 residential lots (Back calc ADMD)	2024	2	0.60
Oran_Park	URS22676 Arcadian Hills Stage 8	2022	2	0.3731
Oran_Park	URS23820 Stage 2 Tranche 25 54 lots	2024	2	0.27
Oran_Park	URS25677-9 The Northern Road, Cobbitty - Stages 7-9	2024	2	0.6642
Oran_Park	URS26824 Marylands Birling Stage 1 The Northern Road BRINGELLY - 471 lots	2023	3	2.5434
Oran_Park	URS26825 Marylands Birling Stage 2 The Northern Road BRINGELLY - 129 lots	2023	2	0.6966
Oran_Park	URS26836 Marylands Stage 1 Northern Rd	2023	2	1.2906
South_Leppington	East Leppington Precinct Denham Court 1000 Lots	2016	8	5.40
South_Leppington	Emerald Hills Precinct 1390 Lots	2018	5	7.51
South_Leppington	Gledswood Lakeside Estate Stage 44 + Stage 45 + Stage 46 - 160 Lots	2022	3	0.86
South_Leppington	Leppington Precinct Stage 1 - 2523 Lots	2020	10	13.91
South_Leppington	Leppington Precinct Stage 2-Stage 5 - 5036 Lots	2024	15	27.19
South_Leppington	UCL10615 49A, 30 Heath Rd Leppington	2023	1	0.26
South_Leppington	UCL11022 50 Heath Rd Leppington - Anglican School	2024	2	0.54
South_Leppington	URS18317 Acreage Estate 121 Raby Rd Leppington 30 lots	2024	3	0.28
South_Leppington	URS21817 Gledswood Lakeside Estate Stage 41	2020	3	0.78
South_Leppington	URS26018 44-45 Rickard Rd Leppington 29 lots	2023	2	0.1566
South_Leppington	URS26902 2 Brittlewood Road (Heath Road) Leppington (18 Lots)	2024	1	0.0972
South_Leppington	URS26929 76 Byron Rd Leppington 22 lots	2024	1	0.1188

Generation

No Generation known at this location

Configuration Changes

Year	Zone / HVC	From STS	To STS
2017	Oran Park	Sydney West 132kV	Macarthur 132kV

Macarthur 132kV Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**		**4.1**	**8.7**	**10.4**	**16.8**	**21.8**										
Smeaton_Grange	MW		3.9	8.7	10.4	16.8	21.8	25.0	28.2	31.4	37.7	43.8	46.9	53.0	56.1	59.1	62.1
	MVAr		1.3	0.0	0.4	0.5	0.8	8.2	9.3	10.3	12.4	14.4	15.4	17.4	18.4	19.4	20.4
10% POE	**MVA**		**4.1**	**8.7**	**10.4**	**16.8**	**21.8**	**26.3**	**29.7**	**33.0**	**39.7**	**46.1**	**49.3**	**55.8**	**59.0**	**62.2**	**65.4**
	PF		0.950	1.000	0.999	1.000	0.999	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW		3.9	8.7	10.4	16.8	21.8	25.0	28.2	31.4	37.7	43.8	46.9	53.0	56.1	59.1	62.1
	MVAr		1.3	0.0	0.4	0.5	0.8	8.2	9.3	10.3	12.4	14.4	15.4	17.4	18.4	19.4	20.4
50% POE	**MVA**		**4.1**	**8.7**	**10.4**	**16.8**	**21.8**	**26.3**	**29.7**	**33.0**	**39.7**	**46.1**	**49.3**	**55.8**	**59.0**	**62.2**	**65.4**
	PF		0.950	1.000	0.999	1.000	0.999	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**	**11.9**	**22.8**	**27.0**	**39.9**	**32.1**	**34.2**										
Oran Park	MW	11.8	22.4	26.6	39.2	31.5	33.9	41.9	51.3	58.1	64.0	71.1	77.9	85.4	94.9	101.5	108.7
	MVAr	1.8	4.2	4.8	7.7	5.8	4.4	13.8	16.8	19.1	21.0	23.4	25.6	28.1	31.2	33.3	35.7
10% POE	**MVA**	**11.9**	**22.8**	**27.0**	**39.9**	**32.1**	**34.2**	**44.1**	**53.9**	**61.1**	**67.3**	**74.8**	**82.0**	**89.9**	**99.9**	**106.8**	**114.4**
	PF	0.989	0.983	0.984	0.981	0.984	0.992	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
	MW	11.8	22.4	26.6	39.2	31.5	33.9	41.9	51.3	58.1	64.0	71.1	77.9	85.4	94.9	101.5	108.7
	MVAr	1.8	4.2	4.8	7.7	5.8	4.4	13.8	16.8	19.1	21.0	23.4	25.6	28.1	31.2	33.3	35.7
50% POE	**MVA**	**11.9**	**22.8**	**27.0**	**39.9**	**32.1**	**34.2**	**44.1**	**53.9**	**61.1**	**67.3**	**74.8**	**82.0**	**89.9**	**99.9**	**106.8**	**114.4**
	PF	0.989	0.983	0.984	0.981	0.984	0.992	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**				**5.9**	**6.5**	**3.6**										
North Leppington	MW				5.7	6.5	3.5	7.6	13.2	16.5	21.1	28.2	34.2	39.0	43.6	47.4	50.8
	MVAr				1.5	0.9	0.7	2.5	4.3	5.4	6.9	9.3	11.2	12.8	14.3	15.6	16.7
10% POE	**MVA**				**5.9**	**6.5**	**3.6**	**8.0**	**13.8**	**17.4**	**22.2**	**29.7**	**36.0**	**41.1**	**45.8**	**49.9**	**53.5**
	PF				0.965	0.990	0.980	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
	MW				5.7	6.5	3.5	7.6	13.2	16.5	21.1	28.2	34.2	39.0	43.6	47.4	50.8
	MVAr				1.5	0.9	0.7	2.5	4.3	5.4	6.9	9.3	11.2	12.8	14.3	15.6	16.7
50% POE	**MVA**				**5.9**	**6.5**	**3.6**	**8.0**	**13.8**	**17.4**	**22.2**	**29.7**	**36.0**	**41.1**	**45.8**	**49.9**	**53.5**
	PF				0.965	0.990	0.980	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**	**6.0**	**8.8**	**10.0**	**13.8**	**16.2**	**16.7**										
South Leppington	MW	5.8	8.7	9.8	13.6	16.0	16.7	20.0	22.2	24.6	26.9	29.4	32.0	34.6	37.3	40.4	43.3
	MVAr	1.4	1.5	1.7	2.2	2.5	1.6	1.9	2.1	2.3	2.6	2.8	3.0	3.3	3.5	3.8	4.1
10% POE	**MVA**	**6.0**	**8.8**	**10.0**	**13.8**	**16.2**	**16.7**	**20.1**	**22.3**	**24.8**	**27.0**	**29.5**	**32.1**	**34.7**	**37.5**	**40.6**	**43.5**
	PF	0.974	0.986	0.985	0.987	0.988	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	5.8	8.7	9.8	13.6	16.0	16.7	20.0	22.2	24.6	26.9	29.4	32.0	34.6	37.3	40.4	43.3
	MVAr	1.4	1.5	1.7	2.2	2.5	1.6	1.9	2.1	2.3	2.6	2.8	3.0	3.3	3.5	3.8	4.1
50% POE	**MVA**	**6.0**	**8.8**	**10.0**	**13.8**	**16.2**	**16.7**	**20.1**	**22.3**	**24.8**	**27.0**	**29.5**	**32.1**	**34.7**	**37.5**	**40.6**	**43.5**
	PF	0.974	0.986	0.985	0.987	0.988	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	**MVA**																
South West Sector	MW													0.1	0.3	0.8	1.4
	MVAr													0.0	0.2	0.4	0.7
10% POE	**MVA**													**0.1**	**0.4**	**0.9**	**1.5**
	PF													0.900	0.900	0.900	0.900
	MW													0.1	0.3	0.8	1.4
	MVAr													0.0	0.2	0.4	0.7
50% POE	**MVA**													**0.1**	**0.4**	**0.9**	**1.5**
	PF													0.900	0.900	0.900	0.900
Actual	**MVA**					**12.0**	**11.2**										
Bringelly	MW					13.2	13.6	17.9	20.7	23.0	24.0	29.8	36.0	42.3	50.4	59.0	67.4
	MVAr					4.0	4.2	5.9	6.8	7.5	7.9	9.8	11.8	13.9	16.6	19.4	22.2
10% POE	**MVA**					**13.8**	**14.2**	**18.9**	**21.8**	**24.2**	**25.2**	**31.4**	**37.9**	**44.6**	**53.0**	**62.1**	**71.0**
	PF					0.957	0.956	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
	MW					11.9	12.3	16.6	19.4	21.7	22.6	28.5	34.7	41.0	49.1	57.8	66.2
	MVAr					3.6	3.8	5.5	6.4	7.1	7.4	9.4	11.4	13.5	16.1	19.0	21.8
50% POE	**MVA**					**12.4**	**12.8**	**17.5**	**20.4**	**22.8**	**23.8**	**30.0**	**36.5**	**43.2**	**51.7**	**60.8**	**69.7**
	PF					0.957	0.956	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**	**17.9**	**35.7**	**45.7**	**70.1**	**83.6**	**87.5**										
Undiversified	MW	17.6	35.0	45.1	68.9	84.0	89.5	112.4	135.4	153.6	173.6	202.3	226.9	254.4	282.6	308.2	333.7
	MVAr	3.1	7.0	6.5	11.9	13.6	11.7	32.3	39.3	44.7	50.8	59.6	67.1	75.5	84.2	92.0	99.8
10% POE	**MVA**	**17.9**	**35.7**	**45.7**	**70.1**	**85.4**	**90.5**	**117.4**	**141.5**	**160.5**	**181.4**	**211.6**	**237.3**	**266.1**	**295.7**	**322.5**	**349.3**
	PF	0.984	0.980	0.987	0.984	0.984	0.988	0.958	0.957	0.957	0.957	0.956	0.956	0.956	0.956	0.956	0.955
	MW	17.6	35.0	45.1	68.9	82.7	88.1	111.1	134.1	152.3	172.3	201.0	225.6	253.1	281.3	306.9	332.5
	MVAr	3.1	7.0	6.5	11.9	13.2	11.3	31.8	38.9	44.3	50.3	59.2	66.7	75.1	83.8	91.5	99.4
50% POE	**MVA**	**17.9**	**35.7**	**45.7**	**70.1**	**84.0**	**89.2**	**116.0**	**140.1**	**159.1**	**180.0**	**210.2**	**235.9**	**264.8**	**294.3**	**321.1**	**348.0**
	PF	0.984	0.980	0.987	0.984	0.984	0.989	0.958	0.957	0.957	0.957	0.956	0.956	0.956	0.956	0.956	0.955

5.20 Mount Druitt STS Demand Forecast

Discussion

Mount Druitt STS has three 120 MVA 132/33kV transformers providing a firm capacity of 240MVA. Mount Druitt STS supplies Plumpton, Werrington, Claremont Meadows, Whalan, St Marys and Horsley Park zone substations.

The main load growth within the Mount Druitt STS supply area is within the Caddens release area. The Caddens release area is to be supplied by Claremont Meadows ZS. Proposed industrial development in the Horsley Park and Oakdale precincts will see increasing demand on Horsley Park ZS. There is a current application for supply to a 25MVA data centre from Feeder 489.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Mt Druitt	3 x 120	360
Claremont Meadows	3 x 25	75
Horsley Park	2 x 15/17.5/25	50
Plumpton	3 x 15/19/25	75
St Marys	3 x 25	75
Werrington	3 x 22/35	105
Whalan	3 x 25	75

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2026	Cambridge_Park	Penrith	Claremont_Meadows	Mount_Druitt	0.57
2023	Huntingwood	Sydney_West_132kV	Whalan	Mount_Druitt	0.50
2024	Mamre	Sydney_West_132kV	St_Marys	Mount_Druitt	0.66
2025	St_Marys	Mount_Druitt	Mamre	Sydney_West_132kV	0.30

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Claremont_Meadows	DBL2529 Construction supply Metro Western Orchard Hills	2023	5.40	2.62	6.00
Claremont_Meadows	DBL2529 Construction supply Metro Western Orchard Hills	2026	-5.40	2.62	-6.00
Claremont_Meadows	DBL2529 Construction supply of Metro Western Orchard Hills	2023	5.40	2.62	6.00
Claremont_Meadows	DBL2529 Construction supply of Metro Western Orchard Hills	2026	-5.40	2.62	-6.00
Claremont_Meadows	DBL2558 1017 Gipps Street CLAREMONT MEADOWS	2023	0.58	0.28	0.64
Claremont_Meadows	DBL2634 Sydney Metro Kent Rd Orchard Hill Construction	2023	0.96	0.20	0.98
Claremont_Meadows	NCL1601 Supply to a dog tranining centre - Austin Pl, Orchard Hills	2023	0.14	0.07	0.16
Claremont_Meadows	UIL5907 Industrial units Tennant Rd, Werrington	2023	0.27	0.13	0.30
Claremont_Meadows	ULL2750 Additional load swimming centre	2023	0.33	0.07	0.33
Claremont_Meadows	ULL3222 Kingswood TAFE O'Connel St, Caddens	2023	0.69	0.34	0.77
Claremont_Meadows	ULL3274 Gipps St Recreation centre	2023	0.25	0.05	0.25
Claremont_Meadows	URS23495 Stage 1A Chapman St, Werrington	2023	0.32	0.16	0.36
Claremont_Meadows	URS23496 Stage 1B Chapman St, Werrington	2023	0.25	0.12	0.28
Horsley_Park	UCL10950 Battery should charge offpeak load montiorign	2024	0.00	0.00	0.00
Plumpton	UCL11258 Uprate Ple sub for 90kVA	2024	0.06	0.01	0.06
St_Marys	DBL2557 Construction supply for Metro Western, Orchard Hills	2023	0.41	0.20	0.45
St_Marys	MHN04953 PR812 Sydney Metro SS Auxilliary Supply (Patons Lane Orchard Hills)	2024	0.15	0.03	0.15
St_Marys	UCL10548 John Hines ave with 80% div	2024	0.54	0.26	0.60
St_Marys	UIL5237 Archbold Rd, Eastern Creek (60%) diversity	2023	0.78	0.38	0.87
St_Marys	UIL5481 Additional load for ALDI Sargents Rd, Minchinbury	2023	0.54	0.26	0.60
St_Marys	UIL6099 Sterling Rd industrial Possible link to 3801	2023	0.39	0.08	0.40
St_Marys	UIL6102 Sterling Rd (60% utilisation)	2024	0.18	0.04	0.18
Werrington	DBL2555 Construction supply Metro Western, St Marys	2023	3.24	1.57	3.60
Werrington	DBL2555 Construction supply Metro Western, St Marys	2026	-3.24	1.57	-3.60
Werrington	NUL0654 Links Rd, St Marys	2023	0.61	0.29	0.67
Werrington	UCL19714 4 Apia pl telstra load (60% diversity)	2023	0.05	0.02	0.05
Werrington	UIL5628 Freight centre - Forrester Rd, St Marys	2023	0.43	0.21	0.48
Werrington	UIL5800 Increase of load on HVC 20180 Forrester Rd, St Marys	2023	5.04	2.44	5.60
Werrington	UIS0874 Industrial estate 25/m2 - ropes crossing rd	2024	0.56	0.11	0.57
Werrington	UML9783 Glossop St, St Marys	2023	0.10	0.05	0.11
Werrington	UML9936 12 units - Glossop St, St Mary's	2023	0.04	0.01	0.04
Werrington	UUL1851 Forrester Rd, Ropes Crosing - Sydney Water	2023	0.09	0.04	0.10
Whalan	UCL10025 Memphis st mt druitt	2024	0.10	0.05	0.11
Whalan	UIL6162 Sterling Rd with switching (no Div)	2023	0.53	0.11	0.54
Whalan	UML5535 272 2 Ayres grove Mt druitt	2024	0.18	0.09	0.20

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Claremont_Meadows	ENL3001 Orchard Hills development	2024	10	10.52
Claremont_Meadows	ENL3045 74 residential units + 6,500m2 of commercial/medical space (MVA diff added to com)	2023	2	0.84
Claremont_Meadows	ENL4196 (1 of 2) Metro West Orchard Hills mixed development	2025	3	2.702
Claremont_Meadows	ENL4196 (2 of 2) Metro West Orchard Hills mixed development	2025	3	2.862
Claremont_Meadows	URS19779 O'Connell St, Caddens	2021	3	0.4212
Claremont_Meadows	URS21170 Caddens St, Caddens	2021	3	0.24
Claremont_Meadows	URS21362 Kent Rd, Claremont Meadows	2021	3	0.31
Horsley_Park	ENL4209-1 Fraser Key Hole Estate Horsley Park	2024	2	4.50
Horsley_Park	ENL4209-2 Fraser Key Hole Estate Horsley Park	2024	2	4.50
Horsley_Park	UIL5828 Momentum M7 Industrial Estate Horsley Park - HVC	2024	2	6.20
Werrington	Department of planning info	2021	5	2.24
Werrington	ENL2986 Chesham St, St Marys	2021	3	0.34
Werrington	ENL4197 (Option 1 of 2) Metro Precinct - St Marys	2025	3	4.6
Werrington	UML7911 Block of 289 residential units - Carson Ln, St Marys	2023	3	0.95
Werrington	UML8963 31 residential & 3 commercial units	2021	2	0.21
Werrington	UML9370 Multiunit res. development - Phillip St, St Marys	2022	2	0.15
Werrington	UML9397 35 residential units, Parklawn Pl St Marys	2022	2	0.12

Generation

Substation	Name	Description	Date
Mount Druitt	LMS Generation	8x1.35MW - East Wallgrove (Co-gen plant eastern creek waste management centre)	Installed

Mount Druitt STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**30.3**	**25.2**	**26.5**	**27.3**	**23.7**	**22.8**										
Claremont Meadows	MW	30.2	25.2	26.5	26.8	23.7	22.8	35.2	35.2	36.3	29.4	31.3	32.6	34.1	35.2	36.0	36.6
	MVAr	2.5	1.9	2.6	4.8	1.2	0.4	3.7	3.7	3.8	3.1	3.3	3.4	3.6	3.7	3.8	3.9
10% POE	**MVA**	**30.3**	**25.2**	**26.6**	**27.3**	**23.7**	**22.8**	**35.4**	**35.4**	**36.5**	**29.6**	**31.4**	**32.8**	**34.3**	**35.4**	**36.2**	**36.8**
	PF	0.997	0.997	0.995	0.984	0.999	1.000	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	30.2	25.2	26.5	26.8	23.7	22.8	35.2	35.2	36.3	29.4	31.3	32.6	34.1	35.2	36.0	36.6
	MVAr	2.5	1.9	2.6	4.8	1.2	0.4	3.7	3.7	3.8	3.1	3.3	3.4	3.6	3.7	3.8	3.9
50% POE	**MVA**	**30.3**	**25.2**	**26.6**	**27.3**	**23.7**	**22.8**	**35.4**	**35.4**	**36.5**	**29.6**	**31.4**	**32.8**	**34.3**	**35.4**	**36.2**	**36.8**
	PF	0.997	0.997	0.995	0.984	0.999	1.000	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**10.3**	**10.4**	**9.1**	**8.9**	**7.6**	**7.1**										
Horsley Park	MW	9.6	9.4	9.3	9.1	8.6	8.4	8.3	14.2	20.1	20.0	20.0	20.0	20.1	20.1	20.2	20.2
	MVAr	1.3	2.0	2.6	2.4	2.9	2.4	2.2	3.7	5.3	5.2	5.2	5.2	5.3	5.3	5.3	5.3
10% POE	**MVA**	**9.7**	**9.6**	**9.7**	**9.4**	**9.1**	**8.7**	**8.6**	**14.7**	**20.7**	**20.7**	**20.7**	**20.7**	**20.7**	**20.8**	**20.8**	**20.9**
	PF	0.990	0.977	0.963	0.967	0.947	0.961	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
	MW	8.9	8.7	8.3	8.2	7.7	7.6	7.5	13.4	19.2	19.2	19.2	19.2	19.3	19.3	19.4	19.4
	MVAr	1.3	1.9	2.3	2.2	2.6	2.2	2.0	3.5	5.0	5.0	5.0	5.0	5.0	5.1	5.1	5.1
50% POE	**MVA**	**9.0**	**8.9**	**8.6**	**8.5**	**8.1**	**7.9**	**7.8**	**13.8**	**19.9**	**19.8**	**19.8**	**19.9**	**19.9**	**20.0**	**20.0**	**20.1**
	PF	0.990	0.977	0.963	0.967	0.947	0.961	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
Actual	**MVA**	**36.1**	**34.2**	**34.9**	**36.8**	**31.4**	**29.1**										
Plumpton	MW	34.1	34.7	38.6	35.4	35.8	37.1	36.3	35.6	35.3	34.5	34.3	34.3	34.6	34.8	35.2	35.6
	MVAr	8.9	3.8	8.9	6.3	4.6	3.2	3.1	3.0	3.0	2.9	2.9	2.9	2.9	3.0	3.0	3.0
10% POE	**MVA**	**35.2**	**34.9**	**39.6**	**35.9**	**36.1**	**37.3**	**36.4**	**35.7**	**35.4**	**34.6**	**34.4**	**34.4**	**34.7**	**34.9**	**35.3**	**35.8**
	PF	0.967	0.994	0.974	0.984	0.992	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	30.5	31.1	34.5	31.3	31.9	33.2	32.4	31.7	31.4	30.6	30.5	30.5	30.8	31.0	31.4	31.8
	MVAr	8.0	3.4	8.0	5.6	4.1	2.8	2.8	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.7	2.7
50% POE	**MVA**	**31.5**	**31.2**	**35.4**	**31.8**	**32.2**	**33.4**	**32.5**	**31.9**	**31.6**	**30.8**	**30.6**	**30.6**	**30.9**	**31.1**	**31.5**	**31.9**
	PF	0.967	0.994	0.974	0.984	0.992	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	**MVA**	**7.3**	**7.2**	**6.9**	**7.3**	**7.4**	**7.0**										
Simsmetal	MW	6.6	6.5	6.2	6.5	6.7	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
	MVAr	3.0	3.1	2.9	3.2	3.1	2.7	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
10% POE	**MVA**	**7.3**	**7.2**	**6.9**	**7.3**	**7.4**	**7.0**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**
	PF	0.911	0.901	0.907	0.896	0.909	0.920	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Major customer	MW	6.6	6.5	6.2	6.5	6.7	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
	MVAr	3.0	3.1	2.9	3.2	3.1	2.7	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
50% POE	**MVA**	**7.3**	**7.2**	**6.9**	**7.3**	**7.4**	**7.0**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**
	PF	0.911	0.901	0.907	0.896	0.909	0.920	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Actual	**MVA**	**35.7**	**32.5**	**32.1**	**33.8**	**29.2**	**27.0**										
St Marys	MW	35.6	33.0	35.5	33.7	29.1	27.0	28.8	29.0	28.7	28.0	27.7	27.6	27.7	27.8	28.0	28.2
	MVAr	3.5	2.0	2.3	1.4	2.4	1.2	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0
10% POE	**MVA**	**35.8**	**33.1**	**35.5**	**33.8**	**29.2**	**27.0**	**28.9**	**29.0**	**28.7**	**28.0**	**27.7**	**27.6**	**27.8**	**27.8**	**28.0**	**28.2**
	PF	0.995	0.998	0.998	0.999	0.997	0.999	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
	MW	31.9	30.1	32.4	33.7	29.1	27.0	28.8	29.0	28.7	28.0	27.7	27.6	27.7	27.8	28.0	28.2
	MVAr	3.2	1.9	2.1	1.4	2.4	1.2	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0
50% POE	**MVA**	**32.1**	**30.2**	**32.4**	**33.8**	**29.2**	**27.0**	**28.9**	**29.0**	**28.7**	**28.0**	**27.7**	**27.6**	**27.8**	**27.8**	**28.0**	**28.2**
	PF	0.995	0.998	0.998	0.999	0.997	0.999	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
Actual	**MVA**	**37.1**	**37.1**	**36.4**	**35.3**	**33.4**	**34.7**										
Werrington	MW	38.5	36.5	38.7	37.3	37.6	37.0	45.6	46.1	46.8	45.1	45.5	45.3	45.3	45.2	45.5	45.7
	MVAr	3.0	9.3	1.3	0.0	2.7	2.6	2.4	2.4	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4
10% POE	**MVA**	**38.6**	**37.7**	**38.7**	**37.3**	**37.7**	**37.1**	**45.7**	**46.2**	**46.8**	**45.2**	**45.6**	**45.4**	**45.3**	**45.3**	**45.5**	**45.8**
	PF	0.997	0.969	0.999	1.000	0.997	0.998	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	35.4	34.0	36.0	34.2	34.7	34.1	42.7	43.3	43.9	42.3	42.6	42.4	42.4	42.5	42.8	43.0
	MVAr	2.8	8.6	1.2	0.0	2.5	2.4	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3
50% POE	**MVA**	**35.5**	**35.1**	**36.1**	**34.2**	**34.8**	**34.2**	**42.8**	**43.3**	**44.0**	**42.3**	**42.7**	**42.5**	**42.5**	**42.6**	**42.8**	**43.1**
	PF	0.997	0.969	0.999	1.000	0.997	0.998	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Actual	**MVA**	**32.8**	**29.7**	**30.2**	**30.0**	**27.4**	**25.1**										
Whalan	MW	32.9	32.3	33.1	31.3	31.3	30.7	31.1	30.9	30.8	30.2	30.0	29.8	29.7	29.5	29.5	29.4
	MVAr	6.7	2.9	2.1	1.8	0.3	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4
10% POE	**MVA**	**33.6**	**32.4**	**33.2**	**31.4**	**31.3**	**30.7**	**31.2**	**31.0**	**30.8**	**30.3**	**30.0**	**29.8**	**29.7**	**29.6**	**29.5**	**29.4**
	PF	0.980	0.996	0.998	0.998	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	29.9	29.4	30.0	28.2	28.2	27.7	28.1	27.9	27.8	27.2	27.0	26.8	26.7	26.5	26.5	26.4
	MVAr	6.1	2.7	1.9	1.6	0.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
50% POE	**MVA**	**30.5**	**29.5**	**30.1**	**28.2**	**28.2**	**27.7**	**28.1**	**28.0**	**27.8**	**27.3**	**27.0**	**26.8**	**26.7**	**26.6**	**26.5**	**26.4**
	PF	0.980	0.996	0.998	0.998	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**189.5**	**176.3**	**175.9**	**179.2**	**160.1**	**152.8**										
Undiversified	MW	187.6	177.6	187.9	180.2	172.8	169.4	191.9	197.5	204.3	193.7	195.2	196.1	197.8	199.1	200.8	202.2
	MVAr	29.0	25.1	22.8	20.0	17.2	14.0	17.9	19.4	21.0	20.0	20.2	20.3	20.5	20.6	20.8	20.9
10% POE	**MVA**	**190.5**	**180.1**	**190.2**	**182.4**	**174.4**	**170.6**	**193.3**	**199.1**	**206.2**	**195.5**	**197.0**	**197.9**	**199.6**	**200.9**	**202.6**	**204.0**
	PF	0.985	0.986	0.988	0.988	0.990	0.993	0.993	0.992	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991
	MW	173.4	164.9	173.9	169.0	162.0	158.8	181.3	186.9	193.8	183.2	184.7	185.6	187.3	188.7	190.5	191.9
	MVAr	26.7	23.5	21.1	18.8	16.2	13.1	17.0	18.5	20.2	19.2	19.4	19.5	19.7	19.8	20.0	20.1
50% POE	**MVA**	**176.2**	**167.3**	**176.0**	**171.0**	**163.6**	**160.0**	**182.7**	**188.5**	**195.5**	**184.9**	**186.4**	**187.3**	**189.1**	**190.5**	**192.2**	**193.7**
	PF	0.984	0.985	0.988	0.988	0.990	0.993	0.992	0.992	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991
Actual	**MVA**	**150.7**	**149.0**	**154.6**	**156.3**	**129.9**	**141.3**										
Diversified*	MW	156.4	134.5	137.3	148.5	145.3	154.7	175.2	180.3	186.6	176.9	178.2	179.1	180.6	181.8	183.4	184.6
(Meter)	MVAr	5.8	8.7	16.3	13.4	4.8	6.6	12.5	12.9	13.3	12.6	12.7	12.8	12.9	13.0	13.1	13.2
10% POE	**MVA**	**156.5**	**134.8**	**138.3**	**149.1**	**145.4**	**154.8**	**175.7**	**180.8**	**187.1**	**177.4**	**178.7**	**179.5**	**181.1**	**182.3**	**183.8**	**185.1**
	PF	0.999	0.998	0.993	0.996	0.999	0.999	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
	MW	144.0	123.7	125.1	132.3	130.4	139.7	159.5	164.4	170.4	161.1	162.4	163.2	164.7	166.0	167.5	168.8
	MVAr	5.4	8.0	14.8	11.9	4.3	6.0	11.4	11.7	12.2	11.5	11.6	11.7	11.8	11.9	12.0	12.1
50% POE	**MVA**	**144.1**	**124.0**	**126.0**	**132.8**	**130.4**	**139.8**	**159.9**	**164.8**	**170.9**	**161.5**	**162.9**	**163.6**	**165.2**	**166.4**	**167.9**	**169.2**
	PF	0.999	0.998	0.993	0.996	0.999	0.999	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
Actual	**MVA**	**7.7**	**7.5**	**6.9**	**6.6**	**6.2**	**5.5**										
LMS East Wallgrove	MW	7.5	7.5	6.8	6.5	6.1	5.4										
	MVAr	1.6	0.0	1.2	1.1	1.1	1.1										
Generation	**MVA**	**7.7**	**7.5**	**6.9**	**6.6**	**6.2**	**5.5**										
	PF	0.978	1.000	0.985	0.986	0.985	0.978										

5.21 Mount Piper 66kV Demand Forecast

Discussion

Mount Piper BSP is owned by TransGrid and has two 120MVA 132/66/11kV transformers. Mount Piper supplies Blackmans Flat and Hartle Vale Endeavour Energy owned zone substations, as well as number of customer substations serving mining operations.

Work at Angus Place Colliery HVC15934 is slowing down, and load is expected to reduce to 3 MVA. Baal Bone colliery HVC16551 is in caretaker mode. Invincible Colliery HVC29808 is also slowing down since 2013 and is expected to reduce load going forward. Charbon Colliery HVC15943 near Kandos has ceased underground mining activities.

Recently Sand Mine Clarence applied for 1MVA of load. Airly Colliery has applied for load increase of 5.4MVA. Angus Place East Colliery is looking to expand its operations in the near future.

Rating Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Mt Piper 132/66	2 x 120	240
Blackmans Flat	2 x 10	20
Hartley Vale	2 x 2.5	5

Proposed Load Transfers

No Proposed Load Transfers at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Blackmans_Flat	NCL1685 Wolgan Rd, Lidsdale	2023	0.02	0.01	0.02
Blackmans_Flat	NIL0308 Castlereagh Hwy, Wallerawang	2025	3.02	1.46	3.36
Sand_Mine_Clarence	NIL0303 Sand Mine Clarence	2023	0.90	0.44	1.00

Planned Lot Releases & Redevelopment

No Lot Releases Proposed at this location

Generation

No Generation known at this location

Mount Piper 66kV Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**2.3**	**3.1**	**2.7**	**3.7**	**4.0**	**3.8**										
Airly Colliery	MW	2.3	2.8	2.7	3.6	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
	MVAr	0.4	1.3	0.5	1.0	1.9	1.1	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
10% POE	**MVA**	**2.3**	**3.1**	**2.7**	**3.7**	**4.0**	**3.9**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**
	PF	0.986	0.902	0.985	0.961	0.880	0.962	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Major customer – HVC 27401	MW	2.3	2.8	2.7	3.6	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
	MVAr	0.4	1.3	0.5	1.0	1.9	1.1	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
50% POE	**MVA**	**2.3**	**3.1**	**2.7**	**3.7**	**4.0**	**3.9**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**
	PF	0.986	0.902	0.985	0.961	0.880	0.962	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921
Actual	**MVA**	**2.7**	**2.0**	**3.3**	**2.9**	**2.3**	**2.6**										
Angus Place Colliery	MW	2.2	1.7	2.9	2.7	2.0	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	MVAr	1.5	1.2	1.7	1.0	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
10% POE	**MVA**	**2.7**	**2.0**	**3.4**	**2.9**	**2.3**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**
	PF	0.825	0.825	0.864	0.937	0.861	0.862	0.862	0.862	0.862	0.862	0.862	0.862	0.862	0.862	0.862	0.862
Major customer - HVC 15934	MW	2.2	1.7	2.9	2.7	2.0	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	MVAr	1.5	1.2	1.7	1.0	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
50% POE	**MVA**	**2.7**	**2.0**	**3.4**	**2.9**	**2.3**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**
	PF	0.825	0.825	0.864	0.937	0.861	0.862	0.862	0.862	0.862	0.862	0.862	0.862	0.862	0.862	0.862	0.862
Actual	**MVA**	**0.7**	**0.8**	**0.8**	**1.8**	**1.6**	**2.0**										
Angus Place East	MW	0.2	0.0	0.0	1.8	1.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	MVAr	0.7	0.8	1.2	0.1	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
10% POE	**MVA**	**0.7**	**0.8**	**1.2**	**1.8**	**1.6**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**
	PF	0.230	0.060	0.037	0.998	0.965	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986
Major customer – HVC 32342	MW	0.2	0.0	0.0	1.8	1.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	MVAr	0.7	0.8	1.2	0.1	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
50% POE	**MVA**	**0.7**	**0.8**	**1.2**	**1.8**	**1.6**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**
	PF	0.230	0.060	0.037	0.998	0.965	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986
Actual	**MVA**	**1.1**	**1.0**	**1.0**	**0.8**	**0.1**	**3.9**										
Baal Bone	MW	0.8	0.7	0.7	0.5	0.1	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
	MVAr	0.9	0.7	0.8	0.6	0.1	1.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
10% POE	**MVA**	**1.2**	**1.0**	**1.1**	**0.8**	**0.1**	**3.9**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**
	PF	0.690	0.713	0.680	0.640	0.566	0.951	0.707	0.707	0.707	0.707	0.707	0.707	0.707	0.707	0.707	0.707
Major customer – HVC 16551	MW	0.8	0.7	0.7	0.5	0.1	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
	MVAr	0.9	0.7	0.8	0.6	0.1	1.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
50% POE	**MVA**	**1.2**	**1.0**	**1.1**	**0.8**	**0.1**	**3.9**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**	**5.2**
	PF	0.690	0.713	0.680	0.640	0.566	0.951	0.707	0.707	0.707	0.707	0.707	0.707	0.707	0.707	0.707	0.707
Actual	**MVA**	**4.8**	**5.0**	**5.2**	**5.5**	**3.9**	**5.0**										
Blackmans Flat	MW	4.6	4.8	5.1	5.4	3.7	5.0	5.0	5.0	7.7	7.7	7.7	7.7	7.8	7.9	8.0	8.1
	MVAr	1.3	1.3	1.2	1.2	1.2	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
10% POE	**MVA**	**4.8**	**5.0**	**5.2**	**5.5**	**3.9**	**5.0**	**5.0**	**5.0**	**7.7**	**7.7**	**7.7**	**7.8**	**7.8**	**7.9**	**8.0**	**8.1**
	PF	0.963	0.964	0.971	0.975	0.950	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
	MW	4.6	4.8	5.1	5.4	3.7	5.0	5.0	5.0	7.7	7.7	7.7	7.7	7.8	7.9	8.0	8.1
	MVAr	1.3	1.3	1.2	1.2	1.2	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
50% POE	**MVA**	**4.8**	**5.0**	**5.2**	**5.5**	**3.9**	**5.0**	**5.0**	**5.0**	**7.7**	**7.7**	**7.7**	**7.8**	**7.8**	**7.9**	**8.0**	**8.1**
	PF	0.963	0.964	0.971	0.975	0.950	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
Actual	**MVA**	**10.1**	**11.0**	**9.7**	**11.3**	**10.5**	**11.2**										
Clarence Colliery	MW	9.6	10.2	9.3	9.7	9.3	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
	MVAr	3.4	3.9	3.0	5.8	5.0	5.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
10% POE	**MVA**	**10.1**	**11.0**	**9.8**	**11.3**	**10.5**	**11.2**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**
	PF	0.944	0.933	0.950	0.857	0.883	0.872	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906
Major customer – HVC 15935	MW	9.6	10.2	9.3	9.7	9.3	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
	MVAr	3.4	3.9	3.0	5.8	5.0	5.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
50% POE	**MVA**	**10.1**	**11.0**	**9.8**	**11.3**	**10.5**	**11.2**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**
	PF	0.944	0.933	0.950	0.857	0.883	0.872	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**0.6**	**0.5**	**1.3**	**1.3**	**1.4**	**1.1**										
Hartley Vale	MW	0.6	0.5	1.3	1.2	1.4	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	MVAr	0.0	0.3	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
10% POE	**MVA**	**0.6**	**0.6**	**1.3**	**1.3**	**1.4**	**1.1**	**1.2**	**1.2**	**1.2**	**1.2**	**1.1**	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
	PF	0.998	0.793	0.994	0.995	0.997	0.995	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
	MW	0.6	0.5	1.3	1.2	1.4	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	MVAr	0.0	0.3	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
50% POE	**MVA**	**0.6**	**0.6**	**1.3**	**1.3**	**1.4**	**1.1**	**1.2**	**1.2**	**1.2**	**1.2**	**1.1**	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
	PF	0.998	0.793	0.994	0.995	0.997	0.995	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
Actual	**MVA**	**1.7**	**1.8**	**1.8**	**2.2**												
Springvale Borehole	MW	1.5	1.8	1.7	2.0												
	MVAr	0.7	0.5	0.5	0.8												
10% POE	**MVA**	**1.7**	**1.8**	**1.8**	**2.2**												
	PF	0.899	0.965	0.966	0.930												
Major customer – HVC 18994	MW	1.5	1.8	1.7	2.0												
	MVAr	0.7	0.5	0.5	0.8												
50% POE	**MVA**	**1.7**	**1.8**	**1.8**	**2.2**												
	PF	0.899	0.965	0.966	0.930												
Actual	**MVA**	**10.2**	**10.6**	**10.6**	**10.4**	**10.3**	**21.3**										
Springvale Shaft #3	MW	8.7	9.3	9.5	9.1	9.0	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3
	MVAr	5.9	5.1	4.8	5.2	5.8	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
10% POE	**MVA**	**10.5**	**10.6**	**10.6**	**10.4**	**10.7**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**
	PF	0.828	0.878	0.892	0.870	0.842	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
Major customer – HVC 23163	MW	8.7	9.3	9.5	9.1	9.0	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3
	MVAr	5.9	5.1	4.8	5.2	5.8	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
50% POE	**MVA**	**10.5**	**10.6**	**10.6**	**10.4**	**10.7**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**
	PF	0.828	0.878	0.892	0.870	0.842	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
Actual	**MVA**																
Sand_Mine_Clarence	MW							0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	MVAr							0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
10% POE	**MVA**							**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**
	PF							0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Major customer	MW							0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	MVAr							0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
50% POE	**MVA**							**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**
	PF							0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Actual	**MVA**	**34.2**	**35.8**	**36.4**	**39.9**	**34.2**	**50.9**										
Undiversified	MW	30.4	31.9	33.2	36.0	30.5	47.8	48.5	48.5	51.2	51.1	51.2	51.2	51.3	51.4	51.5	51.6
	MVAr	14.7	15.2	13.8	15.9	15.6	16.1	18.8	18.8	19.0	18.9	18.9	19.0	19.0	19.0	19.0	19.0
10% POE	**MVA**	**34.6**	**36.0**	**37.0**	**39.9**	**34.6**	**50.9**	**52.8**	**52.8**	**55.5**	**55.5**	**55.5**	**55.5**	**55.6**	**55.7**	**55.8**	**55.9**
	PF	0.881	0.885	0.896	0.902	0.883	0.939	0.918	0.918	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.923
	MW	30.4	31.9	33.2	36.0	30.5	47.8	48.5	48.5	51.2	51.1	51.2	51.2	51.3	51.4	51.5	51.6
	MVAr	14.7	15.2	13.8	15.9	15.6	16.1	18.8	18.8	19.0	18.9	18.9	19.0	19.0	19.0	19.0	19.0
50% POE	**MVA**	**34.6**	**36.0**	**37.0**	**39.9**	**34.6**	**50.9**	**52.8**	**52.8**	**55.5**	**55.5**	**55.5**	**55.5**	**55.6**	**55.7**	**55.8**	**55.9**
	PF	0.881	0.885	0.896	0.902	0.883	0.939	0.918	0.918	0.922	0.922	0.922	0.922	0.922	0.922	0.922	0.923
Actual	**MVA**	**28.4**	**32.1**	**32.8**	**30.0**	**31.4**	**28.3**										
Diversified (Meter)	MW	26.7	30.6	31.2	28.4	29.9	27.1	41.3	41.3	43.6	43.6	43.6	43.6	43.7	43.8	43.9	44.0
	MVAr	9.7	9.9	10.2	9.8	9.8	8.1	13.7	13.7	14.5	14.5	14.5	14.5	14.5	14.5	14.6	14.6
10% POE	**MVA**	**28.4**	**32.1**	**32.8**	**30.0**	**31.4**	**28.3**	**43.5**	**43.5**	**45.9**	**45.9**	**45.9**	**46.0**	**46.1**	**46.1**	**46.2**	**46.3**
	PF	0.940	0.951	0.951	0.945	0.950	0.958	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949
	MW	26.7	30.6	31.2	28.4	29.9	27.1	41.3	41.3	43.6	43.6	43.6	43.6	43.7	43.8	43.9	44.0
	MVAr	9.7	9.9	10.2	9.8	9.8	8.1	13.7	13.7	14.5	14.5	14.5	14.5	14.5	14.5	14.6	14.6
50% POE	**MVA**	**28.4**	**32.1**	**32.8**	**30.0**	**31.4**	**28.3**	**43.5**	**43.5**	**45.9**	**45.9**	**45.9**	**46.0**	**46.1**	**46.1**	**46.2**	**46.3**
	PF	0.940	0.951	0.951	0.945	0.950	0.958	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949

5.22 Mount Terry STS Demand Forecast

Discussion

Mount Terry STS has two 120MVA 132/33kV transformers providing a firm capacity of 120 MVA.

The continuation of urban developments in the Albion Park and Calderwood areas (including Tullimbar and Calderwood Valley estates) in addition to developments at Shell Cove Boat Harbour will see a continuation of growth on Mount Terry TS.

The development of Calderwood is proposed to create 5,500 lots over 30 years, with initial development connecting to Albion Park zone substation. A project to establish a Calderwood Mobile ZS has been approved with commissioning expected mid 2022 which will be supplied from the Mt Terry 33kV network.
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Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Albion Park	3 x 12.5	37.5
Calderwood Mobile	Proposed	NA
Gerringong	2 x 5	10
Jamberoo	1 x 3.75	3.75
Kiama	2 x 12.5 + 1 x 15	40
Mount Terry	2 x 120	240
Shellharbour	2 x 20 + 1 x 25	65
Warilla	2 x 10 + 1 x 12.5	32.5

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2024	Albion_Park	Mount_Terry	Calderwood	Mount_Terry	5.10

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Albion_Park	NRL11077 Yellow Rock	2023	0.04	0.02	0.04
Albion_Park	UCL10715 (WLI) Calderwood, Tavern	2023	0.07	0.03	0.08
Albion_Park	UIL6067 Croom, Cleary Bros	2023	0.26	0.12	0.29
Albion_Park	URS21501 Tullimbar, Commercial Load	2023	0.25	0.12	0.28
Calderwood	Calderwood Residential Development	2023	0.85	0.41	0.94
Calderwood	Calderwood Residential Development	2024	0.85	0.41	0.94
Calderwood	Calderwood Residential Development	2025	0.85	0.41	0.94
Calderwood	Calderwood Residential Development	2026	0.85	0.41	0.94
Calderwood	Calderwood Residential Development	2027	0.85	0.41	0.94
Calderwood	Calderwood Residential Development	2028	0.85	0.41	0.94
Calderwood	Calderwood Residential Development	2029	0.85	0.41	0.94
Calderwood	Calderwood Residential Development	2030	1.06	0.51	1.18
Calderwood	Calderwood Residential Development	2031	1.06	0.51	1.18
Gerringong	NRL15138 Kiama Heights, Large Residential Load	2023	0.03	0.01	0.03
Jamberoo	NCL1744 Jerrara, Commercial Load	2023	0.08	0.02	0.08
Kiama	UCL10895 Kiama, 17 Units and Commercial	2023	0.23	0.05	0.23
Kiama	UCL8411 Kiama, 60 Units	2023	0.30	0.14	0.33
Kiama	ULL3373 Dunmore, Shellharbour Hospital (Supply No. 2)	2025	2.17	0.44	2.22
Shellharbour	ARP4763 South Flinders Dunmore	2023	0.00	0.00	0.00
Shellharbour	ARP4973 Shell Cove Boat Harbourt, New FDR	2023	0.00	0.00	0.00
Shellharbour	UCL10272 Oak Flats, Commercial Building	2024	0.38	0.08	0.39
Shellharbour	UCL10670 Shell Cove Boat Harbour, Shell Cove Hotel	2023	0.64	0.31	0.71
Shellharbour	UCL11076 Dunmore, Shellharbour Anglican College	2023	0.26	0.05	0.27
Shellharbour	ULL3373 Dunmore, Shellharbour Hospital (Supply No. 1)	2025	2.17	0.44	2.22
Shellharbour	UML10071 Shellaharbour, Residential & Commercial	2023	0.18	0.04	0.18

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Albion_Park	UIL5809 Albion Park Rail, Industrial Units	2022	3	0.55
Albion_Park	URS18121-1 (WLI) Calderwood, Stage 2B1 - 145 Lots	2018	5	0.68
Albion_Park	URS18121-2 (WLI) Calderwood, Stage 2B2 - 121 Lots	2018	5	0.57
Albion_Park	URS18542 (WLI) Calderwood - Stage 3A1, 126 Lots	2019	5	0.59
Albion_Park	URS18543 (WLI) Calderwood - Stage 3A2, 127 Lots	2019	5	0.60
Albion_Park	URS19245-1 (WLI) Calderwood - Stage 2C, 151 lots	2020	5	0.71
Albion_Park	URS19245-2 (WLI) Calderwood - Stage 3B South, 157 lots	2021	5	0.74
Albion_Park	URS19436 Albion Park, Bella Vista Estate, - 87 Dual Occupancy lots	2019	3	0.70
Albion_Park	URS20846-47 (WLI) Calderwood, 112 lots	2023	2	0.53
Albion_Park	URS20848 (WLI) Calderwood, 29 lots	2023	4	0.14
Albion_Park	URS20988 Tullimbar, Yellow Rock Rd - 31 lots	2021	3	0.15
Albion_Park	URS21096 Tullimbar, 87 lots	2020	3	0.41
Albion_Park	URS21097 Tullimbar, 76 lots	2020	3	0.36
Albion_Park	URS21099 Tullimbar, 50 lots	2021	2	0.24
Albion_Park	URS21384 Tullimbar, 49 lots	2020	3	0.23
Albion_Park	URS21420 Tullimbar, 37 lots	2020	3	0.17
Albion_Park	URS21522 Tullimbar, 16 lots	2021	2	0.08
Albion_Park	URS21579 (WLI) Calderwood, 31 lots	2021	2	0.15
Albion_Park	URS21580 (WLI) Calderwood, 38 lots	2022	2	0.18
Albion_Park	URS21581 (WLI) Calderwood, 67 lots	2022	3	0.31
Albion_Park	URS21582 (WLI) Calderwood, 58 lots	2023	2	0.27
Albion_Park	URS21583 (WLI) Calderwood, 19 lots	2023	2	0.09
Albion_Park	URS22581 Albion Park	2020	4	0.34
Albion_Park	URS23620 (WLI) Calderwood - Stage 3C1A, 115 Lots	2021	5	0.54
Albion_Park	URS23621 (WLI) Calderwood, Stage 3C1B, 41 Lots	2023	2	0.19
Albion_Park	URS23756 (WLI) Calderwood - Stage 3C2A, 97 Lots	2023	3	0.34
Albion_Park	URS23834 (WLI) Calderwood - Stage 3C2A, 89 Lots	2023	3	0.42
Albion_Park	URS23902 Tullimbar, Tomerong St - Stage 8A, 35 lots	2022	3	0.16
Albion_Park	URS24321 Albion Park, Stage 3B, 3C & 3D - 24 Lots	2022	2	0.11
Albion_Park	URS24616 Tullimbar, Yellow Rock Rd	2022	5	0.55
Albion_Park	URS24798 Tullimbar - Stage 8b, 35 Lots	2022	3	0.16
Albion_Park	URS26189 Albion Park, Stage 5 - 32 Lots	2023	2	0.15
Jamberoo	URS23441 Jamberoo, 12 lots	2021	3	0.06
Kiama	URS23711 Jamberoo, 36 lots	2021	3	0.17
Shellharbour	UML9581 Shellcove Boat Harbour, 115 x Apartments	2022	2	0.38
Shellharbour	URS19259 South Flinders Dunmore - Stage 2, 48 lots	2020	3	0.23
Shellharbour	URS19298 South Flinders Dunmore - Stage 3, 36 lots	2021	2	0.17
Shellharbour	URS20685 Shell Cove Boat Harbour, 33 Res. Units & Tavern & Marina etc.	2021	2	1.28
Shellharbour	URS21840 Shellcove Boat Harbour, 39 Lots	2022	2	0.16
Shellharbour	URS22840 Shellcove Boat Harbour, 77 Lots	2021	3	0.31
Shellharbour	URS23444 Shellcove Boat Harbour, 70 x Town Houses	2022	3	0.28
Shellharbour	URS24165 to 69 Shell Cove Boat Harbour, Precinct F&G - 132 Apartments	2023	2	0.44
Shellharbour	URS24165 to 69 Shell Cove Boat Harbour, Precinct F&G - 42 lots	2021	2	0.20
Shellharbour	URS24165 to 69 Shell Cove Boat Harbour, Precinct F&G - 76 Town Houses	2022	3	0.30
Shellharbour	URS25786 South Flinders Dumore - 11 lots	2023	1	0.05

Generation

No Generation known at this location

Configuration Changes

No configuration change

Mount Terry STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**24.0**	**23.6**	**25.0**	**27.6**	**27.6**	**23.6**										
Albion Park	MW	23.0	23.1	30.8	26.0	27.4	28.4	30.2	26.1	26.6	26.3	26.4	26.6	26.9	27.3	27.8	28.2
	MVAr	4.2	0.7	5.4	2.5	0.0	1.1	1.2	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1
10% POE	**MVA**	**23.4**	**23.1**	**31.2**	**26.1**	**27.4**	**28.4**	**30.3**	**26.1**	**26.6**	**26.3**	**26.4**	**26.6**	**27.0**	**27.3**	**27.8**	**28.3**
	PF	0.984	0.999	0.985	0.995	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	20.1	20.5	25.2	22.1	23.3	24.0	25.9	21.9	22.4	22.1	22.1	22.4	22.7	23.1	23.6	24.0
	MVAr	3.7	0.7	4.4	2.1	0.0	0.9	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
50% POE	**MVA**	**20.5**	**20.5**	**25.6**	**22.2**	**23.3**	**24.0**	**25.9**	**21.9**	**22.4**	**22.1**	**22.2**	**22.4**	**22.7**	**23.1**	**23.6**	**24.1**
	PF	0.984	0.999	0.985	0.995	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Actual	**MVA**																
Calderwood	MW							0.7	6.3	7.0	7.7	8.4	9.1	9.8	10.7	11.6	11.6
	MVAr							0.2	2.1	2.3	2.5	2.8	3.0	3.2	3.5	3.8	3.8
10% POE	**MVA**							**0.8**	**6.6**	**7.4**	**8.1**	**8.9**	**9.6**	**10.4**	**11.3**	**12.2**	**12.2**
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
	MW							0.7	6.3	7.0	7.7	8.4	9.1	9.8	10.7	11.6	11.6
	MVAr							0.2	2.1	2.3	2.5	2.8	3.0	3.2	3.5	3.8	3.8
50% POE	**MVA**							**0.8**	**6.6**	**7.4**	**8.1**	**8.9**	**9.6**	**10.4**	**11.3**	**12.2**	**12.2**
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**	**5.7**	**5.7**	**5.0**	**6.2**	**6.5**	**5.0**										
Gerringong	MW	5.6	5.4	5.0	6.2	6.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.1	5.2
	MVAr	1.3	1.3	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8
10% POE	**MVA**	**5.7**	**5.6**	**5.0**	**6.2**	**6.5**	**5.0**	**5.1**	**5.0**	**5.1**	**5.0**	**5.0**	**5.0**	**5.0**	**5.1**	**5.1**	**5.2**
	PF	0.973	0.973	0.992	0.995	0.996	1.007	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	5.6	5.4	5.0	6.2	6.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.1	5.2
	MVAr	1.3	1.3	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8
50% POE	**MVA**	**5.7**	**5.6**	**5.0**	**6.2**	**6.5**	**5.0**	**5.1**	**5.0**	**5.1**	**5.0**	**5.0**	**5.0**	**5.0**	**5.1**	**5.1**	**5.2**
	PF	0.973	0.973	0.992	0.995	0.996	1.007	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	**MVA**	**3.2**	**3.0**	**2.8**	**3.1**	**3.2**	**2.5**										
Jamberoo	MW	3.0	3.0	3.4	2.8	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.3	3.3
	MVAr	0.9	1.0	0.9	1.0	0.8	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
10% POE	**MVA**	**3.1**	**3.2**	**3.5**	**3.0**	**3.1**	**3.0**	**3.1**	**3.1**	**3.1**	**3.1**	**3.1**	**3.1**	**3.2**	**3.2**	**3.3**	**3.4**
	PF	0.953	0.945	0.964	0.946	0.969	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	2.6	2.6	2.9	2.5	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.8	2.9	3.0
	MVAr	0.8	0.9	0.8	0.8	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
50% POE	**MVA**	**2.7**	**2.8**	**3.0**	**2.6**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.8**	**2.9**	**2.9**	**3.0**
	PF	0.953	0.945	0.964	0.946	0.969	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**11.4**	**12.2**	**11.0**	**13.8**	**13.8**	**11.5**										
Kiama	MW	11.0	10.3	11.2	12.2	11.3	11.7	12.1	12.0	13.9	13.8	13.9	13.9	14.0	14.1	14.3	14.5
	MVAr	2.4	1.0	1.3	1.1	0.7	0.5	1.4	1.4	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7
10% POE	**MVA**	**11.3**	**10.4**	**11.3**	**12.2**	**11.4**	**11.7**	**12.2**	**12.1**	**14.0**	**13.9**	**14.0**	**14.0**	**14.1**	**14.2**	**14.4**	**14.6**
	PF	0.976	0.995	0.994	0.996	0.998	0.999	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
	MW	9.8	9.5	10.0	10.7	10.3	10.6	11.0	10.9	12.9	12.7	12.8	12.8	12.9	13.0	13.2	13.4
	MVAr	2.2	0.9	1.1	0.9	0.6	0.4	1.3	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6
50% POE	**MVA**	**10.1**	**9.5**	**10.1**	**10.7**	**10.3**	**10.7**	**11.1**	**11.0**	**13.0**	**12.8**	**12.9**	**12.9**	**13.0**	**13.1**	**13.3**	**13.5**
	PF	0.976	0.995	0.994	0.996	0.998	0.999	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
Actual	**MVA**	**3.9**	**4.1**	**3.5**	**2.4**	**2.7**	**2.7**										
Sydney Trains Mount Terry	MW	3.7	3.9	3.5	2.4	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	MVAr	1.2	1.3	0.0	0.0	0.1	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
10% POE	**MVA**	**3.9**	**4.1**	**3.5**	**2.4**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**
	PF	0.950	0.950	1.000	1.000	1.000	1.000	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
Major customer	MW	3.7	3.9	3.5	2.4	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
	MVAr	1.2	1.3	0.0	0.0	0.1	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
50% POE	**MVA**	**3.9**	**4.1**	**3.5**	**2.4**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**
	PF	0.950	0.950	1.000	1.000	1.000	1.000	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
Actual	**MVA**	**0.8**	**1.5**	**1.0**	**1.0**	**1.0**	**0.7**										
Sydney_Trains Bombo	MW	0.8	1.4	1.0	1.0	1.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	MVAr	0.3	0.5	0.3	0.3	0.3	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
10% POE	**MVA**	**0.8**	**1.5**	**1.0**	**1.0**	**1.0**	**0.7**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**
	PF	0.950	0.950	0.961	0.965	0.965	0.998	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965
Major customer	MW	0.8	1.4	1.0	1.0	1.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	MVAr	0.3	0.5	0.3	0.3	0.3	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
50% POE	**MVA**	**0.8**	**1.5**	**1.0**	**1.0**	**1.0**	**0.7**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**
	PF	0.950	0.950	0.961	0.965	0.965	0.998	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965	0.965

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**29.6**	**30.3**	**30.9**	**34.5**	**31.8**	**29.9**										
Shellharbour	MW	29.6	29.5	30.2	34.5	31.8	29.9	30.5	30.6	32.4	32.0	32.1	32.3	32.7	33.1	33.6	34.1
	MVAr	0.0	6.7	6.6	0.6	2.4	0.5	4.0	4.0	4.2	4.2	4.2	4.2	4.3	4.3	4.4	4.4
10% POE	**MVA**	**29.6**	**30.3**	**30.9**	**34.5**	**31.8**	**29.9**	**30.8**	**30.9**	**32.7**	**32.3**	**32.3**	**32.6**	**33.0**	**33.3**	**33.9**	**34.4**
	PF	1.000	0.975	0.977	1.000	0.997	1.000	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
	MW	29.6	29.5	30.2	34.5	31.8	29.9	30.5	30.6	32.4	32.0	32.1	32.3	32.7	33.1	33.6	34.1
	MVAr	0.0	6.7	6.6	0.6	2.4	0.5	4.0	4.0	4.2	4.2	4.2	4.2	4.3	4.3	4.4	4.4
50% POE	**MVA**	**29.6**	**30.3**	**30.9**	**34.5**	**31.8**	**29.9**	**30.8**	**30.9**	**32.7**	**32.3**	**32.3**	**32.6**	**33.0**	**33.3**	**33.9**	**34.4**
	PF	1.000	0.975	0.977	1.000	0.997	1.000	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Actual	**MVA**	**19.2**	**18.9**	**17.3**	**19.6**	**19.2**	**18.8**										
Warilla	MW	19.2	18.3	19.7	17.7	17.8	19.4	19.0	18.6	18.6	18.2	18.2	18.4	18.7	19.0	19.4	19.8
	MVAr	4.0	2.9	3.4	3.5	3.6	0.6	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.4	2.4
10% POE	**MVA**	**19.6**	**18.5**	**20.0**	**18.1**	**17.4**	**19.4**	**19.2**	**18.8**	**18.7**	**18.3**	**18.3**	**18.5**	**18.8**	**19.1**	**19.5**	**20.0**
	PF	0.979	0.988	0.986	0.981	1.021	1.000	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
	MW	19.0	16.4	16.9	15.7	15.8	17.3	16.9	16.5	16.5	16.1	16.1	16.3	16.6	16.9	17.3	17.8
	MVAr	3.9	2.6	2.9	3.1	3.2	0.5	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2
50% POE	**MVA**	**19.4**	**16.6**	**17.2**	**16.0**	**15.4**	**17.3**	**17.0**	**16.6**	**16.6**	**16.2**	**16.2**	**16.4**	**16.8**	**17.1**	**17.5**	**17.9**
	PF	0.979	0.988	0.986	0.981	1.021	1.000	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Actual	**MVA**	**97.8**	**99.3**	**96.5**	**108.3**	**105.8**	**94.7**										
Undiversified	MW	95.8	94.9	104.8	102.7	101.4	100.9	104.1	105.0	110.0	109.4	110.3	111.7	113.7	115.8	118.4	120.2
	MVAr	14.3	15.4	18.5	9.6	8.3	3.7	10.9	12.6	13.3	13.4	13.6	13.9	14.3	14.7	15.2	15.4
10% POE	**MVA**	**97.3**	**96.6**	**106.6**	**103.5**	**101.3**	**100.9**	**104.8**	**106.0**	**111.1**	**110.5**	**111.4**	**112.9**	**114.9**	**117.0**	**119.8**	**121.5**
	PF	0.984	0.983	0.984	0.993	1.001	1.000	0.993	0.991	0.991	0.990	0.990	0.990	0.990	0.989	0.989	0.989
	MW	91.2	89.2	94.7	95.0	93.8	92.9	96.1	97.2	102.3	101.6	102.6	104.0	106.0	108.0	110.7	112.5
	MVAr	13.4	14.8	16.7	8.6	7.8	3.4	10.3	12.0	12.7	12.8	13.0	13.3	13.7	14.1	14.6	14.8
50% POE	**MVA**	**92.7**	**90.8**	**96.3**	**95.7**	**93.8**	**92.9**	**96.8**	**98.2**	**103.3**	**102.7**	**103.7**	**105.1**	**107.1**	**109.3**	**112.0**	**113.8**
	PF	0.984	0.983	0.984	0.993	1.001	1.000	0.993	0.990	0.990	0.990	0.990	0.989	0.989	0.989	0.989	0.989
Actual	**MVA**	**110.4**	**109.6**	**109.8**	**108.6**	**111.3**	**107.4**										
Diversified	MW	101.9	100.7	117.0	102.1	104.6	110.2	100.8	101.7	106.6	106.0	106.9	108.3	110.1	112.2	114.7	116.5
(Meter)	MVAr	34.3	33.9	34.4	19.7	17.9	14.1	25.7	25.9	27.1	27.0	27.2	27.6	28.0	28.6	29.2	29.7
10% POE	**MVA**	**107.5**	**106.3**	**121.9**	**104.0**	**106.1**	**111.1**	**104.0**	**105.0**	**110.0**	**109.3**	**110.3**	**111.7**	**113.7**	**115.7**	**118.4**	**120.2**
	PF	0.948	0.948	0.959	0.982	0.986	0.992	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969
	MW	85.9	87.2	97.4	87.7	89.8	94.2	93.1	94.2	99.1	98.5	99.4	100.8	102.7	104.7	107.3	109.0
	MVAr	28.9	29.3	28.6	16.9	15.4	12.1	23.7	24.0	25.2	25.1	25.3	25.7	26.1	26.6	27.3	27.7
50% POE	**MVA**	**90.6**	**92.0**	**101.5**	**89.3**	**91.1**	**94.9**	**96.1**	**97.2**	**102.3**	**101.6**	**102.5**	**104.0**	**105.9**	**108.0**	**110.7**	**112.5**
	PF	0.948	0.948	0.959	0.982	0.986	0.992	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969
Est. System Normal																	
	MVA			**88.2**	**101.4**	**101.0**	**77.7**										

Note: Diversified values which are greater than undiversified values are due to abnormal switching.

5.23 Nepean 33kV STS Demand Forecast

Discussion

Nepean 33kV STS has two 60 MVA 132/33kV transformers providing a firm capacity of 60 MVA.

Cawdor 33/11kV ZS has been established to supply the area to the West of the Nepean River and will offload Nepean ZS which will supply the local new developments at Spring Farm and Elderslie.

Rating Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Nepean 33kV	3 x 60	180
Oakdale	2 x 10	20
Cawdor	2 x 25	50
The Oaks	1 x 15	15

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2023	Nepean_ZS	Nepean_66kV	Cawdor	Nepean_33kV	0.86

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Cawdor	NUL0630 Sydney Water	2023	1.24	0.41	1.30

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Cawdor	UCL10041 90 Werombi Rd, Grasmere	2022	2	0.18
Cawdor	UCL11325 90 Werombi Road GRASMERE	2024	1	0.146
Cawdor	UCL9138 2-4 John St, Camden - RACF	2023	2	1.31
Oakdale	URS21376 Burragorang Rd, Oakdale - 122 residential lots	2021	3	0.34
Oakdale	URS24733-4 Burragoran Rd, Oakdale	2022	2	0.32
The_Oaks	NRL15301 265 Silverdale Rd Orangeville	2023	1	0.03

Generation

Refer to Nepean 66kV

Configuration Changes

No configuration change

Nepean 33kV STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**27.7**	**25.2**	**26.9**	**31.4**	**27.0**	**24.0**										
Cawdor	MW	26.5	24.1	25.9	30.5	26.2	23.6	25.8	26.2	26.1	25.8	25.8	25.9	26.1	26.3	26.6	26.9
	MVAr	8.2	7.2	7.2	7.5	6.4	4.4	5.6	5.7	5.7	5.6	5.6	5.6	5.7	5.7	5.8	5.8
10% POE	**MVA**	**27.7**	**25.2**	**26.9**	**31.4**	**27.0**	**24.0**	**26.4**	**26.8**	**26.7**	**26.4**	**26.4**	**26.5**	**26.7**	**26.9**	**27.2**	**27.5**
	PF	0.955	0.959	0.964	0.971	0.971	0.983	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977
	MW	26.5	24.1	25.9	30.5	26.2	23.6	25.8	26.2	26.1	25.8	25.8	25.9	26.1	26.3	26.6	26.9
	MVAr	8.2	7.2	7.2	7.5	6.4	4.4	5.6	5.7	5.7	5.6	5.6	5.6	5.7	5.7	5.8	5.8
50% POE	**MVA**	**27.7**	**25.2**	**26.9**	**31.4**	**27.0**	**24.0**	**26.4**	**26.8**	**26.7**	**26.4**	**26.4**	**26.5**	**26.7**	**26.9**	**27.2**	**27.5**
	PF	0.955	0.959	0.964	0.971	0.971	0.983	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977
Actual	**MVA**	**0.9**	**5.2**	**4.3**	**4.5**	**4.6**	**5.6**										
Sydney Trains	MW	0.9	5.0	4.3	4.5	4.6	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Nepean	MVAr	0.2	1.6	0.4	0.4	0.5	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
10% POE	**MVA**	**0.9**	**5.2**	**4.3**	**4.5**	**4.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**
	PF	0.986	0.954	0.995	0.995	0.993	0.991	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986
Major customer	MW	0.9	5.0	4.3	4.5	4.6	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
	MVAr	0.2	1.6	0.4	0.4	0.5	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
50% POE	**MVA**	**0.9**	**5.2**	**4.3**	**4.5**	**4.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**	**5.6**
	PF	0.986	0.954	0.995	0.995	0.993	0.991	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986
Actual	**MVA**	**2.5**	**3.0**	**2.7**	**3.1**	**1.9**	**2.0**										
Oakdale	MW	2.4	2.6	2.2	2.2	2.2	2.4	2.5	2.5	2.5	2.5	2.6	2.6	2.7	2.8	2.9	3.0
	MVAr	0.3	0.1	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
10% POE	**MVA**	**2.4**	**2.6**	**2.3**	**2.2**	**2.3**	**2.4**	**2.6**	**2.5**	**2.6**	**2.5**	**2.6**	**2.6**	**2.7**	**2.8**	**2.9**	**3.0**
	PF	0.989	1.000	0.985	0.982	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	1.9	2.1	1.9	1.9	2.0	2.1	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.5	2.6	2.7
	MVAr	0.3	0.0	0.3	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
50% POE	**MVA**	**1.9**	**2.1**	**2.0**	**2.0**	**2.0**	**2.1**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**	**2.4**	**2.4**	**2.5**	**2.6**	**2.7**
	PF	0.989	1.000	0.985	0.982	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**8.7**	**8.4**	**8.1**	**8.9**	**7.1**	**7.0**										
The Oaks	MW	8.3	8.1	7.8	8.7	7.0	6.9	6.9	6.8	6.7	6.6	6.6	6.6	6.6	6.6	6.7	6.8
	MVAr	2.5	2.3	2.1	2.2	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
10% POE	**MVA**	**8.7**	**8.4**	**8.1**	**8.9**	**7.1**	**7.0**	**7.0**	**6.9**	**6.9**	**6.7**	**6.7**	**6.7**	**6.7**	**6.8**	**6.8**	**6.9**
	PF	0.958	0.960	0.967	0.970	0.980	0.983	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
	MW	8.3	8.1	7.8	8.7	7.0	6.9	6.9	6.8	6.7	6.6	6.6	6.6	6.6	6.6	6.7	6.8
	MVAr	2.5	2.3	2.1	2.2	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
50% POE	**MVA**	**8.7**	**8.4**	**8.1**	**8.9**	**7.1**	**7.0**	**7.0**	**6.9**	**6.9**	**6.7**	**6.7**	**6.7**	**6.7**	**6.8**	**6.8**	**6.9**
	PF	0.958	0.960	0.967	0.970	0.980	0.983	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
Actual	**MVA**	**1.8**	**1.7**	**1.8**	**1.6**	**0.2**	**0.2**										
Wollondilly Wash	MW	1.7	1.7	1.7	1.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	MVAr	0.4	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10% POE	**MVA**	**1.8**	**1.7**	**1.8**	**1.6**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
	PF	0.976	0.969	0.981	0.979	0.992	1.000	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	1.7	1.7	1.7	1.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	MVAr	0.4	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50% POE	**MVA**	**1.8**	**1.7**	**1.8**	**1.6**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
	PF	0.976	0.969	0.981	0.979	0.992	1.000	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	**MVA**	**41.6**	**43.5**	**43.7**	**49.6**	**40.8**	**38.8**										
Undiversified	MW	39.8	41.5	41.9	47.4	40.2	38.6	40.9	41.2	41.2	40.7	40.7	40.9	41.2	41.5	42.0	42.4
	MVAr	11.6	11.6	10.4	10.9	8.7	6.7	8.2	8.3	8.2	8.2	8.2	8.2	8.2	8.3	8.4	8.5
10% POE	**MVA**	**41.5**	**43.1**	**43.3**	**48.7**	**41.2**	**39.2**	**41.8**	**42.1**	**42.0**	**41.6**	**41.5**	**41.7**	**42.0**	**42.4**	**42.8**	**43.3**
	PF	0.959	0.961	0.969	0.974	0.976	0.985	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
	MW	39.3	40.9	41.6	47.2	39.9	38.4	40.7	41.0	40.9	40.5	40.5	40.6	40.9	41.2	41.7	42.1
	MVAr	11.5	11.5	10.3	10.9	8.7	6.6	8.2	8.2	8.2	8.1	8.1	8.1	8.2	8.3	8.4	8.4
50% POE	**MVA**	**41.0**	**42.6**	**42.9**	**48.4**	**40.9**	**39.0**	**41.5**	**41.8**	**41.7**	**41.3**	**41.3**	**41.4**	**41.8**	**42.1**	**42.5**	**43.0**
	PF	0.959	0.961	0.969	0.974	0.976	0.985	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Actual	**MVA**	**52.9**	**38.1**	**41.0**	**43.7**	**40.0**	**37.3**										
Diversified	MW	50.3	36.2	41.0	41.0	39.7	36.6	38.5	38.8	38.8	38.4	38.3	38.5	38.8	39.1	39.5	39.9
(Meter)	MVAr	16.5	11.9	1.5	0.8	4.4	7.3	8.1	8.2	8.1	8.1	8.1	8.1	8.2	8.2	8.3	8.4
10% POE	**MVA**	**52.9**	**38.1**	**41.0**	**41.0**	**40.0**	**37.3**	**39.4**	**39.7**	**39.6**	**39.2**	**39.2**	**39.3**	**39.6**	**39.9**	**40.4**	**40.8**
	PF	0.950	0.950	0.999	1.000	0.994	0.981	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
	MW	50.3	36.2	41.0	41.0	39.7	36.6	38.3	38.6	38.5	38.1	38.1	38.2	38.5	38.8	39.3	39.7
	MVAr	16.5	11.9	1.5	0.8	4.4	7.3	8.0	8.1	8.1	8.0	8.0	8.0	8.1	8.2	8.3	8.3
50% POE	**MVA**	**52.9**	**38.1**	**41.0**	**41.0**	**40.0**	**37.3**	**39.1**	**39.4**	**39.4**	**39.0**	**38.9**	**39.1**	**39.4**	**39.7**	**40.1**	**40.5**
	PF	0.950	0.950	0.999	1.000	0.994	0.981	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979

Note: 15 MVAr of capacitance installed at the Nepean 33kV busbar.

5.24 Nepean 66kV STS Demand Forecast

Discussion

Nepean 66kV STS has two 120MVA 132/66kV auto-transformers providing a firm rating of 120MVA. There are plans to install a third 132/66kV transformer at Nepean STS when the cost can be justified.

Nepean 66kV STS supplied Narellan and Nepean zone substations, and supplies the Southern Macarthur 66kV supply area together with Macarthur 66kV BSP in a ring network. The Southern macarthur 66kV supply area has large scale gas embeeded generators that are supplied from the mining operations in the area.

Wilton Zone is currently being used to supply the Bingara Gorge development and will be used to supply developments in the South East Wilton and Wilton North precincts.
Major customer substations at BHP Douglas Park, BCSC Maldon, Tower Colliery, Westcliff Colliery, Appin, Appin Top Pit, Appin Colliery and Broughton Pass ZSs are now being supplied from Macarthur 66kV.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Nepean 66kV	2 x 120	240
Appin	1 x 5	5
Maldon	2 x 22/35	70
Narellan	3 x 22/35	105
Nepean ZS	2 x 35	70
Tahmoor	2 x 15/25	50
Wilton	2 x 20	40

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2023	Maldon	Nepean_66kV	Appin	Macarthur_66kV	0.34
2023	Maldon	Nepean_66kV	Nepean_ZS	Nepean_66kV	0.15
2023	Nepean_ZS	Nepean_66kV	Cawdor	Nepean_33kV	0.86
2023	Nepean_ZS	Nepean_66kV	Menangle_Park	Macarthur_66kV	0.78

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Maldon	NCL1688 296 Pheasants Nest Rd, Pheasants Nest	2023	0.23	0.00	0.23
Maldon	NRL13823 75 Skarrats Ln, Lakesland	2023	0.01	0.00	0.01
Maldon	NRL14409 269 Oaks Rd, Thirlmere	2023	0.01	0.00	0.01
Maldon	NRS3514 350 Barkers Lodge Road	2023	0.00	0.00	0.00
Maldon	UCL10174 3 Walton St, Picton	2023	0.09	0.03	0.10
Maldon	ULL3246 2-4 Colder St, Picton	2023	0.57	0.00	0.57
Maldon	ULL3354 Avon Dam Rd Bargo	2023	0.07	0.01	0.07
Maldon	URS26065 200 Abbotsford Road PICTON 50 lots	2023	0.49	0.10	0.50
Narellan	Camden Lakeside	2023	0.71	0.00	0.71
Narellan	Camden Lakeside	2023	1.39	0.00	1.39
Narellan	Camden Lakeside	2024	0.30	0.00	0.30
Narellan	Camden Lakeside	2025	0.36	0.00	0.36
Narellan	Camden Lakeside	2026	0.43	0.00	0.43
Narellan	Camden Lakeside	2027	0.60	0.00	0.60
Narellan	Camden Lakeside	2028	0.12	0.00	0.12
Narellan	Camden Lakeside	2029	0.12	0.00	0.12
Narellan	Camden Lakeside	2030	0.12	0.00	0.12
Narellan	Camden Lakeside	2031	0.12	0.00	0.12
Narellan	Camden Lakeside	2032	0.12	0.00	0.12
Narellan	Gregory Hills	2023	0.81	0.00	0.81
Narellan	Gregory Hills	2024	0.81	0.00	0.81
Narellan	Gregory Hills	2025	1.62	0.00	1.62
Narellan	Gregory Hills	2026	2.16	0.00	2.16
Narellan	Gregory Hills	2027	2.16	0.00	2.16
Narellan	Gregory Hills	2028	2.16	0.00	2.16
Narellan	Gregory Hills	2029	1.62	0.00	1.62
Narellan	Gregory Hills	2030	1.62	0.00	1.62
Narellan	UCL9439 52 Anderson St Smeaton Grange	2023	0.18	0.00	0.18
Narellan	UIL6293 MOVE FDRS LATER 19 Central Hills Drive GREGORY HILLS	2024	0.25	0.05	0.26
Narellan	UIL6303 19 Digitaria Drive Gledswood Hills - 12 units	2023	0.49	0.10	0.50
Nepean_ZS	Elderslie	2023	0.41	0.00	0.41
Nepean_ZS	Elderslie	2024	0.40	0.00	0.40

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Nepean_ZS	Elderslie	2025	0.10	0.00	0.10
Nepean_ZS	Elderslie	2026	0.10	0.00	0.10
Nepean_ZS	Elderslie	2027	0.10	0.00	0.10
Nepean_ZS	Elderslie	2028	0.10	0.00	0.10
Nepean_ZS	Elderslie	2029	0.10	0.00	0.10
Nepean_ZS	Elderslie	2030	0.10	0.00	0.10
Nepean_ZS	NIL0313-1 South32 construction	2023	2.85	0.94	3.00
Nepean_ZS	NIL0313-3 South32 construction	2025	-1.90	0.62	-2.00
Nepean_ZS	NIL0313-4 South32 construction	2025	-0.95	0.31	-1.00
Nepean_ZS	NLL0233 Remembrance Dr, Camden Park - Belgenny Farm	2023	0.15	0.00	0.15
Nepean_ZS	Spring Farm	2023	0.32	0.00	0.32
Nepean_ZS	Spring Farm	2024	0.32	0.00	0.32
Nepean_ZS	Spring Farm	2025	0.32	0.00	0.32
Nepean_ZS	Spring Farm	2026	0.32	0.00	0.32
Nepean_ZS	Spring Farm	2027	0.32	0.00	0.32
Nepean_ZS	Spring Farm	2028	0.32	0.00	0.32
Nepean_ZS	Spring Farm	2029	0.32	0.00	0.32
Nepean_ZS	Spring Farm	2030	0.32	0.00	0.32
Nepean_ZS	UIL6051 15 Grahams Hill Rd, Narellan	2023	0.53	0.17	0.55
S32_No4_Shaft_Project	ENL4283 HVC XXXX Vent Fan 4/5 Mature Load - Scenario 8, Jun 2028	2029	6.54	1.33	6.67
Tahmoor	NRL14720 50 Yarran Rd, Bargo	2023	0.01	0.00	0.01
Tahmoor	Picton, Tahmor & Thirlmere redevelopment	2023	0.78	0.00	0.78
Tahmoor	Picton, Tahmor & Thirlmere redevelopment	2024	0.56	0.00	0.56
Tahmoor	Picton, Tahmor & Thirlmere redevelopment	2025	0.47	0.00	0.47
Tahmoor	UCL10534 Thirlmere Way, Tahmoor - sporting fields	2023	0.26	0.00	0.26
Tahmoor_Colliery	NIL0287 Tahmoor Colliery	2024	4.75	1.56	5.00
Wilton	Bingara Gorge	2023	0.22	0.00	0.22
Wilton	Bingara Gorge	2024	0.22	0.00	0.22
Wilton	Bingara Gorge	2025	0.22	0.00	0.22
Wilton	Bingara Gorge	2026	0.22	0.00	0.22
Wilton	Bingara Gorge	2027	0.44	0.00	0.44
Wilton	Bingara Gorge	2028	0.44	0.00	0.44
Wilton	Bingara Gorge	2029	0.44	0.00	0.44
Wilton	Bingara Gorge	2030	0.44	0.00	0.44
Wilton	South East Wilton	2023	0.51	0.00	0.51
Wilton	South East Wilton	2024	0.51	0.00	0.51
Wilton	South East Wilton	2025	0.51	0.00	0.51
Wilton	South East Wilton	2026	0.51	0.00	0.51
Wilton	South East Wilton	2027	1.62	0.00	1.62
Wilton	South East Wilton	2028	1.62	0.00	1.62
Wilton	South East Wilton	2029	1.62	0.00	1.62
Wilton	South East Wilton	2030	1.62	0.00	1.62
Wilton	ULL2951 11 Greenbridge Dr, Wilton - School	2023	0.28	0.00	0.28
Wilton	West Wilton	2030	0.24	0.00	0.24
Wilton	Wilton North	2030	0.47	0.00	0.47

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Maldon	UCL10773 F5 Freeway Northbound, Pheasants Nest	2023	3	0.86
Maldon	UCL10774 F5 Freeway Southbound, Pheasants Nest	2023	3	0.78
Maldon	UIL5860 70 Bridge St, Picton	2022	2	0.24
Maldon	URS22244 Myrtle Creek Av, Tahmoor - 35 residential lots (Back calc ADMD)	2021	2	0.19
Maldon	URS22586 21-31 Rumker St, Picton	2021	2	0.04
Maldon	URS23903 69 Tahmoor Rd, Tahmoor	2023	1	0.04
Narellan	UCL10539 Rodeo Rd, Gregory Hills - Units	2023	2	0.214
Narellan	UCL10967 UCL10967 39-47 Lasso Rd, Gregory Hills 1500kVA PM	2024	1	0.79
Narellan	UCL11106 11-13 Main Street MOUNT ANNAN	2023	2	0.395
Narellan	UIL5950 55 Anderson Rd, Smeaton Grange - 32 industrial units	2023	2	0.367
Narellan	UIL6157 UIL6157 - 42 Turner Rd – Smeaton Grange - 38 Industrial Unit complex	2024	2	0.54
Narellan	UIL6208 11 units industrial	2024	2	0.455
Narellan	UIL6260 UIL6260 - 5-9 Cattle Way, Gregory Hills	2023	1	0.055
Narellan	UIL6289 36 Turner Road SMEATON GRANGE	2023	1	0.591
Narellan	UIL6302 MOVE FDRS LATER - 56 Central Hills Drive 14 industrial units	2023	1	0.22
Narellan	UIS0889 17-37 Camden Valley Way, Gregory Hills - 38 industrial lots	2023	3	2.70
Narellan	UIS0969 UIS0969 Turner Rd Gregory Hills warehouses	2023	3	2.01
Narellan	URS19643 Main St, Mount Annan	2022	3	0.75
Narellan	URS22218 93A Holdworths Dr, Narellan Vale	2023	2	0.12
Narellan	URS23104 Somerset Ave, Narellan - apartments	2022	2	0.33
Narellan	URS24013 501 Raby Rd, Gleswood Hills Stage 6A	2023	1	0.24
Nepean_ZS	URS13162 52A Merino Dr Elderslie11lots more to come 315KVA TX	2023	1	0.06
Nepean_ZS	URS21716 Spring Farm P800B-1	2023	1	0.1566
Nepean_ZS	URS22335 110 Lodges Rd, Elderslie	2023	2	0.17
Nepean_ZS	URS26855 Spring Farm P800B-3	2023	1	0.027
Tahmoor	NCL1544 Rockford Rd, Tahmoor RACF	2024	2	0.70
Tahmoor	NRS3503 4lots 45 Hilton Park Road TAHMOOR	2023	1	0.02
Tahmoor	NRS3510 20 Hilton Park Rd 3 lots 1 residual	2023	1	0.03
Tahmoor	NRS3528 Balmoral Park Rd Buxton	2023	1	0.03
Tahmoor	URS20968 Byron Rd, Tahmoor - 36 residential lots	2022	2	0.19
Tahmoor	URS22009 10 Bronzewing St, Tahmoor - 20 residential lots	2023	2	0.11
Tahmoor	URS23153 30 Greenacre Dr, Tahmoor - 34 residential lots	2023	2	0.18
Tahmoor	URS23373 38-42 Tahmoor Rd, Tahmoor	2023	2	0.13
Tahmoor	URS23930 19 Tickle Dr, Thirlmere	2022	2	0.28
Tahmoor	URS25526 30 Bronzewing St, Tahmoor - 27 residential lots	2023	2	0.15
Tahmoor	URS25744 25 Byron Rd, Tahmoor	2023	2	0.13
Tahmoor	URS25912 91, Stage 1 49 Bell Street THIRLMERE TAHMOOR.	2023	1	0.09
Wilton	ENL4261 Industrial sub - Berwick Road, Wilton	2026	3	8.4

Generation

Zone Substation	Name	Description	Date
Nepean 66kV	Appin Colliery (EDL)	54 x 1MW (methane extraction - export to 66kV network)	Installed
Nepean 66kV	WestCliff Colliery	1 x 6MW	Installed
Nepean 66kV	Tower Colliery	40 x 1MW (methane extraction - export to 66kV network)	Installed
Nepean 66kV	Tahmoor Colliery	1 x 7MW Gas Generator connected to 11kV Bus	Installed

Configuration Changes

Year	Zone / HVC	From STS	To STS
2016	Appin	Nepean 66kV	Macarthur 66kV
2016	Appin Top Pit	Nepean 66kV	Macarthur 66kV
2016	Appin Colliery	Nepean 66kV	Macarthur 66kV
2016	BHP Douglas Park	Nepean 66kV	Macarthur 66kV
2016	Broughton Pass	Nepean 66kV	Macarthur 66kV
2016	Tower Colliery	Nepean 66kV	Macarthur 66kV
2016	Westcliff Colliery	Nepean 66kV	Macarthur 66kV

Nepean 66kV STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	8.8	8.8	8.9	9.1	8.7	8.6										
BCSC Maldon	MW	8.2	8.2	8.3	8.5	8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
	MVAr	3.3	3.3	3.3	3.4	2.8	2.9	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
10% POE	MVA	8.8	8.8	8.9	9.1	8.7	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
	PF	0.927	0.929	0.928	0.930	0.946	0.941	0.933	0.933	0.933	0.933	0.933	0.933	0.933	0.933	0.933	0.933
Major customer	MW	8.2	8.2	8.3	8.5	8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
	MVAr	3.3	3.3	3.3	3.4	2.8	2.9	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
50% POE	MVA	8.8	8.8	8.9	9.1	8.7	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
	PF	0.927	0.929	0.928	0.930	0.946	0.941	0.933	0.933	0.933	0.933	0.933	0.933	0.933	0.933	0.933	0.933
Actual	MVA	22.9	21.2	23.5	25.7	22.5	21.4										
Maldon	MW	20.3	20.7	24.6	23.1	22.5	23.4	24.8	25.5	25.8	25.7	25.9	26.1	26.4	26.8	27.2	27.6
	MVAr	1.8	1.2	1.6	3.3	1.1	2.4	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.5
10% POE	MVA	20.4	20.7	24.7	23.4	22.5	23.6	24.9	25.6	25.9	25.8	26.0	26.2	26.5	26.9	27.3	27.8
	PF	0.996	0.998	0.998	0.990	0.999	0.995	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	18.0	18.3	21.1	19.8	19.4	20.5	21.8	22.5	22.9	22.8	22.9	23.1	23.5	23.8	24.2	24.7
	MVAr	1.6	1.0	1.4	2.8	1.0	2.1	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.2	2.2
50% POE	MVA	18.0	18.3	21.1	20.0	19.4	20.6	21.9	22.6	23.0	22.9	23.0	23.2	23.6	23.9	24.3	24.8
	PF	0.996	0.998	0.998	0.990	0.999	0.995	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	MVA	75.8	72.7	70.7	65.8	61.4	64.9										
Narellan	MW	70.8	72.5	75.7	69.2	71.3	75.0	79.2	82.9	85.0	85.9	87.4	88.7	89.7	90.7	90.7	90.8
	MVAr	14.9	19.7	12.0	8.8	9.4	7.9	9.7	10.1	10.4	10.5	10.7	10.8	11.0	11.1	11.1	11.1
10% POE	MVA	72.4	75.1	76.7	69.7	71.9	75.4	79.8	83.5	85.6	86.5	88.1	89.4	90.4	91.4	91.4	91.5
	PF	0.979	0.965	0.988	0.992	0.991	0.995	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
	MW	63.7	66.2	67.8	61.0	63.4	67.0	71.2	74.8	76.9	77.8	79.4	80.7	81.7	82.9	83.0	83.1
	MVAr	13.4	18.0	10.7	7.8	8.4	7.0	8.7	9.1	9.4	9.5	9.7	9.9	10.0	10.1	10.1	10.2
50% POE	MVA	65.1	68.6	68.7	61.5	64.0	67.3	71.7	75.3	77.5	78.4	80.0	81.3	82.3	83.5	83.6	83.7
	PF	0.979	0.965	0.988	0.992	0.991	0.995	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
Actual	MVA	42.8	38.3	39.6	40.4	34.6	32.7										
Nepean Zone	MW	38.8	39.4	46.1	39.9	41.4	42.8	44.6	44.3	42.0	41.7	41.8	42.1	42.5	42.9	43.3	43.7
	MVAr	9.8	8.4	6.9	2.7	0.5	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
10% POE	MVA	40.0	40.3	46.6	40.0	41.4	42.8	44.6	44.3	42.0	41.7	41.8	42.1	42.5	42.9	43.3	43.7
	PF	0.969	0.978	0.989	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	MW	32.9	33.6	38.4	33.8	35.7	37.2	39.0	38.9	36.6	36.3	36.4	36.7	37.1	37.7	38.2	38.6
	MVAr	8.3	7.2	5.7	2.3	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50% POE	MVA	33.9	34.3	38.8	33.8	35.7	37.2	39.0	38.9	36.6	36.3	36.4	36.7	37.1	37.7	38.2	38.6
	PF	0.969	0.978	0.989	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Actual	MVA	18.2	16.4	18.9	18.8	17.6	14.2										
Tahmoor	MW	16.9	16.4	20.5	18.4	18.6	18.3	19.5	20.5	21.2	21.1	21.2	21.4	21.8	22.1	22.6	23.0
	MVAr	0.4	2.3	5.7	1.8	1.7	3.5	3.4	3.5	3.7	3.6	3.7	3.7	3.8	3.8	3.9	4.0
10% POE	MVA	16.9	16.5	21.3	18.5	18.6	18.7	19.8	20.8	21.5	21.4	21.5	21.7	22.1	22.4	22.9	23.4
	PF	1.000	0.990	0.964	0.995	0.996	0.982	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985
	MW	14.7	14.3	17.5	15.7	16.1	16.0	17.2	18.1	18.9	18.7	18.8	19.0	19.4	19.8	20.2	20.7
	MVAr	0.4	2.0	4.8	1.6	1.5	3.1	3.0	3.1	3.3	3.2	3.2	3.3	3.4	3.4	3.5	3.6
50% POE	MVA	14.7	14.4	18.1	15.7	16.1	16.3	17.5	18.4	19.2	19.0	19.1	19.3	19.7	20.1	20.5	21.0
	PF	1.000	0.990	0.964	0.995	0.996	0.982	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.985
Actual	MVA	19.3	19.3	18.4	18.9	21.3	21.2										
Tahmoor Colliery	MW	17.3	17.3	17.4	18.0	20.3	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	MVAr	8.7	8.7	7.2	5.9	6.4	7.0	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
10% POE	MVA	19.3	19.3	18.8	18.9	21.3	21.2	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6
	PF	0.894	0.894	0.925	0.950	0.953	0.944	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927
Major customer	MW	17.3	17.3	17.4	18.0	20.3	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	MVAr	8.7	8.7	7.2	5.9	6.4	7.0	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
50% POE	MVA	19.3	19.3	18.8	18.9	21.3	21.2	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6
	PF	0.894	0.894	0.925	0.950	0.953	0.944	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927	0.927
Actual	MVA	2.5	4.0	4.6	4.9	4.7	3.9										
Wilton	MW	2.5	4.0	4.5	4.9	4.7	3.9	4.7	5.3	5.9	7.9	13.3	16.5	18.1	20.4	20.5	20.5
	MVAr	0.1	0.1	0.3	0.4	0.4	0.0	0.3	0.3	0.4	0.5	0.8	1.0	1.1	1.2	1.2	1.3
10% POE	MVA	2.5	4.0	4.6	4.9	4.7	3.9	4.7	5.3	5.9	8.0	13.3	16.5	18.2	20.4	20.5	20.5
	PF	1.000	0.999	0.998	0.997	0.996	1.000	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
	MW	2.5	4.0	4.5	4.9	4.7	3.9	4.7	5.3	5.9	7.9	13.3	16.5	18.1	20.4	20.5	20.5
	MVAr	0.1	0.1	0.3	0.4	0.4	0.0	0.3	0.3	0.4	0.5	0.8	1.0	1.1	1.2	1.2	1.3
50% POE	MVA	2.5	4.0	4.6	4.9	4.7	3.9	4.7	5.3	5.9	8.0	13.3	16.5	18.2	20.4	20.5	20.5
	PF	1.000	0.999	0.998	0.997	0.996	1.000	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**																
S32_No4_Shaft Project	MW													5.1	5.1	5.1	5.1
	MVAr													1.7	1.7	1.7	1.7
10% POE	**MVA**													**5.3**	**5.3**	**5.3**	**5.3**
	PF													0.950	0.950	0.950	0.950
Major customer	MW													5.1	5.1	5.1	5.1
	MVAr													1.7	1.7	1.7	1.7
50% POE	**MVA**													**5.3**	**5.3**	**5.3**	**5.3**
	PF													0.950	0.950	0.950	0.950
Actual	**MVA**	**190.3**	**180.7**	**184.6**	**183.6**	**170.7**	**166.8**										
Undiversified	MW	174.7	178.3	197.3	182.0	186.9	191.6	200.9	206.5	208.0	210.3	217.5	222.8	231.7	236.0	237.4	238.8
	MVAr	39.0	43.7	36.9	26.3	22.4	23.8	26.9	27.6	28.1	28.3	28.8	29.2	31.2	31.6	31.7	31.8
10% POE	**MVA**	**180.3**	**184.7**	**201.6**	**184.5**	**189.2**	**194.2**	**204.0**	**209.6**	**211.2**	**213.6**	**220.8**	**226.0**	**235.2**	**239.5**	**240.9**	**242.4**
	PF	0.969	0.965	0.978	0.986	0.988	0.987	0.985	0.985	0.985	0.985	0.985	0.986	0.985	0.985	0.985	0.985
	MW	157.1	161.8	175.1	161.5	167.7	172.6	181.9	187.6	189.2	191.6	198.8	204.0	213.0	217.7	219.2	220.7
	MVAr	35.7	40.3	33.4	24.1	20.9	22.2	25.3	26.0	26.4	26.6	27.2	27.6	29.6	29.9	30.1	30.2
50% POE	**MVA**	**162.3**	**167.8**	**179.1**	**164.0**	**169.9**	**175.1**	**185.0**	**190.7**	**192.3**	**194.7**	**202.0**	**207.2**	**216.4**	**221.2**	**222.7**	**224.1**
	PF	0.968	0.964	0.977	0.985	0.987	0.986	0.984	0.984	0.984	0.984	0.984	0.985	0.984	0.984	0.984	0.984
Actual	**MVA**	**129.8**	**106.4**	**159.7**	**178.5**	**148.1**	**143.3**										
Diversified	MW	108.5	99.7	143.2	161.9	138.1	144.4	159.5	163.9	165.2	167.0	172.7	176.9	184.0	187.4	188.5	189.6
	MVAr	17.4	32.8	47.7	39.7	15.2	15.6	36.9	37.9	38.2	38.6	40.0	40.9	42.6	43.3	43.6	43.9
10% POE	**MVA**	**109.9**	**104.9**	**150.9**	**166.7**	**138.9**	**145.2**	**163.7**	**168.3**	**169.5**	**171.4**	**177.3**	**181.6**	**188.8**	**192.3**	**193.5**	**194.6**
	PF	0.987	0.950	0.949	0.971	0.994	0.994	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974
	MW	97.3	88.5	129.0	145.1	124.0	129.9	144.9	149.5	150.7	152.6	158.4	162.5	169.6	173.4	174.6	175.8
	MVAr	15.6	29.1	43.0	35.6	13.6	14.0	33.5	34.6	34.9	35.3	36.6	37.6	39.2	40.1	40.4	40.7
50% POE	**MVA**	**98.5**	**93.1**	**136.0**	**149.4**	**124.7**	**130.6**	**148.7**	**153.4**	**154.7**	**156.6**	**162.6**	**166.8**	**174.1**	**178.0**	**179.2**	**180.4**
	PF	0.987	0.950	0.949	0.971	0.994	0.994	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974
Generation*	MW							-14.3	-14.3	-14.3	-14.3	-14.3	-14.3	-14.3	-14.3	-14.3	-14.3
	MVAr							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
max generation output	**MVA**							**-14.3**	**-14.3**	**-14.3**	**-14.3**	**-14.3**	**-14.3**	**-14.3**	**-14.3**	**-14.3**	**-14.3**
	PF							1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Note: Refers to the 66kV transformer metering values plus the generation output
Note: 100% of the generation is consumed by Nepean

5.25 Outer Harbour STS Demand Forecast

Discussion

Outer Harbour STS has one 30/45/60 MVA and one 30/60 MVA 132/33kV transformer providing a firm rating of 60MVA.

The Port Kembla Port Corporation was planning to redevelop Outer Harbour with additional berths and export facilities though recently these plans have been deferred indefinitely. The ultimate supply to the Port Kembla Outer Harbour development is outlined in UCL5528 (PD T-1265). Cement Australia (HVC 32652) a cement grinding mill was commissioned in February 2014 as part of this redevelopment.

Rating Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Outer Harbour	2 x 60	120
Port Central	2 x 19	38

Proposed Load Transfers

No Load Transfers Proposed at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Port_Central	UCL11218 Warrawong, Service	2023	0.26	0.05	0.26
Port_Central	UIL6066 Port Kembla, Industrial	2023	0.12	0.02	0.12
Port_Central	UIL6155 Port Kembla,	2023	0.60	0.12	0.61

Planned Lot Releases & Redevelopment

No Lot Releases Proposed at this location

Generation

No Generation known at this location

Outer Harbour STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**9.8**	**10.6**	**9.6**	**9.4**	**9.5**	**9.2**										
Cement Australia	MW	9.3	10.0	9.1	8.9	9.0	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
	MVAr	3.1	3.7	3.1	3.1	3.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
10% POE	**MVA**	**9.8**	**10.6**	**9.6**	**9.4**	**9.5**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**
	PF	0.948	0.939	0.947	0.945	0.946	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
Major customer	MW	9.3	10.0	9.1	8.9	9.0	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
	MVAr	3.1	3.7	3.1	3.1	3.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
50% POE	**MVA**	**9.8**	**10.6**	**9.6**	**9.4**	**9.5**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**	**9.2**
	PF	0.948	0.939	0.947	0.945	0.946	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
Actual	**MVA**	**1.0**	**1.0**	**0.9**	**0.9**	**0.8**	**0.7**										
CRM	MW	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	MVAr	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
10% POE	**MVA**	**1.0**	**1.0**	**0.9**	**0.9**	**0.8**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**
	PF	0.604	0.560	0.573	0.565	0.553	0.539	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546
Major customer	MW	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	MVAr	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
50% POE	**MVA**	**1.0**	**1.0**	**0.9**	**0.9**	**0.8**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**
	PF	0.604	0.560	0.573	0.565	0.553	0.539	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546
Actual	**MVA**	**4.6**	**9.5**	**6.8**	**6.9**	**7.1**	**7.0**										
Metal	MW	4.3	9.0	6.5	6.7	6.9	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Manufacturers	MVAr	1.4	3.0	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
10% POE	**MVA**	**4.6**	**9.5**	**6.8**	**6.9**	**7.1**	**7.0**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**
	PF	0.950	0.950	0.967	0.968	0.966	0.967	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
Major customer	MW	4.3	9.0	6.5	6.7	6.9	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
	MVAr	1.4	3.0	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
50% POE	**MVA**	**4.6**	**9.5**	**6.8**	**6.9**	**7.1**	**7.0**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**	**7.1**
	PF	0.950	0.950	0.967	0.968	0.966	0.967	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966	0.966
Actual	**MVA**	**6.8**	**5.0**	**5.2**	**5.1**	**4.9**	**5.3**										
Morgan	MW	6.5	4.8	4.9	4.8	4.7	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Cement	MVAr	2.1	1.6	1.7	1.7	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
10% POE	**MVA**	**6.8**	**5.0**	**5.2**	**5.1**	**4.9**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**
	PF	0.950	0.950	0.942	0.945	0.947	0.939	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943
Major customer	MW	6.5	4.8	4.9	4.8	4.7	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	MVAr	2.1	1.6	1.7	1.7	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
50% POE	**MVA**	**6.8**	**5.0**	**5.2**	**5.1**	**4.9**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**	**5.3**
	PF	0.950	0.950	0.942	0.945	0.947	0.939	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943
Actual	**MVA**	**10.4**	**9.6**	**10.0**	**12.8**	**9.4**	**9.3**										
Port Central	MW	10.4	9.0	10.0	12.2	9.0	9.0	9.3	9.0	8.7	8.5	8.4	8.3	8.3	8.3	8.3	8.3
	MVAr	1.2	3.5	0.4	3.8	2.6	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2
10% POE	**MVA**	**10.4**	**9.7**	**10.0**	**12.8**	**9.4**	**9.3**	**9.7**	**9.3**	**9.0**	**8.7**	**8.6**	**8.6**	**8.6**	**8.5**	**8.6**	**8.6**
	PF	0.993	0.932	0.999	0.955	0.960	0.966	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
	MW	10.4	9.0	10.0	12.2	9.0	9.0	9.3	9.0	8.7	8.5	8.4	8.3	8.3	8.3	8.3	8.3
	MVAr	1.2	3.5	0.4	3.8	2.6	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2
50% POE	**MVA**	**10.4**	**9.7**	**10.0**	**12.8**	**9.4**	**9.3**	**9.7**	**9.3**	**9.0**	**8.7**	**8.6**	**8.6**	**8.6**	**8.5**	**8.6**	**8.6**
	PF	0.993	0.932	0.999	0.955	0.960	0.966	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
Actual	**MVA**	**5.0**	**4.4**	**6.4**	**6.2**	**5.3**	**5.7**										
Sydney Trains	MW	5.0	4.4	6.4	6.2	5.3	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Port Kembla	MVAr	0.3	0.5	0.5	0.5	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
10% POE	**MVA**	**5.0**	**4.4**	**6.4**	**6.2**	**5.3**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**
	PF	0.998	0.994	0.997	0.997	0.998	0.999	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
Major customer	MW	5.0	4.4	6.4	6.2	5.3	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	MVAr	0.3	0.5	0.5	0.5	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
50% POE	**MVA**	**5.0**	**4.4**	**6.4**	**6.2**	**5.3**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**	**5.7**
	PF	0.998	0.994	0.997	0.997	0.998	0.999	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
Actual	**MVA**	**37.6**	**40.0**	**38.8**	**41.3**	**37.1**	**37.3**										
Undiversified	MW	36.1	37.7	37.4	39.3	35.3	35.6	36.0	35.6	35.3	35.1	35.0	34.9	34.9	34.9	34.9	34.9
	MVAr	9.0	13.0	8.2	11.4	10.1	9.9	10.0	9.9	9.8	9.8	9.7	9.7	9.7	9.7	9.7	9.7
10% POE	**MVA**	**37.6**	**40.2**	**38.9**	**41.3**	**37.1**	**37.3**	**37.6**	**37.2**	**37.0**	**36.7**	**36.6**	**36.6**	**36.5**	**36.5**	**36.6**	**36.6**
	PF	0.959	0.938	0.963	0.952	0.952	0.954	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
	MW	36.1	37.7	37.4	39.3	35.3	35.6	36.0	35.6	35.3	35.1	35.0	34.9	34.9	34.9	34.9	34.9
	MVAr	5.9	9.3	5.2	11.4	10.1	9.9	10.0	9.9	9.8	9.8	9.7	9.7	9.7	9.7	9.7	9.7
50% POE	**MVA**	**27.8**	**29.5**	**29.3**	**41.3**	**37.1**	**37.3**	**37.6**	**37.2**	**37.0**	**36.7**	**36.6**	**36.6**	**36.5**	**36.5**	**36.6**	**36.6**
	PF	1.295	1.276	1.278	0.952	0.952	0.954	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**23.7**	**35.7**	**39.1**	**34.2**	**30.4**	**30.6**										
Diversified	MW	23.4	34.9	38.3	33.7	30.2	30.6	30.9	30.5	30.3	30.1	30.0	30.0	29.9	29.9	30.0	30.0
(Meter)	MVAr	3.3	7.6	8.1	6.2	3.9	1.1	5.1	5.0	5.0	5.0	5.0	4.9	4.9	4.9	4.9	4.9
10% POE	**MVA**	**23.7**	**35.7**	**39.1**	**34.2**	**30.4**	**30.6**	**31.3**	**30.9**	**30.7**	**30.5**	**30.4**	**30.4**	**30.3**	**30.3**	**30.4**	**30.4**
	PF	0.990	0.977	0.978	0.984	0.992	0.999	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
	MW	23.4	34.9	38.3	33.7	30.2	30.6	30.9	30.5	30.3	30.1	30.0	30.0	29.9	29.9	30.0	30.0
	MVAr	3.3	7.6	8.1	6.2	3.9	1.1	5.1	5.0	5.0	5.0	5.0	4.9	4.9	4.9	4.9	4.9
50% POE	**MVA**	**23.7**	**35.7**	**39.1**	**34.2**	**30.4**	**30.6**	**31.3**	**30.9**	**30.7**	**30.5**	**30.4**	**30.4**	**30.3**	**30.3**	**30.4**	**30.4**
	PF	0.990	0.977	0.978	0.984	0.992	0.999	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
Est. System Normal																	
	MVA																

Note: There is 20 MVAr of capacitors installed at the Outer Harbour 33 kV busbar.

5.26 Penrith STS Demand Forecast

Discussion

There is 60 MVAr of capacitance proposed to be installed on the 33kV busbar at Penrith Substation. Penrith STS has three 60MVA 132/33kV transformers, providing a firm capacity of 120MVA. Penrith STS supplies Emu Plains, Kingswood, Cranebrook, Jordan Springs ZS and Cambridge Park zone substations. Load on Kingswood ZS is expected to increase significantly, due to addition of Stage 1 and Stage 2 upgrade of Nepean Hospital.

The Jordan Springs residential development has formed the main load growth in the Penrith STS supply area. It is supplied from Jordan Springs ZS, which actual load has exceeded firm capacity of this ZS. There is large subdivision Central Precinct development, which is supplied from both Jordan Springs ZS and Cambridge Park ZS. This subdivision contributes to load increase on both ZSs.

The renewal and augmentation project at Penrith STS has been completed. Penrith STS now has 3 x 60/120 MVA transformers with a provision for a fourth transformer.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Penrith TS	3 x 60/120	360
Cambridge Park	2 x 15/19/25	50
Cranebrook	3 x 15/19/25	75
Emu Plains	3 x 15/19/25	75
Jordan Springs	2 x 25	50
Kingswood	3 x 15/19/25	75

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2026	Cambridge_Park	Penrith	Claremont_Meadows	Mount_Druitt	0.57

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Cranebrook	UIL6175 VISY Waste Facility	2024	0.78	0.16	0.80
Emu_Plains	NRL15208 Bungaree Rd, Yellow	2023	0.01	0.00	0.01
Emu_Plains	PLT1191 Installation of a pole	2023	0.01	0.00	0.01
Emu_Plains	UCL10405 Memorial Ave,	2023	0.71	0.34	0.79
Emu_Plains	UCL11006 4 Punt Rd, Emu	2023	0.06	0.01	0.06
Emu_Plains	ULL3383 Regatta Park, Emu	2023	0.00	0.21	0.21
Emu_Plains	UUL1897 Commercial - carpark	2023	0.14	0.07	0.16
Jordan_Springs	NCL1468 Ninth Ave, Llandilo	2023	0.14	0.07	0.15
Jordan_Springs	URS26101 Stage 1: 25 lot	2023	0.12	0.02	0.13
Jordan_Springs	URS26101 Stage 2: 48 units +	2024	0.27	0.06	0.28
Kingswood	UCL10026 Nepean Medical	2023	0.57	0.27	0.63
Kingswood	UCL11248 28-32 Somerset St,	2024	0.70	0.14	0.71
Kingswood	UCL9855 154-162 Stafford	2023	0.10	0.02	0.10
Kingswood	ULL3250 Private Hospital	2023	0.46	0.09	0.47
Kingswood	UML7378 Fulton St, Penrith	2024	0.12	0.06	0.13
Kingswood	UML8653 115-119 Derby St	2023	0.32	0.06	0.32
Kingswood	UML9821 Kingswood Private	2023	0.41	0.20	0.46

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Cambridge_Park	ENL3083 Victoria st, Werrington	2024	2	0.32
Cambridge_Park	UML9049 Henry Lawson Av, Werrington County	2023	2	0.16
Cambridge_Park	URS17361 Leichardt Ave, St Marys	2023	3	0.24
Cranebrook	ENL4213 (1 of 3) Penrith Lakes Film Studios (Stage 1) (double cable)	2024	2	3.5
Cranebrook	ENL4213 (2 of 3) Penrith Lakes Film Studio (Stage 2)	2025	2	0.70
Cranebrook	NIL0307 Mushroom Farm The Northern Rd, Londonderry	2023	2	2.00
Emu_Plains	ENL4213 (3 of 3) Penrith Lakes Film Studios (Stage 2)	2025	2	1.3
Jordan_Springs	Central Precinct - Department of Planning info	2022	4	2.79
Jordan_Springs	UCL11061 Retirement Village off Horstmann Cct Jordan Springs	2023	2	0.4587
Jordan_Springs	URS20122 The Northern Rd, Llandilo	2021	2	0.45
Jordan_Springs	URS21020 Wianmatta Pkwy, Llandilo	2021	3	0.52
Kingswood	ULL2663 Nepean Hospital	2022	2	4.32
Kingswood	ULL3036 Nepean Hospital Stg2 Upgrade	2023	2	2.79
Kingswood	UML7472 24 residential units	2022	2	0.08
Kingswood	UML8004 50 units and childcare Colless St, Penrit	2021	2	0.24
Kingswood	UML8329 63 units + commercial Doonmore St, Penrith	2021	3	0.26
Kingswood	UML8400 44 residential units Lethbridge St, Penith	2021	3	0.15
Kingswood	UML8803 55 residential units - Lethbridge St, Penrith	2021	3	0.18
Kingswood	UML8950 21-25 Woodriff St, Penrith	2021	2	0.26
Kingswood	UML8950 Woodriff St, Penrith	2021	3	0.26
Kingswood	UML9214 81 residential units - Lethbridge St, Penrith	2022	3	0.27
Kingswood	UML9542 Hargrave St, Kingswood (serviced apartments)	2023	2	0.225

Generation

No Generation known at this location

Penrith STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**21.8**	**22.0**	**23.3**	**26.5**	**25.6**	**20.8**										
Cambridge Park	MW	21.1	22.5	26.0	25.4	25.4	25.4	25.0	24.9	25.2	24.9	25.0	25.2	25.5	25.9	26.3	26.7
	MVAr	4.9	4.7	0.8	0.0	0.0	0.0	3.2	3.1	3.2	3.1	3.2	3.2	3.2	3.3	3.3	3.4
10% POE	**MVA**	**21.6**	**22.9**	**26.0**	**25.4**	**25.4**	**25.4**	**25.2**	**25.1**	**25.4**	**25.1**	**25.2**	**25.4**	**25.7**	**26.1**	**26.5**	**26.9**
	PF	0.974	0.979	1.000	1.000	1.000	1.000	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
	MW	18.1	19.5	22.9	22.1	22.8	22.8	22.4	22.3	22.6	22.4	22.4	22.6	23.0	23.3	23.7	24.2
	MVAr	4.2	4.1	0.7	0.0	0.0	0.0	2.8	2.8	2.9	2.8	2.8	2.9	2.9	2.9	3.0	3.1
50% POE	**MVA**	**18.5**	**19.9**	**22.9**	**22.1**	**22.8**	**22.8**	**22.6**	**22.5**	**22.8**	**22.5**	**22.6**	**22.8**	**23.2**	**23.5**	**23.9**	**24.4**
	PF	0.974	0.979	1.000	1.000	1.000	1.000	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Actual	**MVA**	**26.5**	**31.1**	**36.0**	**29.9**	**28.9**	**27.2**										
Cranebrook	MW	29.3	29.9	35.7	31.1	30.1	30.9	31.6	34.2	36.0	36.1	36.2	36.3	36.6	36.8	37.2	37.5
	MVAr	2.8	0.0	4.3	1.4	3.6	4.5	3.2	3.4	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.8
10% POE	**MVA**	**29.4**	**29.9**	**36.0**	**31.1**	**30.4**	**31.2**	**31.7**	**34.4**	**36.2**	**36.3**	**36.3**	**36.5**	**36.8**	**37.0**	**37.4**	**37.7**
	PF	0.995	1.000	0.993	0.999	0.993	0.990	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
	MW	27.3	27.9	32.9	28.6	27.9	28.6	29.3	32.0	33.7	33.8	33.9	34.1	34.3	34.6	34.9	35.3
	MVAr	2.6	0.0	4.0	1.3	3.3	4.1	2.9	3.2	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.6
50% POE	**MVA**	**27.4**	**27.9**	**33.1**	**28.6**	**28.1**	**28.9**	**29.4**	**32.1**	**33.9**	**34.0**	**34.1**	**34.2**	**34.5**	**34.8**	**35.1**	**35.4**
	PF	0.995	1.000	0.993	0.999	0.993	0.990	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Actual	**MVA**	**35.5**	**33.0**	**37.5**	**39.9**	**30.4**	**27.1**										
Emu Plains	MW	33.9	33.9	38.7	37.0	34.7	35.7	36.5	36.3	36.9	37.2	37.2	37.4	37.6	37.8	38.1	38.4
	MVAr	0.0	0.0	0.0	0.0	12.2	6.4	4.2	4.2	4.3	4.3	4.3	4.4	4.4	4.4	4.4	4.5
10% POE	**MVA**	**33.9**	**33.9**	**38.7**	**37.0**	**36.8**	**35.1**	**36.7**	**36.5**	**37.1**	**37.4**	**37.5**	**37.6**	**37.8**	**38.1**	**38.4**	**38.7**
	PF	1.000	1.000	1.000	1.000	0.943	1.017	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
	MW	30.7	31.0	35.1	33.0	31.0	32.0	32.8	32.6	33.2	33.5	33.5	33.7	33.9	34.1	34.4	34.8
	MVAr	0.0	0.0	0.0	0.0	10.9	5.8	3.8	3.8	3.9	3.9	3.9	3.9	4.0	4.0	4.0	4.0
50% POE	**MVA**	**30.7**	**31.0**	**35.1**	**33.0**	**32.9**	**31.5**	**33.0**	**32.8**	**33.4**	**33.7**	**33.8**	**33.9**	**34.1**	**34.4**	**34.7**	**35.0**
	PF	1.000	1.000	1.000	1.000	0.943	1.017	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
Actual	**MVA**	**23.4**	**20.1**	**22.1**	**25.1**	**21.4**	**19.0**										
Jordan Springs	MW	22.9	19.8	21.8	24.8	21.3	18.9	20.0	21.0	21.4	21.2	21.2	21.3	21.5	21.7	21.9	22.1
	MVAr	4.8	3.4	3.9	4.2	2.9	1.9	9.7	10.2	10.4	10.3	10.3	10.3	10.4	10.5	10.6	10.7
10% POE	**MVA**	**23.4**	**20.1**	**22.1**	**25.1**	**21.4**	**19.0**	**22.2**	**23.4**	**23.8**	**23.5**	**23.6**	**23.7**	**23.9**	**24.1**	**24.3**	**24.6**
	PF	0.979	0.986	0.985	0.986	0.991	0.995	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
	MW	22.9	19.8	21.8	24.8	21.3	18.9	20.0	21.0	21.4	21.2	21.2	21.3	21.5	21.7	21.9	22.1
	MVAr	4.8	3.4	3.9	4.2	2.9	1.9	9.7	10.2	10.4	10.3	10.3	10.3	10.4	10.5	10.6	10.7
50% POE	**MVA**	**23.4**	**20.1**	**22.1**	**25.1**	**21.4**	**19.0**	**22.2**	**23.4**	**23.8**	**23.5**	**23.6**	**23.7**	**23.9**	**24.1**	**24.3**	**24.6**
	PF	0.979	0.986	0.985	0.986	0.991	0.995	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Actual	**MVA**	**47.0**	**45.3**	**45.3**	**44.1**	**39.9**	**41.8**										
Kingswood	MW	47.4	46.7	48.9	45.8	46.9	49.3	52.7	53.5	53.0	52.1	51.8	51.7	51.8	51.8	52.0	52.2
	MVAr	15.2	10.7	12.4	5.6	4.1	3.6	10.6	10.8	10.7	10.5	10.4	10.4	10.4	10.4	10.5	10.5
10% POE	**MVA**	**49.7**	**47.9**	**50.5**	**46.2**	**47.1**	**49.5**	**53.7**	**54.6**	**54.0**	**53.2**	**52.8**	**52.7**	**52.8**	**52.8**	**53.0**	**53.2**
	PF	0.952	0.974	0.969	0.993	0.996	0.997	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
	MW	42.9	42.3	44.4	41.3	42.5	44.9	48.2	49.1	48.6	47.8	47.5	47.3	47.4	47.5	47.7	48.0
	MVAr	13.7	9.7	11.3	5.1	3.7	3.3	9.7	9.9	9.8	9.6	9.6	9.5	9.5	9.6	9.6	9.7
50% POE	**MVA**	**45.0**	**43.4**	**45.8**	**41.7**	**42.6**	**45.0**	**49.2**	**50.1**	**49.6**	**48.8**	**48.4**	**48.3**	**48.4**	**48.4**	**48.7**	**49.0**
	PF	0.952	0.974	0.969	0.993	0.996	0.997	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Actual	**MVA**	**0.3**															
Test Australia^	MW	0.3															
	MVAr	0.2															
10% POE	**MVA**	**0.3**															
	PF	0.867															
Major customer	MW	0.3															
	MVAr	0.2															
50% POE	**MVA**	**0.3**															
	PF	0.867															
Actual	**MVA**	**154.4**	**151.4**	**164.2**	**165.5**	**146.2**	**135.9**										
Undiversified	MW	154.9	152.8	171.0	164.1	158.4	160.2	165.7	170.0	172.4	171.5	171.4	171.9	173.0	174.0	175.5	177.0
	MVAr	27.8	18.9	21.4	11.2	22.8	16.4	30.9	31.8	32.1	31.9	31.8	31.9	32.1	32.3	32.6	32.8
10% POE	**MVA**	**158.5**	**154.8**	**173.2**	**164.8**	**161.0**	**160.2**	**169.6**	**174.0**	**176.5**	**175.6**	**175.4**	**175.9**	**177.0**	**178.0**	**179.6**	**181.1**
	PF	0.977	0.987	0.987	0.996	0.983	1.000	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977	0.977
	MW	142.1	140.3	157.0	149.8	145.4	147.2	152.7	157.0	159.6	158.7	158.6	159.0	160.2	161.1	162.7	164.3
	MVAr	20.7	17.2	19.8	10.6	20.9	15.1	29.0	29.9	30.3	30.0	30.0	30.1	30.3	30.4	30.7	31.0
50% POE	**MVA**	**122.0**	**142.2**	**159.0**	**150.5**	**147.8**	**147.2**	**156.5**	**160.9**	**163.5**	**162.6**	**162.4**	**162.9**	**164.1**	**165.1**	**166.7**	**168.3**
	PF	1.165	0.987	0.987	0.995	0.984	1.000	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976

Note: ^ Test Australia is planned to be supplied from Jordan Springs

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**148.9**	**142.6**	**146.3**	**149.5**	**136.5**	**124.0**										
Diversified	MW	135.0	143.8	154.5	150.8	154.4	158.4	162.1	166.3	168.7	167.8	167.6	168.1	169.2	170.2	171.6	173.1
(Meter)	MVAr	43.2	48.7	39.2	34.9	37.2	38.9	39.8	40.9	41.4	41.2	41.2	41.3	41.6	41.8	42.2	42.5
10% POE	**MVA**	**141.7**	**151.8**	**159.4**	**154.7**	**158.8**	**163.1**	**166.9**	**171.3**	**173.7**	**172.8**	**172.6**	**173.1**	**174.2**	**175.2**	**176.7**	**178.2**
	PF	0.952	0.947	0.969	0.974	0.972	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
	MW	123.6	132.6	144.6	136.5	140.0	144.0	149.4	153.6	156.1	155.2	155.1	155.6	156.7	157.6	159.2	160.7
	MVAr	39.5	44.9	36.7	31.6	33.7	35.4	36.7	37.7	38.3	38.1	38.1	38.2	38.5	38.7	39.1	39.5
50% POE	**MVA**	**129.8**	**140.0**	**149.2**	**140.1**	**144.0**	**148.2**	**153.8**	**158.2**	**160.7**	**159.9**	**159.7**	**160.2**	**161.3**	**162.3**	**163.9**	**165.5**
	PF	0.952	0.947	0.969	0.974	0.972	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
Est. System Normal																	
	MVA																

Note: There is 60 MVAr of capacitors installed on the 33kV busbar.

5.27 Regentville STS Demand Forecast

Discussion

Regentville BSP is owned by TransGrid and has two 375MVA 330/132kV transformers installed, providing a firm capacity of 375MVA. Regentville BSP supplies Penrith sub-transmission substation (STS) and Glenmore Park, Penrith, North Warragamba and Luddenham zone substations.
Main source of load growth at Regentville BSP is lot release area to the south of Glenmore Park. However, large load growth is expected in Science Park development, proposed to be initially supplied from Luddenham ZS. There is also a load increase on Defence site, to the north of Luddenham.

Significant load growth in area supplied from Regentville BSP is also caused by multiple commercial and multi-unit development applications in Penrith ZS area.

The Penrith Panthers development is progressing, by steady connections of load within the area.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Glenmore Park	2 x 45	90
Penrith 11KV	2 x 34/44/52/65	130
North Warragamba	1 x 25 + 1x15	40
Luddenham	2 x 15	30

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2026	Luddenham	Regentville	Science_Park	Sydney_West_132kV	3.19
2026	Luddenham	Regentville	Science_Park	Sydney_West_132kV	3.19

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Glenmore_Park	UCL10012 Aged Care Facility	2023	0.63	0.31	0.70
Glenmore_Park	UCL10046 Electric vehicle charging	2023	0.90	0.44	1.00
Glenmore_Park	UCL11107 1-11 Town Terrace,	2023	0.69	0.14	0.70
Glenmore_Park	ULL3190 Glenmore Park High School	2023	0.17	0.08	0.19
Glenmore_Park	URS15678 Bradley St, Glenmore Park	2023	0.12	0.06	0.14
Luddenham	AEROAP Agribusiness North - FY25	2025	2.92	0.59	2.98
Luddenham	AEROAP Agribusiness North - FY26	2026	2.92	0.59	2.98
Luddenham	AEROAP Agribusiness North - FY27	2027	2.92	0.59	2.98
Luddenham	AEROAP Agribusiness North - FY28	2028	1.65	0.33	1.68
Luddenham	AEROAP Agribusiness North - FY29	2029	1.65	0.33	1.68
Luddenham	AEROAP Agribusiness North - FY30	2030	1.65	0.33	1.68
Luddenham	AEROAP Agribusiness North - FY31	2031	1.65	0.33	1.68
Luddenham	AEROAP Agribusiness North - FY32	2032	2.97	0.60	3.03
Luddenham	AEROAP Luddenham Enterprise -	2030	1.41	0.29	1.44
Luddenham	AEROAP Luddenham Enterprise -	2031	1.41	0.29	1.44
Luddenham	AEROAP Luddenham Enterprise -	2032	1.41	0.29	1.44
Luddenham	AEROAP Northern Gateway - FY24	2024	1.30	0.26	1.33
Luddenham	AEROAP Northern Gateway - FY25	2025	1.30	0.26	1.33
Luddenham	AEROAP Northern Gateway - FY26	2026	1.30	0.26	1.33
Luddenham	AEROAP Northern Gateway - FY27	2027	1.30	0.26	1.33
Luddenham	AEROAP Northern Gateway - FY28	2028	2.61	0.53	2.66
Luddenham	AEROAP Northern Gateway - FY29	2029	2.61	0.53	2.66
Luddenham	AEROAP Northern Gateway - FY30	2030	2.61	0.53	2.66
Luddenham	AEROAP Northern Gateway - FY31	2031	2.61	0.53	2.66
Luddenham	AEROAP Northern Gateway - FY32	2032	2.61	0.53	2.66
Luddenham	AEROAP Science Park (Luddenham)	2023	0.90	0.00	0.90
Luddenham	AEROAP Science Park (Luddenham)	2024	1.15	0.00	1.15
Luddenham	AEROAP Science Park (Luddenham)	2025	1.15	0.00	1.15
Luddenham	AEROAP Science Park (Luddenham)	2023	0.90	0.00	0.90
Luddenham	AEROAP Science Park (Luddenham)	2024	1.15	0.00	1.15
Luddenham	AEROAP Science Park (Luddenham)	2025	1.15	0.00	1.15
Luddenham	ARP4241 URD north of Chain-O-Ponds	2028	0.81	0.00	0.81
Luddenham	NCL0271-1 RAAF temporary supply	2023	1.47	0.30	1.50
Luddenham	NCL0271-2 RAAF temporary supply	2025	-1.47	0.30	-
Luddenham	NRL15102 Fairlight Rd, Mulgoa	2024	0.01	0.00	0.01
Luddenham	NUL0656 Sydney Water SSP	2023	0.29	0.06	0.30
Luddenham	UIL5931 No.275 Adams Rd	2023	1.35	0.65	1.50
Luddenham	ULL3092 Littlefields Rd, Mulgoa -	2023	0.05	0.02	0.05
Luddenham	ULL3448-1 WSA Concrete Batching	2023	1.42	0.29	1.45

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Luddenham	ULL3448-3 WSA Concrete Batching	2024	1.42	0.29	1.45
Penrith_11kV	UCL10046 EV charging station	2023	0.81	0.39	0.90
Penrith_11kV	UCL10060 Penrith Panthers (hotel,	2023	1.53	0.74	1.70
Penrith_11kV	UCL10805 302, 29 Hickeys Rd Penrith	2023	0.24	0.12	0.26
Penrith_11kV	UCL11103 133 Henry St, Penrith	2024	0.46	0.09	0.47
Penrith_11kV	UIL6019 Leland St, Penrith 18	2023	0.63	0.31	0.70
Penrith_11kV	ULL3360 99A Henry St., Penrith	2024	1.08	0.22	1.10
Penrith_11kV	UML10177 10-16 John Tipping Grove	2024	0.20	0.04	0.20

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Glenmore_Park	ARP4241 URD north of Chain-O-Ponds Rd	2023	4	4.59
Glenmore_Park	ULL3280 1-23 Forestwood Dr, Glenmore Park	2023	2	0.42
Glenmore_Park	UML8384 Glengarry Dr, Glenmore Park	2021	2	0.16
Glenmore_Park	UML9044 90-98 Glenmore Ridge Dr (147 units, shops, basement carpar)	2023	2	1.29
Glenmore_Park	URS20377 Forestwood Dr, Glenmore Park	2019	3	0.71
Glenmore_Park	URS21002 Stg2 Forestwood Dr, Glenmore Park	2022	2	0.10
Glenmore_Park	URS21630 44 residential lots - Off Forestwood Dr, Glenmore Park	2022	3	0.24
Glenmore_Park	URS21958 Gunyah Dr, Glenmore Park	2021	3	0.24
Glenmore_Park	URS21973 Stg6 The Northern Rd, Mulgoa	2021	2	0.19
Luddenham	ARP3834 New feeder for initial supply of large Chain O'Ponds development	2024	10	5.4
Luddenham	ARP3834 URD north of Chain-O-Ponds Rd	2024	10	3.24
Luddenham	ENL4226 Mixed: School, Retail, Sport fields (Penrith Council)	2026	3	0.7
Luddenham	NLL0259 Additional load to Defence site, Luddenham	2022	9	6.00
North_Warragamba	NCL1760 Optus upgrade 1030 Silverdale Road WEROMBI	2023	1	0.033
North_Warragamba	URS19804 Warradale Rd, Silverdale - 87 Residential lots (Back calc ADMD)	2022	2	0.50
North_Warragamba	URS25036 41 Marsh Rd, Silverdale - Stage 4	2023	2	0.17
North_Warragamba	URS26861 41 Marsh Rd Silverdale Stage 5	2024	2	0.3186
Penrith_11kV	ENL2601 Mulgoa Rd, Penrith	2023	7	2.86
Penrith_11kV	ENL2684 Station St, Penrih	2023	10	6.84
Penrith_11kV	ENL3028 Union Rd, Penrith	2023	10	4.64
Penrith_11kV	UCL10228 46-50 Belmore Street, Penrith	2023	2	0.80
Penrith_11kV	UCL10552 Electric buses chargers Mullins Rd, Penrith	2023	3	1.20
Penrith_11kV	UCL8744 Lawson St, Penrith (hotel units + commercial)	2022	2	0.87
Penrith_11kV	UML8753 163 Station St, Penrith - URS20993 Stage 1A	2025	2	0.56
Penrith_11kV	UML8754 163 Station St, Penrith - URS20993 Stage 1B	2024	2	0.52
Penrith_11kV	UML9002 Mulgoa Rd, Penrith	2021	3	0.50
Penrith_11kV	UML9137 26 Lord Sheffield Cct, Penrith	2021	3	0.46
Penrith_11kV	UML9451 Markham Ave, Penrith	2022	2	0.16
Penrith_11kV	UML9772 2 Lord Sheffield Cct, Penrith	2022	3	0.54
Penrith_11kV	URS24229-A Stage 2A and 2B Retreat Dr, Penrith	2022	4	0.68
Penrith_11kV	URS24229-B Stage 3 Retreat Dr, Penrith Panthers	2022	4	0.48

Generation

No Generation known at this location

Regentville STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**44.8**	**44.8**	**44.4**	**44.6**	**41.3**	**38.4**										
Glenmore Park	MW	43.5	43.5	49.5	45.3	43.9	46.0	49.1	50.8	52.1	52.1	52.0	52.0	52.2	52.3	52.5	52.7
	MVAr	9.4	9.4	9.3	7.2	8.8	5.1	5.5	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.9	5.9
10% POE	**MVA**	**44.5**	**44.5**	**50.3**	**45.8**	**44.7**	**46.3**	**49.4**	**51.1**	**52.5**	**52.4**	**52.3**	**52.4**	**52.5**	**52.6**	**52.8**	**53.0**
	PF	0.977	0.977	0.983	0.988	0.980	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	38.3	38.3	45.5	39.7	38.3	40.2	43.3	45.1	46.4	46.4	46.3	46.4	46.5	46.6	46.8	47.1
	MVAr	8.3	8.3	8.6	6.3	7.7	4.5	4.8	5.0	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.3
50% POE	**MVA**	**39.2**	**39.2**	**46.3**	**40.2**	**39.0**	**40.5**	**43.6**	**45.4**	**46.7**	**46.7**	**46.6**	**46.6**	**46.8**	**46.9**	**47.1**	**47.3**
	PF	0.977	0.977	0.983	0.988	0.980	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**10.9**	**8.3**	**7.8**	**8.1**	**7.9**	**5.7**										
Luddenham	MW	9.2	7.9	8.1	7.7	7.5	7.3	12.7	17.3	22.5	21.4	26.8	32.8	37.8	43.5	48.8	54.9
	MVAr	3.7	3.2	2.9	2.4	2.1	2.0	3.5	4.8	6.2	5.9	7.4	9.1	10.4	12.0	13.5	15.1
10% POE	**MVA**	**9.9**	**8.5**	**8.6**	**8.1**	**7.7**	**7.6**	**13.2**	**18.0**	**23.3**	**22.2**	**27.8**	**34.0**	**39.3**	**45.1**	**50.6**	**56.9**
	PF	0.926	0.925	0.943	0.956	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964
	MW	8.2	6.9	7.1	6.9	6.6	6.5	11.9	16.5	21.7	20.6	26.0	32.0	37.0	42.6	48.0	54.0
	MVAr	3.3	2.8	2.5	2.1	1.8	1.8	3.3	4.6	6.0	5.7	7.2	8.8	10.2	11.8	13.2	14.9
50% POE	**MVA**	**8.8**	**7.5**	**7.6**	**7.2**	**6.8**	**6.7**	**12.3**	**17.1**	**22.5**	**21.4**	**27.0**	**33.2**	**38.4**	**44.2**	**49.7**	**56.1**
	PF	0.926	0.925	0.943	0.956	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964
Actual	**MVA**	**12.0**	**11.8**	**14.0**	**13.0**	**11.3**	**10.6**										
North	MW	10.8	10.8	13.7	11.8	11.2	11.6	11.6	11.7	11.8	11.7	11.7	11.8	12.0	12.2	12.5	12.7
Warragamba	MVAr	3.9	3.7	4.5	3.2	3.1	3.3	5.0	5.0	5.1	5.0	5.0	5.1	5.2	5.3	5.4	5.5
10% POE	**MVA**	**11.5**	**11.4**	**14.5**	**12.2**	**11.6**	**12.0**	**12.7**	**12.7**	**12.8**	**12.7**	**12.7**	**12.9**	**13.1**	**13.3**	**13.6**	**13.9**
	PF	0.940	0.947	0.951	0.966	0.964	0.963	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918
	MW	9.8	9.8	12.3	10.5	10.0	10.4	10.4	10.5	10.6	10.5	10.5	10.6	10.9	11.1	11.3	11.6
	MVAr	3.6	3.3	4.0	2.8	2.8	2.9	4.5	4.5	4.6	4.5	4.5	4.6	4.7	4.8	4.9	5.0
50% POE	**MVA**	**10.4**	**10.3**	**13.0**	**10.8**	**10.4**	**10.8**	**11.4**	**11.4**	**11.5**	**11.4**	**11.4**	**11.6**	**11.8**	**12.0**	**12.3**	**12.6**
	PF	0.940	0.947	0.951	0.966	0.964	0.963	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918
Actual	**MVA**	**46.7**	**44.3**	**47.5**	**43.0**	**40.0**	**41.1**										
Penrith 11kV	MW	45.9	46.8	47.9	43.8	44.6	45.1	49.2	52.3	54.0	55.5	57.3	59.0	60.2	60.9	61.4	61.5
	MVAr	13.0	12.9	14.7	5.8	0.5	1.3	10.2	10.9	11.2	11.5	11.9	12.3	12.5	12.7	12.8	12.8
10% POE	**MVA**	**47.7**	**48.5**	**50.1**	**44.2**	**44.6**	**45.1**	**50.3**	**53.4**	**55.2**	**56.7**	**58.5**	**60.2**	**61.5**	**62.2**	**62.7**	**62.8**
	PF	0.962	0.964	0.956	0.991	1.000	1.000	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
	MW	43.0	43.7	45.1	40.6	41.5	41.9	46.0	49.1	50.8	52.3	54.1	55.8	57.0	57.7	58.2	58.3
	MVAr	12.1	12.0	13.8	5.4	0.5	1.3	9.6	10.2	10.6	10.9	11.2	11.6	11.8	12.0	12.1	12.1
50% POE	**MVA**	**44.7**	**45.3**	**47.2**	**41.0**	**41.5**	**41.9**	**47.0**	**50.2**	**51.9**	**53.5**	**55.2**	**57.0**	**58.2**	**59.0**	**59.4**	**59.5**
	PF	0.962	0.964	0.956	0.991	1.000	1.000	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
Actual	**MVA**	**114.4**	**109.2**	**113.8**	**108.7**	**100.4**	**95.7**										
Undiversified	MW	109.5	109.0	119.2	108.6	107.1	110.0	122.6	132.2	140.5	140.7	147.8	155.6	162.2	168.9	175.1	181.8
	MVAr	30.1	29.2	31.3	18.6	14.5	11.8	24.2	26.4	28.4	28.3	30.2	32.2	34.0	35.8	37.5	39.3
10% POE	**MVA**	**113.7**	**113.0**	**123.5**	**110.4**	**108.7**	**111.0**	**125.5**	**135.3**	**143.8**	**144.1**	**151.4**	**159.5**	**166.3**	**173.3**	**179.7**	**186.6**
	PF	0.963	0.965	0.965	0.984	0.985	0.991	0.977	0.977	0.977	0.977	0.976	0.976	0.975	0.975	0.975	0.974
	MW	99.3	98.7	110.1	97.6	96.3	99.0	111.7	121.2	129.5	129.8	136.9	144.7	151.3	158.0	164.3	170.9
	MVAr	27.3	26.5	28.9	16.7	12.8	10.5	22.2	24.3	26.3	26.3	28.1	30.2	31.9	33.7	35.4	37.3
50% POE	**MVA**	**103.1**	**102.3**	**114.0**	**99.2**	**97.7**	**99.9**	**114.3**	**124.1**	**132.6**	**132.9**	**140.3**	**148.3**	**155.2**	**162.1**	**168.6**	**175.5**
	PF	0.963	0.965	0.965	0.984	0.986	0.991	0.977	0.977	0.976	0.977	0.976	0.976	0.975	0.975	0.974	0.974

5.28 Shoalhaven STS Demand Forecast

Discussion

Shoalhaven STS has three 60 MVA 132/33kV transformers providing a firm rating of 120 MVA.

Shoalhaven City Council (SCC) released their structure plan for the strategic direction of the Nowra / Bomaderry area in October 2006. This strategic plan was endorsed by the NSW Department of Planning and Infrastructure in February 2008. All SCC release areas are now subject to approved Shoalhaven Local Environment Plan (SLEP) 2014. The main green field expansion area is expected to be the West Bomaderry area with up to 4000 residential lots to be released over the next 20-30 years. SCC expects the initial release areas to be Mundamia (approx. 59ha; 890 dwellings), Worrigee (approx. 38ha; 500 dwellings) and Moss Vale Road South (approx. 104ha: 1,170 dwellings).

Burrier pumping station may operate during peak periods. Bamarang is also a pumping station with similar operating characteristics.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Shoalhaven	3 x 60	180
Berry	2 x 15	30
Bolong	1 x 12.5	12.5
Bomaderry	3 x 10/12.5/15	45
Kangaroo Valley	1 x 5 + 1 x 2.5	7.5
Nowra	2 x 22/29/35	70

Proposed Load Transfers

No Proposed Load Transfers at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Berry	NCL1737 Berry, Optus	2023	0.05	0.01	0.05
Berry	NRS3277 Broughton, Residential 1 x Large Lot	2024	0.03	0.01	0.04
Bomaderry	NLL0266 Bomaderry, SCC Sewer pump	2023	0.10	0.02	0.11
Bomaderry	NRL15117 Beaumont, Rural Load	2023	0.01	0.00	0.01
Bomaderry	ULL3362 Bomaderry, Artie Smith Oval (sporting Complex)	2023	0.28	0.06	0.29
Bomaderry	ULL3392 Cambewarra, Sewer	2023	0.05	0.01	0.06
Bomaderry	ULL3430 North Nowra, Sewer/water Pumps	2023	0.13	0.03	0.13
HMAS_Albatross	ULL2036 HMAS Albatross	2025	6.39	3.09	7.10
Kangaroo_Valley	NCL1719 Kangaro Valley, Bush Retreat	2023	0.07	0.03	0.08
Kangaroo_Valley	NRL14630 Kangaroo Valley, Rural Load	2023	0.05	0.02	0.05
Kangaroo_Valley	NRL14972 Kangaroo Valley, 1 x Rural lot	2023	0.01	0.00	0.01
Nowra_	NRL14752 Nowra Hill, Non Urban Residential	2023	0.06	0.01	0.06
Nowra_	NRL15246 Longreach, Rural Load	2024	0.03	0.01	0.04
Nowra_	NRL15724 Barringella, Rural load	2023	0.03	0.01	0.03
Nowra_	UCL10876 Nowra, Commercial	2023	0.13	0.03	0.13
Nowra_	UCL10985 Nowra - Guzman Y Gomez	2023	0.10	0.02	0.10
Nowra_	UCL11175 Nowra, New Sewer Pump Site	2023	0.13	0.03	0.13
Nowra_	UCL11341 Nowra, Commercial	2024	0.15	0.03	0.15
Nowra_	UCS0577 Nowra - Pet Barn, 7-Eleven, Taco Bell etc.	2023	0.32	0.07	0.33
Nowra_	ULL3038 Nowra, Multi level Carpark & EV Charging	2023	0.35	0.17	0.39
Nowra_	UML9472 West Nowra, 21 x Res. Units	2023	0.06	0.03	0.07

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Berry	NRS25603 Berry, 28 lots	2023	4	0.13
Berry	NRS3307 Berry, large Lots	2020	2	0.03
Berry	NRS3414 Berry, 2 Lots (Large Rural)	2022	1	0.02
Berry	URS21544 Huntingdale, 13 lots	2021	2	0.06
Bomaderry	ENL2805 Cambewarra / Moss Vale Road (South), 1100 lots	2022	20	5.17
Bomaderry	ENL2935 Cambewarra / Moss Vale Road (North), 2000 lots	2022	20	9.40
Bomaderry	NRS3450 Tapitallee, 3 Rural Lots	2021	2	0.02
Bomaderry	URS19618 Cambewarra/ Moss Vale Rd (South), Stage 1A	2024	2	0.1457
Bomaderry	URS22501 Tapitallee, 50 lots	2019	6	0.24
Bomaderry	URS23849 Bomaderry, 15 Lots	2022	2	0.07
Bomaderry	URS24584 Cambewarra/ Moss Vale Rd (South), Stage 1A & 1C	2023	3	0.2679
Bomaderry	URS24587 Cambewarra/Moss Vale Rd (South), Stage 1B	2024	2	0.09
Bomaderry	URS25427 Cambewarra/Moss Vale Rd (South) 32 Units	2024	1	0.11
Bomaderry	URS25427 Cambewarra/Moss Vale Rd (South), 47 Lots	2024	3	0.22
Bomaderry	URS26584 Cambewarra/ Moss Vale Rd (South), Stage 1B	2024	1	0.1316
Bomaderry	URS26790 Cambewarra/Moss Vale Rd (South), Stage 0	2025	3	0.1598
Bomaderry	URS26791 Cambewarra/Moss Vale Rd (South), Stage 1	2026	4	0.5029
Bomaderry	URS26792 Cambewarra/Moss Vale Rd (South), Stage 2	2027	2	0.2679
Bomaderry	URS26793 Cambewarra/Moss Vale Rd (South), Stage 3	2027	1	0.1598
Bomaderry	URS26794 Cambewarra/Moss Vale Rd (South), Stage 4	2028	1	0.282
Kangaroo_Valley	NRS3446 Kangaroo Valley, 5 x rural lots	2021	3	0.04
Kangaroo_Valley	URS21139 Kangaroo Valley, 12 lots	2021	4	0.06
Nowra_	UML10182 South Nowra, 19 Townhouses	2023	1	0.08
Nowra_	URS18746 Nowra, 100 Lots	2019	5	0.47
Nowra_	URS20446 Mundamia (Stage 1/11), 34 Lots	2023	3	0.15
Nowra_	URS20538 Mundamia (Stage 2/11), 27 Lots	2023	3	0.13
Nowra_	URS20551 Mundamia (Stage 3/11), 29 Lots	2024	3	0.14
Nowra_	URS20896 Worigee, 21 lots	2020	4	0.10

Generation

Zone Substation	Name	Description	Date
Nowra	Nowra Generator	1 x 1MVA (Unity power factor) - connected to 11kV network	Installed

Configuration Changes

Year	Zone / HVC	From STS	To STS
2015	Brundee	Shoalhaven	West Tomerong
2015	Culburra	Shoalhaven	West Tomerong
2015	Huskisson	Shoalhaven	West Tomerong
2015	South Nowra	Shoalhaven	West Tomerong
2015	Sussex Inlet	Shoalhaven	West Tomerong

Shoalhaven STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**	**0.1**										
APM	MW	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Major customer	MVAr	0.2	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10% POE	**MVA**	**0.3**	**0.4**	**0.3**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
	PF	0.832	0.706	0.704	0.870	0.894	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
	MW	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	MVAr	0.2	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50% POE	**MVA**	**0.3**	**0.4**	**0.3**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
	PF	0.832	0.706	0.704	0.870	0.894	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Actual	**MVA**	**0.2**	**0.2**	**0.2**	**5.0**	**6.3**	**0.9**										
Clearwater	MW	0.2	0.2	0.3	4.0	6.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	MVAr	0.1	0.1	0.2	2.9	2.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
10% POE	**MVA**	**0.2**	**0.2**	**0.4**	**5.0**	**6.3**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**
	PF	0.806	0.806	0.806	0.804	0.950	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956
Major customer - 20158	MW	0.2	0.2	0.3	4.0	6.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	MVAr	0.1	0.1	0.2	2.9	2.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
50% POE	**MVA**	**0.2**	**0.2**	**0.4**	**5.0**	**6.3**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**
	PF	0.806	0.806	0.806	0.804	0.950	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956
Actual	**MVA**	**9.0**	**8.0**	**8.2**	**9.9**	**9.2**	**7.5**										
Berry	MW	9.3	8.2	8.7	8.6	8.3	8.2	8.1	8.0	8.0	7.8	7.8	7.8	7.9	8.1	8.3	8.4
	MVAr	2.0	1.5	1.4	0.2	3.4	4.0	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.4
10% POE	**MVA**	**9.5**	**8.3**	**8.8**	**8.6**	**8.9**	**9.1**	**8.4**	**8.3**	**8.3**	**8.1**	**8.1**	**8.1**	**8.2**	**8.4**	**8.6**	**8.8**
	PF	0.978	0.984	0.988	1.000	0.927	0.897	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
	MW	7.6	6.8	7.2	7.1	7.0	6.8	6.7	6.6	6.6	6.4	6.4	6.5	6.6	6.8	7.0	7.2
	MVAr	1.6	1.2	1.1	0.2	2.8	3.4	1.9	1.9	1.9	1.8	1.8	1.8	1.9	1.9	2.0	2.0
50% POE	**MVA**	**7.8**	**6.9**	**7.3**	**7.1**	**7.5**	**7.6**	**6.9**	**6.8**	**6.8**	**6.7**	**6.7**	**6.8**	**6.9**	**7.0**	**7.2**	**7.4**
	PF	0.978	0.984	0.988	1.000	0.927	0.897	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
Actual	**MVA**	**3.0**	**2.7**	**2.6**	**3.3**	**3.1**	**4.2**										
Bolong	MW	2.9	2.9	2.5	3.2	3.0	4.2	4.2	4.2	4.2	4.1	4.2	4.2	4.2	4.3	4.3	4.4
	MVAr	0.8	1.3	0.9	0.9	0.8	0.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
10% POE	**MVA**	**3.0**	**3.1**	**2.6**	**3.3**	**3.1**	**4.2**	**4.4**	**4.3**	**4.4**	**4.3**	**4.3**	**4.4**	**4.4**	**4.5**	**4.5**	**4.6**
	PF	0.967	0.915	0.943	0.961	0.966	0.984	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956
	MW	2.9	2.9	2.5	3.2	3.0	4.2	4.2	4.2	4.2	4.1	4.2	4.2	4.2	4.3	4.3	4.4
	MVAr	0.8	1.3	0.9	0.9	0.8	0.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
50% POE	**MVA**	**3.0**	**3.1**	**2.6**	**3.3**	**3.1**	**4.2**	**4.4**	**4.3**	**4.4**	**4.3**	**4.3**	**4.4**	**4.4**	**4.5**	**4.5**	**4.6**
	PF	0.967	0.915	0.943	0.961	0.966	0.984	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956
Actual	**MVA**	**21.0**	**19.7**	**20.2**	**22.2**	**20.2**	**17.9**										
Bomaderry	MW	19.9	20.2	26.1	19.9	20.6	20.6	21.2	21.7	22.5	22.8	23.8	25.1	26.2	27.3	28.7	30.1
	MVAr	4.7	9.8	4.6	0.0	2.5	0.0	4.8	4.9	5.1	5.2	5.4	5.7	6.0	6.2	6.5	6.8
10% POE	**MVA**	**20.5**	**22.4**	**26.5**	**19.9**	**20.8**	**20.6**	**21.7**	**22.3**	**23.0**	**23.4**	**24.5**	**25.8**	**26.9**	**28.0**	**29.5**	**30.9**
	PF	0.973	0.900	0.985	1.000	0.993	1.000	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
	MW	17.8	17.3	20.9	17.3	18.0	17.9	18.5	19.0	19.8	20.2	21.2	22.5	23.6	24.7	26.1	27.5
	MVAr	4.2	8.4	3.6	0.0	2.2	0.0	4.2	4.3	4.5	4.6	4.8	5.1	5.4	5.6	5.9	6.3
50% POE	**MVA**	**18.3**	**19.2**	**21.2**	**17.3**	**18.1**	**17.9**	**19.0**	**19.5**	**20.3**	**20.7**	**21.7**	**23.0**	**24.2**	**25.4**	**26.8**	**28.2**
	PF	0.973	0.900	0.985	1.000	0.993	1.000	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
Actual	**MVA**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**										
Burrier	MW	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	MVAr	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
10% POE	**MVA**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**
	PF	0.913	0.913	0.914	0.917	0.915	0.917	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915
Major customer	MW	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	MVAr	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
50% POE	**MVA**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**
	PF	0.913	0.913	0.914	0.917	0.915	0.917	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915	0.915

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**5.1**	**4.1**	**4.6**	**4.3**	**3.7**	**3.8**										
HMAS Albatross	MW	4.8	3.9	4.4	4.1	3.6	3.7	3.7	3.7	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
	MVAr	1.6	1.3	1.4	1.2	0.8	0.9	0.9	0.9	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
10% POE	**MVA**	**5.1**	**4.1**	**4.6**	**4.3**	**3.7**	**3.8**	**3.8**	**3.8**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**
	PF	0.950	0.950	0.950	0.961	0.977	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974
Major customer	MW	4.8	3.9	4.4	4.1	3.6	3.7	3.7	3.7	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
	MVAr	1.6	1.3	1.4	1.2	0.8	0.9	0.9	0.9	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
50% POE	**MVA**	**5.1**	**4.1**	**4.6**	**4.3**	**3.7**	**3.8**	**3.8**	**3.8**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**
	PF	0.950	0.950	0.950	0.961	0.977	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974
Actual	**MVA**	**3.1**	**2.7**	**2.6**	**2.3**	**2.5**	**2.0**										
Kangaroo Valley	MW	2.7	2.8	2.8	2.3	2.5	2.8	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.1	3.1	3.2
	MVAr	0.9	0.9	0.6	0.4	0.4	0.2	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
10% POE	**MVA**	**2.9**	**2.9**	**2.9**	**2.3**	**2.5**	**2.8**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.1**	**3.1**	**3.2**	**3.3**
	PF	0.950	0.950	0.976	0.988	0.989	0.996	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
	MW	2.3	2.4	2.3	1.9	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.5	2.5	2.6
	MVAr	0.8	0.8	0.5	0.3	0.3	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
50% POE	**MVA**	**2.4**	**2.5**	**2.4**	**2.0**	**2.1**	**2.2**	**2.4**	**2.4**	**2.4**	**2.3**	**2.4**	**2.4**	**2.5**	**2.5**	**2.6**	**2.7**
	PF	0.950	0.950	0.976	0.988	0.989	0.996	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
Actual	**MVA**	**8.6**	**9.4**	**9.8**	**10.1**	**11.6**	**13.3**										
Manildra	MW	7.9	8.6	9.0	9.3	10.6	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
	MVAr	3.4	3.6	3.8	4.1	4.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
10% POE	**MVA**	**8.6**	**9.4**	**9.8**	**10.1**	**11.6**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**
	PF	0.920	0.923	0.921	0.916	0.916	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Major customer	MW	7.9	8.6	9.0	9.3	10.6	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
	MVAr	3.4	3.6	3.8	4.1	4.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
50% POE	**MVA**	**8.6**	**9.4**	**9.8**	**10.1**	**11.6**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**	**13.3**
	PF	0.920	0.923	0.921	0.916	0.916	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Actual	**MVA**	**26.9**	**29.1**	**30.4**	**31.5**	**36.2**	**39.0**										
Manildra_SM22	MW	24.7	26.9	28.0	28.9	33.0	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8
	MVAr	10.6	11.2	11.8	12.6	14.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
10% POE	**MVA**	**26.9**	**29.1**	**30.4**	**31.5**	**36.2**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**
	PF	0.920	0.923	0.921	0.916	0.912	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Major customer	MW	24.7	26.9	28.0	28.9	33.0	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8
	MVAr	10.6	11.2	11.8	12.6	14.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
50% POE	**MVA**	**26.9**	**29.1**	**30.4**	**31.5**	**36.2**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**	**39.0**
	PF	0.920	0.923	0.921	0.916	0.912	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Actual	**MVA**	**26.2**	**20.4**	**23.7**	**24.3**	**21.2**	**21.0**										
Nowra	MW	29.1	25.5	25.7	24.3	24.6	26.1	26.5	26.4	26.6	26.4	26.4	26.6	26.8	27.1	27.4	27.8
	MVAr	1.7	2.4	3.5	2.4	2.0	14.9	6.2	6.1	6.2	6.1	6.1	6.2	6.2	6.3	6.4	6.4
10% POE	**MVA**	**29.1**	**25.6**	**25.9**	**24.4**	**24.7**	**30.1**	**27.2**	**27.1**	**27.3**	**27.1**	**27.1**	**27.3**	**27.5**	**27.8**	**28.1**	**28.5**
	PF	0.998	0.996	0.991	0.995	0.997	0.868	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974
	MW	23.3	22.9	22.7	21.0	21.2	22.5	23.0	22.9	23.2	22.9	23.0	23.1	23.4	23.6	24.0	24.3
	MVAr	1.3	2.2	3.1	2.1	1.7	12.9	5.3	5.3	5.4	5.3	5.3	5.4	5.4	5.5	5.6	5.6
50% POE	**MVA**	23.3	23.0	22.9	21.1	21.3	26.0	23.6	23.6	23.8	23.5	23.6	23.7	24.0	24.2	24.6	24.9
	PF	0.998	0.996	0.991	0.995	0.997	0.868	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974
Actual	**MVA**	**105.6**	**98.8**	**104.8**	**115.3**	**116.3**	**111.8**										
Undiversified	MW	103.8	101.4	109.7	106.6	114.4	120.5	121.5	121.9	128.3	128.3	129.3	130.8	132.4	134.0	136.0	138.1
	MVAr	26.8	33.3	29.3	25.7	32.3	27.2	22.5	22.6	24.1	24.1	24.3	24.6	25.0	25.4	25.9	26.3
10% POE	**MVA**	**108.3**	**107.8**	**114.4**	**111.8**	**120.2**	**126.1**	**123.9**	**124.3**	**131.0**	**130.9**	**131.9**	**133.5**	**135.1**	**136.7**	**138.9**	**141.0**
	PF	0.959	0.940	0.959	0.954	0.952	0.956	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
	MW	93.9	94.1	99.6	98.9	106.7	112.3	113.3	113.7	120.2	120.1	121.2	122.8	124.4	126.0	128.1	130.1
	MVAr	25.5	31.3	27.7	25.3	31.1	24.5	20.5	20.6	22.1	22.1	22.4	22.7	23.1	23.5	24.0	24.4
50% POE	**MVA**	**98.2**	**100.1**	**104.2**	**104.0**	**112.4**	**117.2**	**115.5**	**115.9**	**122.6**	**122.5**	**123.6**	**125.3**	**126.9**	**128.6**	**130.7**	**132.8**
	PF	0.956	0.939	0.956	0.951	0.950	0.958	0.981	0.981	0.981	0.981	0.981	0.980	0.980	0.980	0.980	0.980
Actual	**MVA**	**92.9**	**91.5**	**96.8**	**104.2**	**101.6**	**97.3**										
Diversified	MW	102.3	103.8	111.9	100.1	102.2	107.5	106.1	106.4	112.0	112.0	112.9	114.2	115.6	117.0	118.8	120.6
(Meter)	MVAr	17.4	10.8	27.2	24.9	26.0	15.3	15.1	15.1	15.9	15.9	16.1	16.2	16.4	16.6	16.9	17.1
10% POE	**MVA**	**103.8**	**104.4**	**115.1**	**103.2**	**105.5**	**108.6**	**107.1**	**107.5**	**113.2**	**113.1**	**114.0**	**115.4**	**116.7**	**118.2**	**120.0**	**121.8**
	PF	0.986	0.995	0.972	0.970	0.969	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
	MW	89.7	91.3	98.0	90.9	93.5	98.0	98.9	99.3	105.0	104.9	105.8	107.2	108.6	110.0	111.8	113.6
	MVAr	15.2	9.5	23.9	22.6	23.8	13.9	14.1	14.1	14.9	14.9	15.0	15.2	15.4	15.6	15.9	16.2
50% POE	**MVA**	**90.9**	**91.8**	**100.9**	**93.7**	**96.4**	**99.0**	**99.9**	**100.3**	**106.0**	**105.9**	**106.9**	**108.3**	**109.7**	**111.1**	**112.9**	**114.7**
	PF	0.986	0.995	0.972	0.970	0.969	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990

5.29 Springhill STS Demand Forecast

Discussion

Springhill STS has three 120 MVA transformers to supply the Endeavour Energy load. Woolongong Coal operating Wongawilli No. 4 Airshaft is (HVC28777) and Wongawilli Mine (HVC28295) is expected to cease operations and close during during 2020. Development is expected to continue at the University of Wollongong and UOW Innovation Campus. Further mixed use residential and commercial developments are expected to result in load growth in and around the Wollongong CBD.

Dapto ZS was transferred to Springhill TS when the augmentation of Dapto ZS was completed in late 2011. The development of West Dapto is proposed to create 26,000 lots over 30-35 years, with initial development connecting to Dapto and Kembla Grange zone substations. Ultimately, West Dapto is expected to require two additional zone substations supplied from the Dapto BSP 132kV network. Therefore, the remainder of the development has been included in the Dapto 132kV STS Forecast. In addition to West Dapto, the land surrounding the Tallawarra generator has the potential to yield 1200 dwellings as well as 67ha of industrial/commercial land. The future load for the Tallawarra development is proposed to be supplied from Dapto ZS.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Springhill	3 x 120	360
Dapto	3 x 15/19/25	75
Figtree	2 x 25	50
Inner Harbour	2 x 12.5	25
Kembla Grange	2 x 10	20
Kenny Street	2 x 25	50
North Wollongong	2 x 19	38
Port Kembla	2 x 25	50
South Wollongong	2 x 19	38
Unanderra	3 x 12	36
West Wollongong	1 x 10 + 2 x 12.5	35

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2029	Dapto	Springhill	West_Dapto	Dapto_132kV	16.56
2029	Kembla_Grange	Springhill	West_Dapto	Dapto_132kV	5.52

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Dapto	ULL3258 Dapto, Lakelands Public School	2023	0.17	0.08	0.19
Dapto	UML10209 (WLI) Avondale, 92 x T/Houses	2023	0.36	0.07	0.37
Dendrobium_Mine	ENL4283-8 HVC 21436 KV Mature Load - Scenario 8, Jun 2028	2029	15.79	3.21	16.11
Dendrobium_Mine	NIL0321 HVC 21436 KV - Scenario 2, Jan 2022	2023	1.00	0.48	1.11
Dendrobium_Vent_Fan_B	ENL4283-8 HVC 25413 Vent Fan 2/3 Mature Load - Scenario 8, Jun 2028	2029	2.62	0.53	2.67
Inner_Harbour	UIL6040 Port Kembla, Port Kembla Gas Terminal	2023	0.37	0.18	0.41
Inner_Harbour	UIL6265 Inner Harbour, Tesla charging Station?	2023	0.15	0.03	0.15
Inner_Harbour	UIL6266 Inner Harbour, Tesla Charging Station	2023	0.57	0.12	0.58
Kembla_Grange	UCL10699 (WLI) Horsley, West Dapto Rd, 65 light Industrial Units	2023	0.74	0.36	0.82
Kembla_Grange	UIL5619 Kembla Grange, Composting Site	2023	0.76	0.37	0.84
Kembla_Grange	UIS0966 (WLI) Kembla Grange, Service Station & Industrial Development	2024	0.45	0.09	0.46
Kembla_Grange	UML9761 (WLI) West Dapto, Kembla Grange, 108 Apartments	2023	0.32	0.16	0.36
Kenny_Street	UCL10072 Retail/Commercial Development	2023	2.48	1.20	2.75
Kenny_Street	UML8778 Wollongong, 82 Units & Commercial Premises (MVA diff is Commercial)	2024	0.52	0.25	0.58
Kenny_Street	UML9221 Wollongong, 46 Residential Units & Child Care Centre	2023	0.29	0.14	0.32
Kenny_Street	UML9352 Wollongong, 64 Units & Commercial Tenancies	2023	0.59	0.12	0.60
Kenny_Street	UML9353 Wollongong, 50 Residential Units & Commercial Area	2023	0.22	0.11	0.25
Kenny_Street	UML9849 Wollongong, Large Mixed Use Development	2024	2.52	1.22	2.80
North_Wollongong	UCL10661 Wollongong, Hotel	2023	0.69	0.14	0.70
North_Wollongong	UML10193 Wollongong, 18 Units	2024	0.10	0.02	0.10
North_Wollongong	UML9325 Wollongong, Wollongong, 160 Units & 6 Retail Suits	2023	0.56	0.27	0.62
Port_Kembla	UCL11080 Warrawong, Bayview Centre	2023	0.23	0.05	0.24

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Port_Kembla	UCL11080 Warrawong, Bayview Centre	2023	0.56	0.11	0.57
Port_Kembla	UIL6152 Unanderra, Industrial development	2023	0.54	0.11	0.55
Port_Kembla	ULL3056 Warrawong, Library & Community Centre	2023	0.26	0.05	0.27
South_Wollongong	ULL3381 Wollongong, NRMA EV Charging Station x 2	2023	0.14	0.03	0.15
South_Wollongong	UML9663 Wollongong, Residential - 62 Units) Commercial area	2025	0.27	0.13	0.30
South_Wollongong	UML9900 Wollongong, 40 Resi. Units & Common Area	2023	0.18	0.09	0.20
Unanderra	UIL5499 Unanderra, 18 x Light Industrial Units	2023	0.26	0.05	0.26

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Dapto	UIS0841 Yallah - 31 lots	2020	5	0.74
Dapto	URS23593 (WLI) Huntley Estate, Stage 2B - 68 lots	2024	3	0.3196
Dapto	URS23594 (WLI) Huntley Estate, Stage 1 - 37 lots	2024	3	0.17
Dapto	URS23602 (WLI) Huntley Estate, Stage 1 - 89 lots	2024	3	0.42
Figtree	URS22361 Farmborough Hts, 12 x Dwellings	2022	2	0.06
Figtree	URS24854 Figtree, Stage 1 - 14 lots	2022	3	0.07
Kembla_Grange	URS19124 (WLI) Kembla Grange, Sheaffes Rd, Phase 02, 70 lots	2020	3	0.33
Kembla_Grange	URS19125 (WLI) Kembla Grange, Sheaffes Rd, Phase 03, 51 lots	2020	4	0.24
Kembla_Grange	URS19126 (WLI) Kembla Grange, Sheaffes Rd, Phase 03, 51 lots	2021	4	0.24
Kembla_Grange	URS20190 (WLI) Smith lane, Kembla Grange - Sanctury Ponds Stage 1 of 3, 83 lots	2020	5	0.39
Kembla_Grange	URS20191 (WLI) Smith lane, Kembla Grange - Sanctury Ponds Stage 2 of 3, 84 lots	2020	5	0.39
Kembla_Grange	URS20192 (WLI) Smith lane, Kembla Grange - Sanctury Ponds Stage 3 of 3, 42 lots	2021	2	0.20
Kembla_Grange	URS21477 (WLI) West Dapto Rd, 77 lots	2021	3	0.36
Kembla_Grange	URS21478 (WLI) West Dapto Rd, 54 lots	2020	3	0.25
Kembla_Grange	URS21479 (WLI) West Dapto Rd, 64 lots	2020	3	0.30
Kembla_Grange	URS21634 (WLI) Wongawilli, 36 lots	2021	2	0.17
Kembla_Grange	URS21635 (WLI) Wongawilli, 52 lots	2021	2	0.24
Kembla_Grange	URS21636 (WLI) Wongawilli, 27 lots	2022	2	0.13
Kembla_Grange	URS21637 (WLI) Wongawilli, 39 lots	2022	2	0.18
Kembla_Grange	URS21638 (WLI) Wongawilli, 30 lots	2023	2	0.14
Kembla_Grange	URS21639 (WLI) Wongawilli, 21 lots	2023	2	0.10
Kembla_Grange	URS22665 (WLI) West Dapto, Horsley, 24 Lots	2021	2	0.11
Kembla_Grange	URS24537 (WLI) West Dapto, Horsley, 38 T/Houses	2022	2	0.15
Kembla_Grange	URS24537 (WLI) West Dapto, Horsley, 45 Lots	2022	2	0.21
Kembla_Grange	URS25175 (WLI) Kembla Grange, Sheaffes Rd, 15 Dual Occupancy	2023	3	0.14
Kembla_Grange	URS25175 (WLI) Kembla Grange, Sheaffes Rd, 84 Town Houses	2023	3	0.34
Kembla_Grange	URS26234 (WLI) Kembla Grange, Stage 2A - 27 Lots	2023	2	0.13
Kembla_Grange	URS26234 (WLI) Kembla Grange, Stage 2A - 71 Lots	2023	2	0.28

Generation

Zone Substation	Name	Description	Date
Springhill	Wyuna Waters	2 x 3.25 + 750kW hydro (net effect to system is zero)	Installed

Configuration Changes

No configuration change

Springhill STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**										
BHP Cordeaux Colliery	MW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	MVAr	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10% POE	**MVA**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
	PF	0.539	0.679	0.667	0.650	0.610	0.654	0.654	0.654	0.654	0.654	0.654	0.654	0.654	0.654	0.654	0.654
Major customer –HVC93002	MW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	MVAr	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50% POE	**MVA**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
	PF	0.539	0.679	0.667	0.650	0.610	0.654	0.654	0.654	0.654	0.654	0.654	0.654	0.654	0.654	0.654	0.654
Actual	**MVA**	**10.3**	**10.2**	**10.5**	**13.1**	**12.9**	**14.0**										
Dendrobium Mine	MW	9.9	9.8	9.8	10.9	12.2	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
	MVAr	4.3	2.9	3.6	7.4	4.2	3.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
10% POE	**MVA**	**10.8**	**10.2**	**10.5**	**13.1**	**12.9**	**14.0**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**
	PF	0.918	0.959	0.938	0.826	0.946	0.963	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918
Major customer –HVC21436	MW	9.9	9.8	9.8	10.9	12.2	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
	MVAr	4.3	2.9	3.6	7.4	4.2	3.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
50% POE	**MVA**	**10.8**	**10.2**	**10.5**	**13.1**	**12.9**	**14.0**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**	**14.6**
	PF	0.918	0.959	0.938	0.826	0.946	0.963	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918
Actual	**MVA**	**0.6**	**0.8**	**1.5**	**1.6**	**0.8**	**0.5**										
Dendrobium Vent Fan B	MW	0.6	0.7	1.4	1.5	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2.5	2.5	2.5	2.5
	MVAr	0.2	0.2	0.5	0.5	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7	0.7	0.7	0.7
10% POE	**MVA**	**0.6**	**0.8**	**1.5**	**1.6**	**0.8**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**2.6**	**2.6**	**2.6**	**2.6**
	PF	0.964	0.972	0.954	0.959	0.915	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Major customer –HVC25413	MW	0.6	0.7	1.4	1.5	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2.5	2.5	2.5	2.5
	MVAr	0.2	0.2	0.5	0.5	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7	0.7	0.7	0.7
50% POE	**MVA**	**0.6**	**0.8**	**1.5**	**1.6**	**0.8**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**2.6**	**2.6**	**2.6**	**2.6**
	PF	0.964	0.972	0.954	0.959	0.915	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Actual	**MVA**	**34.7**	**32.7**	**32.4**	**34.9**	**33.0**	**30.4**										
Dapto	MW	35.8	35.3	37.6	35.9	36.7	37.5	37.6	37.5	37.9	37.5	37.4	37.6	21.4	21.7	22.2	22.8
	MVAr	2.8	3.5	4.3	3.5	2.5	3.3	2.9	2.9	2.9	2.9	2.9	2.9	1.7	1.7	1.7	1.8
10% POE	**MVA**	**35.9**	**35.4**	**37.8**	**36.1**	**36.8**	**37.6**	**37.7**	**37.6**	**38.0**	**37.6**	**37.6**	**37.7**	**21.4**	**21.8**	**22.3**	**22.9**
	PF	0.997	0.995	0.994	0.995	0.998	0.996	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
	MW	30.5	29.8	31.6	30.0	30.5	30.8	31.0	30.8	31.2	30.8	30.8	31.0	14.9	15.2	15.8	16.3
	MVAr	2.4	2.9	3.6	2.9	2.0	2.7	2.4	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.3
50% POE	**MVA**	**30.6**	**29.9**	**31.8**	**30.1**	**30.6**	**30.9**	**31.0**	**30.9**	**31.3**	**30.9**	**30.9**	**31.1**	**14.9**	**15.3**	**15.8**	**16.3**
	PF	0.997	0.995	0.994	0.995	0.998	0.996	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
Actual	**MVA**	**4.2**	**2.4**	**2.4**	**2.1**	**3.5**	**4.1**										
Grain Terminal	MW	3.9	2.2	2.2	2.0	3.3	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
	MVAr	1.5	0.8	0.7	0.7	1.3	1.6	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
10% POE	**MVA**	**4.2**	**2.4**	**2.3**	**2.1**	**3.5**	**4.1**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**
	PF	0.934	0.936	0.957	0.949	0.934	0.921	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939
Major customer –HVC93008	MW	3.9	2.2	2.2	2.0	3.3	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
	MVAr	1.5	0.8	0.7	0.7	1.3	1.6	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
50% POE	**MVA**	**4.2**	**2.4**	**2.3**	**2.1**	**3.5**	**4.1**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**
	PF	0.934	0.936	0.957	0.949	0.934	0.921	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939
Actual	**MVA**	**24.8**	**23.4**	**22.6**	**24.6**	**24.2**	**21.9**										
Figtree	MW	24.1	23.0	22.2	24.2	23.9	21.7	21.5	21.3	21.4	21.1	21.1	21.3	21.6	22.0	22.4	22.9
	MVAr	5.7	4.3	4.4	4.5	3.8	3.2	3.3	3.3	3.3	3.2	3.2	3.3	3.3	3.4	3.5	3.5
10% POE	**MVA**	**24.8**	**23.4**	**22.6**	**24.6**	**24.2**	**21.9**	**21.7**	**21.6**	**21.6**	**21.3**	**21.4**	**21.5**	**21.9**	**22.2**	**22.7**	**23.1**
	PF	0.973	0.983	0.981	0.983	0.987	0.989	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988
	MW	24.1	23.0	22.2	24.2	23.9	21.7	21.5	21.3	21.4	21.1	21.1	21.3	21.6	22.0	22.4	22.9
	MVAr	5.7	4.3	4.4	4.5	3.8	3.2	3.3	3.3	3.3	3.2	3.2	3.3	3.3	3.4	3.5	3.5
50% POE	**MVA**	**24.8**	**23.4**	**22.6**	**24.6**	**24.2**	**21.9**	**21.7**	**21.6**	**21.6**	**21.3**	**21.4**	**21.5**	**21.9**	**22.2**	**22.7**	**23.1**
	PF	0.973	0.983	0.981	0.983	0.987	0.989	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988
Actual	**MVA**	**8.9**	**8.7**	**8.4**	**8.9**	**9.1**	**8.7**										
Inner Harbour	MW	7.8	7.8	8.3	8.9	9.0	8.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
	MVAr	4.3	3.8	1.1	1.0	1.6	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
10% POE	**MVA**	**8.9**	**8.7**	**8.4**	**8.9**	**9.2**	**8.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**
	PF	0.874	0.900	0.992	0.994	0.985	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991
	MW	7.8	7.8	8.3	8.9	9.0	8.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
	MVAr	4.3	3.8	1.1	1.0	1.6	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
50% POE	**MVA**	**8.9**	**8.7**	**8.4**	**8.9**	**9.2**	**8.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**	**9.7**
	PF	0.874	0.900	0.992	0.994	0.985	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991	0.991
Actual	**MVA**	**20.5**	**18.5**	**19.9**	**17.0**	**15.5**	**15.2**										
Kenny Street	MW	19.2	18.2	19.6	17.3	17.0	16.7	19.7	22.4	22.4	22.3	22.3	22.3	22.3	22.3	22.3	22.3
	MVAr	6.7	3.2	3.4	4.2	1.0	0.3	3.9	4.5	4.5	4.4	4.4	4.4	4.4	4.4	4.4	4.4
10% POE	**MVA**	**20.4**	**18.4**	**19.9**	**17.8**	**17.0**	**16.7**	**20.1**	**22.8**	**22.8**	**22.8**	**22.7**	**22.7**	**22.7**	**22.7**	**22.7**	**22.7**
	PF	0.944	0.985	0.985	0.972	0.998	1.000	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
	MW	17.7	17.1	19.6	16.0	15.6	15.3	18.3	20.9	20.9	20.9	20.9	20.9	20.9	20.8	20.8	20.8
	MVAr	6.2	3.0	3.4	3.9	0.9	0.2	3.6	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
50% POE	**MVA**	**18.7**	**17.3**	**19.9**	**16.5**	**15.6**	**15.3**	**18.7**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**	**21.3**
	PF	0.944	0.985	0.985	0.972	0.998	1.000	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**4.4**	**4.1**	**4.3**	**4.8**	**5.7**	**6.4**										
Kembla Grange	MW	4.2	4.0	4.3	4.7	5.6	6.4	8.8	9.7	9.8	9.7	9.8	9.8	4.5	4.6	4.7	4.8
	MVAr	1.1	1.0	0.6	0.4	0.4	0.0	1.4	1.6	1.6	1.6	1.6	1.6	0.7	0.7	0.8	0.8
10% POE	**MVA**	**4.4**	**4.1**	**4.3**	**4.8**	**5.7**	**6.4**	**8.9**	**9.8**	**9.9**	**9.9**	**9.9**	**9.9**	**4.5**	**4.6**	**4.8**	**4.9**
	PF	0.968	0.970	0.991	0.996	0.998	1.000	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
	MW	4.2	4.0	4.3	4.7	5.6	6.4	8.8	9.7	9.8	9.7	9.8	9.8	4.5	4.6	4.7	4.8
	MVAr	1.1	1.0	0.6	0.4	0.4	0.0	1.4	1.6	1.6	1.6	1.6	1.6	0.7	0.7	0.8	0.8
50% POE	**MVA**	**4.4**	**4.1**	**4.3**	**4.8**	**5.7**	**6.4**	**8.9**	**9.8**	**9.9**	**9.9**	**9.9**	**9.9**	**4.5**	**4.6**	**4.8**	**4.9**
	PF	0.968	0.970	0.991	0.996	0.998	1.000	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
Actual	**MVA**	**32.0**	**34.0**	**31.9**	**32.4**	**31.7**	**31.8**										
Lysaghts	MW	30.4	32.3	30.2	30.7	29.9	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2
	MVAr	10.0	10.6	10.2	10.3	10.6	10.1	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
10% POE	**MVA**	**32.0**	**34.0**	**31.9**	**32.4**	**31.7**	**31.8**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**
	PF	0.950	0.950	0.947	0.948	0.943	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
Major customer- HVC93013	MW	30.4	32.3	30.2	30.7	29.9	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2	30.2
	MVAr	10.0	10.6	10.2	10.3	10.6	10.1	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
50% POE	**MVA**	**32.0**	**34.0**	**31.9**	**32.4**	**31.7**	**31.8**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**	**31.9**
	PF	0.950	0.950	0.947	0.948	0.943	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
Actual	**MVA**	**0.3**	**0.2**	**0.2**	**0.1**	**0.3**	**0.1**										
Nepean Conveyors	MW	0.3	0.2	0.2	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	MVAr	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10% POE	**MVA**	**0.3**	**0.2**	**0.2**	**0.1**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
	PF	0.992	0.950	0.818	0.975	0.982	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Major customer- HVC22436	MW	0.3	0.2	0.2	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	MVAr	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50% POE	**MVA**	**0.3**	**0.2**	**0.2**	**0.1**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
	PF	0.992	0.950	0.818	0.975	0.982	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Actual	**MVA**	**13.5**	**13.3**	**12.9**	**13.5**	**11.2**	**13.9**										
North Wollongong	MW	13.4	13.3	12.5	13.2	11.1	13.7	14.0	13.4	12.9	12.3	12.0	12.0	12.1	12.2	12.3	12.4
	MVAr	1.0	0.0	3.0	2.6	1.3	2.4	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9
10% POE	**MVA**	**13.5**	**13.3**	**12.9**	**13.5**	**11.2**	**13.9**	**14.1**	**13.5**	**13.1**	**12.5**	**12.2**	**12.2**	**12.2**	**12.3**	**12.4**	**12.5**
	PF	0.997	1.000	0.973	0.981	0.993	0.985	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988
	MW	13.4	13.3	12.5	13.2	11.1	13.7	14.0	13.4	12.9	12.3	12.0	12.0	12.1	12.2	12.3	12.4
	MVAr	1.0	0.0	3.0	2.6	1.3	2.4	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9
50% POE	**MVA**	**13.5**	**13.3**	**12.9**	**13.5**	**11.2**	**13.9**	**14.1**	**13.5**	**13.1**	**12.5**	**12.2**	**12.2**	**12.2**	**12.3**	**12.4**	**12.5**
	PF	0.997	1.000	0.973	0.981	0.993	0.985	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988
Actual	**MVA**	**13.1**	**12.7**	**12.2**	**13.0**	**12.4**	**9.6**										
Port Kembla	MW	13.1	12.2	12.9	11.8	11.8	11.0	12.2	12.1	12.2	12.0	12.1	12.2	12.5	12.8	13.1	13.5
	MVAr	3.0	2.0	2.5	2.2	1.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9
10% POE	**MVA**	**13.4**	**12.3**	**13.1**	**12.0**	**11.9**	**11.0**	**12.3**	**12.2**	**12.3**	**12.0**	**12.1**	**12.3**	**12.5**	**12.8**	**13.1**	**13.5**
	PF	0.975	0.986	0.982	0.983	0.991	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
	MW	13.0	10.8	11.2	10.5	10.5	9.7	10.9	10.8	10.9	10.7	10.7	10.9	11.2	11.4	11.8	12.1
	MVAr	2.9	1.8	2.2	2.0	1.4	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
50% POE	**MVA**	**13.3**	**11.0**	**11.4**	**10.7**	**10.6**	**9.7**	**10.9**	**10.8**	**10.9**	**10.7**	**10.8**	**10.9**	**11.2**	**11.5**	**11.8**	**12.2**
	PF	0.975	0.986	0.982	0.983	0.991	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
Actual	**MVA**	**15.0**	**13.2**	**13.5**	**14.5**	**11.4**	**12.6**										
South Wollongong	MW	15.2	13.5	14.4	13.4	13.1	13.1	13.2	13.0	13.1	12.9	12.8	12.7	12.7	12.7	12.7	12.7
	MVAr	2.0	3.4	1.0	0.5	2.6	1.3	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9
10% POE	**MVA**	**15.4**	**13.9**	**14.5**	**13.4**	**13.3**	**13.2**	**13.3**	**13.1**	**13.3**	**13.0**	**12.9**	**12.9**	**12.8**	**12.8**	**12.8**	**12.8**
	PF	0.992	0.970	0.998	0.999	0.981	0.995	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	15.1	12.4	12.9	12.1	11.8	11.8	11.9	11.7	11.9	11.6	11.5	11.5	11.5	11.4	11.4	11.5
	MVAr	1.9	3.1	0.9	0.5	2.3	1.2	1.8	1.7	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7
50% POE	**MVA**	**15.2**	**12.8**	**12.9**	**12.1**	**12.0**	**11.9**	**12.0**	**11.9**	**12.0**	**11.8**	**11.7**	**11.6**	**11.6**	**11.6**	**11.6**	**11.6**
	PF	0.992	0.970	0.998	0.999	0.981	0.995	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**17.1**	**16.2**	**14.9**	**13.7**	**12.5**	**13.0**										
Unanderra	MW	14.9	13.8	14.5	14.4	13.4	13.5	13.4	13.1	12.9	12.6	12.5	12.4	12.4	12.3	12.4	12.4
	MVAr	0.8	3.1	0.9	1.6	1.5	0.9	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
10% POE	**MVA**	**14.9**	**14.1**	**14.5**	**14.5**	**13.4**	**13.6**	**13.5**	**13.2**	**13.0**	**12.7**	**12.5**	**12.5**	**12.4**	**12.4**	**12.5**	**12.5**
	PF	0.999	0.976	0.998	0.994	0.993	0.998	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
	MW	12.9	12.5	13.2	13.5	12.5	12.7	12.6	12.3	12.1	11.8	11.7	11.6	11.6	11.5	11.6	11.6
	MVAr	0.7	2.8	0.8	1.5	1.4	0.9	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
50% POE	**MVA**	**12.9**	**12.8**	**13.2**	**13.6**	**12.6**	**12.8**	**12.7**	**12.4**	**12.2**	**11.9**	**11.7**	**11.7**	**11.6**	**11.6**	**11.6**	**11.7**
	PF	0.999	0.976	0.998	0.994	0.993	0.998	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
Actual	**MVA**	**1.9**	**1.9**	**0.7**	**0.6**	**0.6**	**0.1**										
Water Board Dams	MW	1.8	1.6	0.6	0.6	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	MVAr	0.6	0.5	0.0	0.1	0.07	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10% POE	**MVA**	**1.9**	**1.7**	**0.6**	**0.6**	**0.6**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
	PF	0.950	0.950	1.000	0.994	0.994	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Major customer	MW	1.8	1.6	0.6	0.6	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	MVAr	0.6	0.5	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50% POE	**MVA**	**1.9**	**1.7**	**0.6**	**0.6**	**0.6**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
	PF	0.950	0.950	1.000	0.994	0.994	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907	0.907
Actual	**MVA**	**13.9**	**12.8**	**13.0**	**13.3**	**12.9**	**13.1**										
West Wollongong	MW	13.6	13.1	14.6	12.9	13.2	13.9	13.8	13.6	13.7	13.5	13.5	13.6	13.8	14.0	14.2	14.5
	MVAr	2.4	1.8	2.2	1.6	0.0	1.8	1.5	1.5	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.6
10% POE	**MVA**	**13.8**	**13.2**	**14.8**	**13.0**	**13.2**	**13.8**	**13.8**	**13.7**	**13.8**	**13.6**	**13.6**	**13.7**	**13.9**	**14.1**	**14.3**	**14.6**
	PF	0.985	0.991	0.989	0.992	1.000	1.009	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	11.6	11.3	12.5	11.2	11.5	12.1	11.9	11.8	11.9	11.7	11.7	11.8	12.0	12.2	12.4	12.7
	MVAr	2.0	1.6	1.9	1.4	0.0	1.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4
50% POE	**MVA**	**11.8**	**11.4**	**12.7**	**11.3**	**11.5**	**12.0**	**12.0**	**11.9**	**12.0**	**11.8**	**11.8**	**11.9**	**12.1**	**12.2**	**12.5**	**12.7**
	PF	0.985	0.991	0.989	0.992	1.000	1.009	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**2.1**	**2.1**	**1.9**	**0.5**	**0.3**	**0.4**										
Wongawilli Colliery	MW	1.4	1.2	1.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	MVAr	1.6	1.6	1.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
10% POE	**MVA**	**2.1**	**2.1**	**2.0**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
	PF	0.657	0.603	0.619	0.614	0.553	0.634	0.593	0.593	0.593	0.593	0.593	0.593	0.593	0.593	0.593	0.593
Major customer – VC28295	MW	1.4	1.2	1.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	MVAr	1.6	1.6	1.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
50% POE	**MVA**	**2.1**	**2.1**	**2.0**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
	PF	0.657	0.603	0.619	0.614	0.553	0.634	0.593	0.593	0.593	0.593	0.593	0.593	0.593	0.593	0.593	0.593
Actual	**MVA**	**3.1**	**2.8**	**2.7**													
Wongawilli No4 Airshaft	MW	2.0	1.8	1.7													
	MVAr	2.4	2.1	2.0													
10% POE	**MVA**	**3.1**	**2.8**	**2.7**													
	PF	0.646	0.667	0.644													
Major customer –HVC28777	MW	2.0	1.8	1.7													
	MVAr	2.4	2.1	2.0													
50% POE	**MVA**	**3.1**	**2.8**	**2.7**													
	PF	0.646	0.667	0.644													
Actual	**MVA**	**220.4**	**209.9**	**205.9**	**208.7**	**198.1**	**195.8**										
Undiversified	MW	211.6	204.0	208.5	202.9	201.9	204.5	212.1	214.0	214.4	211.9	211.4	211.9	193.3	194.4	196.3	198.2
	MVAr	50.2	44.9	42.1	41.5	33.1	31.0	38.8	39.3	39.3	39.0	38.9	39.0	37.5	37.7	37.9	38.1
10% POE	**MVA**	**220.3**	**211.1**	**214.7**	**209.1**	**206.0**	**207.8**	**216.9**	**218.8**	**219.2**	**216.7**	**216.2**	**216.8**	**198.1**	**199.2**	**201.1**	**203.0**
	PF	0.961	0.967	0.971	0.970	0.980	0.984	0.978	0.978	0.978	0.978	0.978	0.978	0.976	0.976	0.976	0.976
	MW	200.6	191.8	195.8	190.6	189.3	191.1	198.8	200.6	201.0	198.6	198.1	198.7	180.1	181.3	183.2	185.1
	MVAr	48.8	43.1	40.6	40.0	32.1	29.9	37.5	37.9	37.9	37.6	37.6	37.6	36.2	36.3	36.5	36.7
50% POE	**MVA**	**209.1**	**198.7**	**201.9**	**196.7**	**193.4**	**194.5**	**203.5**	**205.4**	**205.8**	**203.3**	**202.8**	**203.4**	**184.8**	**186.0**	**187.9**	**189.8**
	PF	0.959	0.965	0.970	0.969	0.979	0.983	0.977	0.977	0.977	0.977	0.977	0.977	0.974	0.975	0.975	0.975
Actual	**MVA**	**179.8**	**157.0**	**176.0**	**163.6**	**160.5**	**157.8**										
Diversified (Meter)	MW	171.6	166.2	184.7	167.9	172.8	175.3	178.6	180.1	180.5	178.4	178.0	178.4	162.7	163.7	165.3	166.9
	MVAr	43.0	35.5	46.5	35.4	27.7	42.1	39.9	40.2	40.3	39.8	39.7	39.8	36.3	36.5	36.9	37.2
10% POE	**MVA**	**176.9**	**170.0**	**190.4**	**171.6**	**175.1**	**180.3**	**183.0**	**184.6**	**184.9**	**182.8**	**182.4**	**182.8**	**166.7**	**167.7**	**169.4**	**171.0**
	PF	0.970	0.978	0.970	0.979	0.987	0.972	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976
	MW	157.9	153.9	161.2	150.8	155.2	156.9	163.2	164.7	165.1	163.0	162.6	163.1	147.9	148.9	150.4	151.9
	MVAr	39.6	32.9	40.6	31.8	24.9	37.7	36.4	36.8	36.8	36.4	36.3	36.4	33.0	33.2	33.6	33.9
50% POE	**MVA**	**162.8**	**157.4**	**166.2**	**154.1**	**157.2**	**161.4**	**167.2**	**168.8**	**169.1**	**167.1**	**166.6**	**167.1**	**151.5**	**152.5**	**154.1**	**155.7**
	PF	0.970	0.978	0.970	0.979	0.987	0.972	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976
Actual	**MVA**	**1.3**	**2.6**	**0.7**	**1.7**	**2.5**	**2.1**										
Wyuna Waters	MW	1.2	2.6	0.9	1.4	2.5	1.2										
	MVAr	0.5	0.4	1.4	0.9	0.5	1.8										
Generation	**MVA**	**1.3**	**2.6**	**1.6**	**1.7**	**2.5**	**2.1**										
Actual	PF	0.915	0.990	0.541	0.845	0.981	0.561										

Note: There is 39 MVAr of capacitors installed at the Springhill 33 kV busbar.

5.30 Sydney North STS Demand Forecast

Discussion

There are no significant developments in the foreseeable future that will affect the load growth of the Sydney North supply area.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Kellyville	2 x 15/19/25	50
Kenthurst	1 x 60 (132/33kV) + 1 x 25 (33/11kV) + 1 x 25 (66/11kV)	50
Sydney North	5 x 375	1875

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2024	Kellyville	Sydney_North	West_Castle_Hill	Vineyard	0.40
2024	Kenthurst	Sydney_North	Mungerie_Park	Vineyard	0.80
2023	Mungerie_Park	Vineyard	Kellyville	Sydney_North	3.40

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Kellyville	North Kellyville (66%)	2023	0.60	0.29	0.67
Kellyville	North Kellyville (66%)	2024	0.83	0.40	0.92
Kellyville	North Kellyville (66%)	2025	0.72	0.35	0.80
Kellyville	North Kellyville (66%)	2026	0.20	0.10	0.22
Kellyville	North Kellyville (66%)	2027	0.20	0.10	0.22
Kellyville	North Kellyville (66%)	2028	0.20	0.10	0.22
Kellyville	North Kellyville (66%)	2029	0.20	0.10	0.22
Kellyville	North Kellyville (66%)	2030	0.20	0.10	0.22
Kellyville	North Kellyville (66%)	2031	0.20	0.10	0.22
Kellyville	North Kellyville (66%)	2032	0.20	0.10	0.22
Kellyville	URS25939 Cattai Creek Dr & Georgia Tce, Kellyville	2025	0.21	0.04	0.22
Kenthurst	NRL13991 3A Wyoming Rd, Dural	2023	0.05	0.03	0.06
Kenthurst	UCL10250 42B Annangrove Rd, Kenthurst	2023	0.09	0.04	0.10
Kenthurst	UCL10695 630 Old Northern Rd, Dural	2023	0.26	0.12	0.29

Planned Lot Releases & Redevelopment

No Lot Releases Proposed at this location

Generation

No Generation known at this location

Sydney North STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**20.0**	**21.9**	**22.5**	**25.5**	**21.6**	**17.3**										
Kellyville	MW	20.8	21.8	24.4	22.4	22.5	22.3	25.7	25.6	26.1	26.0	26.0	26.1	26.3	26.4	26.6	26.8
	MVAr	3.5	5.5	7.1	8.9	7.5	8.4	8.0	8.0	8.1	8.1	8.1	8.1	8.2	8.2	8.3	8.3
10% POE	**MVA**	**21.1**	**22.5**	**25.4**	**24.1**	**23.7**	**23.9**	**26.9**	**26.8**	**27.4**	**27.2**	**27.3**	**27.4**	**27.5**	**27.7**	**27.9**	**28.1**
	PF	0.986	0.969	0.960	0.929	0.949	0.936	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
	MW	17.7	18.5	21.2	19.3	19.5	19.4	22.7	22.6	23.2	23.1	23.1	23.2	23.4	23.5	23.7	23.9
	MVAr	2.9	4.7	6.2	7.7	6.5	7.3	7.1	7.0	7.2	7.2	7.2	7.2	7.3	7.3	7.4	7.4
50% POE	**MVA**	**17.9**	**19.1**	**22.0**	**20.7**	**20.5**	**20.7**	**23.8**	**23.7**	**24.3**	**24.2**	**24.2**	**24.3**	**24.5**	**24.6**	**24.8**	**25.0**
	PF	0.986	0.969	0.960	0.929	0.949	0.936	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
Actual	**MVA**	**23.3**	**19.6**	**21.7**	**24.9**	**22.9**	**19.4**										
Kenthurst	MW	20.7	18.0	21.3	21.5	21.3	21.4	21.0	21.7	21.5	21.2	21.1	21.0	21.0	21.0	21.1	21.1
	MVAr	8.4	7.0	2.4	5.8	6.7	6.4	6.5	6.7	6.7	6.6	6.5	6.5	6.5	6.5	6.5	6.5
10% POE	**MVA**	**22.3**	**19.3**	**21.4**	**22.3**	**22.3**	**22.4**	**22.0**	**22.8**	**22.5**	**22.2**	**22.1**	**22.0**	**22.0**	**22.0**	**22.0**	**22.1**
	PF	0.927	0.933	0.994	0.965	0.954	0.959	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
	MW	17.9	15.9	18.6	18.6	19.0	19.2	18.8	19.5	19.3	19.1	18.9	18.9	18.8	18.8	18.9	18.9
	MVAr	7.2	6.1	2.1	5.0	6.0	5.7	5.8	6.0	6.0	5.9	5.9	5.8	5.8	5.8	5.8	5.9
50% POE	**MVA**	**19.3**	**17.1**	**18.7**	**19.3**	**19.9**	**20.0**	**19.7**	**20.4**	**20.3**	**19.9**	**19.8**	**19.7**	**19.7**	**19.7**	**19.8**	**19.8**
	PF	0.927	0.933	0.994	0.965	0.954	0.959	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
Actual	**MVA**	**43.3**	**41.5**	**44.2**	**50.5**	**44.5**	**36.7**										
Undiversified	MW	41.5	39.8	45.7	43.9	43.7	43.8	46.7	47.3	47.7	47.2	47.1	47.2	47.3	47.4	47.7	47.9
	MVAr	11.8	12.5	9.6	14.8	14.2	14.8	14.5	14.7	14.8	14.7	14.6	14.6	14.7	14.7	14.8	14.9
10% POE	**MVA**	**43.4**	**41.8**	**46.9**	**46.4**	**46.0**	**46.3**	**48.9**	**49.6**	**49.9**	**49.4**	**49.4**	**49.4**	**49.5**	**49.6**	**49.9**	**50.2**
	PF	0.956	0.952	0.975	0.946	0.951	0.947	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
	MW	35.6	34.5	39.8	37.9	38.4	38.6	41.5	42.1	42.5	42.1	42.1	42.1	42.2	42.3	42.6	42.9
	MVAr	10.2	10.9	8.3	12.7	12.5	13.0	12.9	13.1	13.2	13.1	13.1	13.1	13.1	13.1	13.2	13.3
50% POE	**MVA**	**37.2**	**36.2**	**40.8**	**40.0**	**40.4**	**40.7**	**43.4**	**44.1**	**44.5**	**44.1**	**44.1**	**44.1**	**44.2**	**44.3**	**44.6**	**44.9**
	PF	0.956	0.952	0.975	0.946	0.951	0.947	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
Actual	**MVA**	**38.2**	**36.1**	**40.7**	**43.6**	**40.9**	**35.2**										
Diversified (Meter)	MW	38.1	36.5	38.5	40.3	41.2	41.8	44.5	45.1	45.4	45.0	44.9	44.9	45.0	45.1	45.4	45.6
	MVAr	3.8	3.7	13.4	25.3	24.7	4.2	16.3	16.5	16.6	16.5	16.4	16.4	16.5	16.5	16.6	16.7
10% POE	**MVA**	**38.3**	**36.7**	**40.8**	**47.6**	**48.0**	**42.0**	**47.3**	**48.0**	**48.3**	**47.9**	**47.8**	**47.8**	**47.9**	**48.1**	**48.3**	**48.6**
	PF	0.995	0.995	0.945	0.847	0.858	0.995	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939
	MW	34.2	33.2	34.9	35.7	36.6	37.1	39.5	40.1	40.5	40.1	40.1	40.1	40.2	40.3	40.6	40.8
	MVAr	3.4	3.3	12.1	22.4	21.9	3.7	14.5	14.7	14.8	14.7	14.7	14.7	14.7	14.8	14.8	14.9
50% POE	**MVA**	**34.3**	**33.3**	**36.9**	**42.1**	**42.7**	**37.3**	**42.1**	**42.8**	**43.1**	**42.7**	**42.7**	**42.7**	**42.8**	**42.9**	**43.2**	**43.5**
	PF	0.995	0.995	0.945	0.847	0.858	0.995	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939

5.31 Sydney West 132kV STS Demand Forecast

Discussion

Sydney West 132 kV STS forecast entry represents a consolidation of the zone substations supplied directly out of the 132kV busbar at Sydney West Bulk Supply point.

Development continues within the South West Growth Sector including the precincts of Austral, Leppington, Oran Park and Catherine Park. The growth sector is expected to take 30 years to complete and will increase network load by 650MVA. Sydney West BSP will supply part of the initial stages of development via feeder 93X, but ultimately the South West Sector will be supplied from Macarthur BSP, Liverpool BSP and the future Kemps Creek BSP 132kV busbar.

The Eastern Creek industrial lands located near the intersection of the M4 and M7 motorways form part of the greater Western Sydney Employment Hub SEPP 59 development area. These include Interchange Park, Ropes Creek and Oakdale business parks and are all supplied from Sydney West BSP.

There is also significant growth expected in the Mamre precint area and will be serviced by the proposed South Erskine Park zone substation.

Various Data Centres will be supplied by Endeavour Energy from Sydney West 132kV.

Sydney West will supply the initial development of the Aerotropolis region with the assistance of Nepean / Macarthur BSP via the proposed interconnecting 132kV Aerotropolis Feeder.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Arndell Park	2 x 33/39/45	90
Aerotropolis	New	NA
Baulkham Hills 11kV	2 x 45	90
Doonside	3 x 45	135
Bringelly	1 x 19 + 1 x 25	44
Eastern Creek	2 x 30/45	90
Granville 132kV	2 x 45	90
Huntingwood	3 x 45	90
Mamre	3 x 45	135
North Eastern Creek	2 x 45	90
North Parramatta	2 x 45/55	110
Oran Park	2 x 45	90
Quakers Hill	2x25 (33/11) + 1x45 (132/11) + 1x60(132/33)	155
Rooty Hill	2 x 33/45	90
Science_Park	New	NA
South_Erskine_Park	New	NA
Wetherill Park	2 x 33/35/45	90
West Wetherill Park	2 x 45	90

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2024	Seven_Hills	Baulkham_Hills	Station_DC	Sydney_West_132kV	3.60
2024	Quarries	Blacktown	DCI	Sydney_West_132kV	2.50
2024	Quarries	Blacktown	DCI	Sydney_West_132kV	2.50
2023	Mamre	Liverpool_STS	South_Erskine_Park	Sydney_West_132kV	4.21
2025	St_Marys	Mount_Druitt	Mamre	Sydney_West_132kV	0.30
2026	Luddenham	Regentville	Science_Park	Sydney_West_132kV	3.19
2026	Luddenham	Regentville	Science_Park	Sydney_West_132kV	3.19
2025	Arndell_Park	Sydney_West_132kV	Augusta_DC	Sydney_West_132kV	5.40
2023	Doonside	Sydney_West_132kV	Rooty_Hill	Sydney_West_132kV	0.65
2024	Huntingwood	Sydney_West_132kV	DCI	Sydney_West_132kV	3.60
2024	Huntingwood	Sydney_West_132kV	Honeman_DC	Sydney_West_132kV	5.70
2024	Huntingwood	Sydney_West_132kV	Honeman_DC	Sydney_West_132kV	5.70
2025	Huntingwood	Sydney_West_132kV	Honeman_DC	Sydney_West_132kV	5.70
2023	Mamre	Sydney_West_132kV	South_Erskine_Park	Sydney_West_132kV	1.20
2023	Mamre	Sydney_West_132kV	South_Erskine_Park	Sydney_West_132kV	3.50
2023	Mamre	Sydney_West_132kV	South_Erskine_Park	Sydney_West_132kV	3.90
2025	North_Eastern_Creek	Sydney_West_132kV	Syd_55	Sydney_West_132kV	8.00
2025	North_Eastern_Creek	Sydney_West_132kV	Syd_55	Sydney_West_132kV	8.00
2025	North_Eastern_Creek	Sydney_West_132kV	Syd_55	Sydney_West_132kV	8.00
2023	Kemps_Creek	West_Liverpool	South_Erskine_Park	Sydney_West_132kV	0.85
2023	Huntingwood	Sydney_West_132kV	Whalan	Mount_Druitt	0.50
2024	Mamre	Sydney_West_132kV	St_Marys	Mount_Druitt	0.66

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Aerotropolis	Metro - Aerotropolis FY25	2025	20.5	6.7	21.59
Aerotropolis	Metro - Aerotropolis FY26	2026	1.3	0.4	1.33
Aerotropolis	Metro - Aerotropolis FY27	2027	1.3	0.4	1.33
Aerotropolis	Metro - Aerotropolis FY28	2028	1.3	0.4	1.33
Aerotropolis	Metro - Aerotropolis FY29	2029	1.3	0.4	1.33
Aerotropolis	Metro - Aerotropolis FY30	2030	1.3	0.4	1.33
Aerotropolis	Metro - Aerotropolis FY31	2031	1.3	0.4	1.33
Aerotropolis	Metro - Aerotropolis FY32	2032	1.3	0.4	1.33
Aerotropolis	Western Sydney Airport & Business Park FY25	2025	2.0	0.7	2.14
Aerotropolis	Western Sydney Airport & Business Park FY26	2026	11.7	3.8	12.27
Aerotropolis	Western Sydney Airport & Business Park FY27	2027	21.5	7.1	22.64
Aerotropolis	Western Sydney Airport & Business Park FY28	2028	-3.8	1.3	-4.01
Aerotropolis	Western Sydney Airport & Business Park FY29	2029	0.6	0.2	0.66
Aerotropolis	Western Sydney Airport & Business Park FY30	2030	0.5	0.2	0.55
Aerotropolis	Western Sydney Airport & Business Park FY31	2031	16.1	5.3	16.96
Aerotropolis	Western Sydney Airport & Business Park FY32	2032	1.1	0.4	1.21
Arndell_Park	DBL2604 Homena bulding supply	2023	0.90	0.44	1.00
Arndell_Park	UCL11030 Holbeche Rd (60%)	2024	1.67	0.34	1.70
Arndell_Park	UIL6083 Data centre Augusta Rd Temp supply (only till 2024	2024	8.10	3.92	9.00
Arndell_Park	UIS0970 Holbeche Rd Industrial 60%	2024	1.27	0.26	1.30
Baulkham_Hills_11kV	ULL3324 Pendle Hill Highschool	2024	0.34	0.07	0.35
Baulkham_Hills_11kV	UML8623 18-24 Portico Pde, Toongabbie	2023	0.22	0.11	0.25
Baulkham_Hills_11kV	UML9796 56-60 Aurelia St, Toongabbie	2024	0.55	0.27	0.61
CDC	UCL10121 CDC 132kV Connection to Syd West (incl 19MVA distribution)	2024	27.00	13.08	30.00
CDC	UCL10121 CDC 132kV Connection to Syd West (incl 19MVA distribution)	2025	27.00	13.08	30.00
CDC	UCL10121 CDC 132kV Connection to Syd West(incl 19MVA distribution)	2023	32.85	15.91	36.50
CDC	UCL10121 CDC 132kV Connection to Syd West(incl 19MVA distribution)	2024	27.00	13.08	30.00
Doonside	UCL10469 Sports park eastern Rd.	2023	0.00	0.00	0.00
Doonside	UCL11180 Optus tower bungaribee rd tallawong park	2024	0.12	0.02	0.12
Eastern_Creek	DBLSYD55 Temp Building Supply	2023	2.25	1.09	2.50
Eastern_Creek	ENL4182-2 Goodman Oakdale East Estate Warehouse 2C x 0.75	2024	3.99	1.31	4.20
Eastern_Creek	UCL10950 Battery - shoulc charge during offpeak	2024	0.00	0.00	0.00
Eastern_Creek	UIL5379 Warehouse 1C Oakdale South	2023	0.81	0.17	0.83
Eastern_Creek	UIL5572 Jaycar warehouse Feeder 54695	2024	0.99	0.48	1.10
Eastern_Creek	UIL5689 Masonry Plant - Jade Place Oakdale East Estate	2024	3.87	0.79	3.95
Eastern_Creek	UIL5746 Warehouse Site 6	2023	0.52	0.25	0.58
Eastern_Creek	UIL5824 Sydney Metro West Precast Plant	2023	1.26	0.61	1.40
Eastern_Creek	UIL5898 Warehouse Lot 100 Jacfin Oakdale Central	2024	0.19	0.09	0.21
Eastern_Creek	UIL5982 Warehouse A + B + C + D by ESR Lot 204 Johnston Cr	2024	1.23	0.25	1.25
Eastern_Creek	UIL6006 Lighting for archblad rd extension to Lenmore DR (no diversity)	2024	1.26	0.61	1.40
Eastern_Creek	UIL6110-1 Warehouse 2B-1	2024	0.93	0.19	0.95
Eastern_Creek	UIL6110-2 Warehouse 2B-2	2024	0.93	0.19	0.95
Eastern_Creek	UIL6112-1 Warehouse 2A-1 and 2A-2	2023	0.49	0.10	0.50
Eastern_Creek	UIL6185 -1 Goodman Sagittarius Warehouse - Oakdale East	2024	7.35	1.49	7.50
Eastern_Creek	UIL6185-2 Goodman Sagittarius Warehouse - Oakdale East	2024	7.35	1.49	7.50
Eastern_Creek	UIL6263 Industrial load 80%	2024	1.96	0.40	2.00
Eastern_Creek	UIL6339 Lot 204 Warehouse A & Warehouse B	2023	2.34	0.48	2.39
Eastern_Creek	UIL6340 Lot 206 Warehouse A & Warehouse B	2023	1.86	0.38	1.90
Eastern_Creek	UIS0912 Wonderland drive extension	2024	0.00	0.00	0.00
Healey_Cct_Data	UIL4911-3 132kV Supply Data Centre - Huntingwood Dr	2023	4.50	2.18	5.00
Healey_Cct_Data	UIL4911-4 132kV Supply Data Centre - Huntingwood Dr	2024	4.50	2.18	5.00
Healey_Cct_Data	UIL4911-5 132kV Supply Data Centre - Huntingwood Dr	2025	4.50	2.18	5.00
Healey_Cct_Data	UIL4911-6 132kV Supply Data Centre - Huntingwood Dr	2026	4.50	2.18	5.00
Healey_Cct_Data	UIL4911-7 132kV Supply Data Centre - Huntingwood Dr	2027	4.50	2.18	5.00
Healey_Cct_Data	UIL4911-8 132kV Supply Data Centre - Huntingwood Dr	2028	4.50	2.18	5.00
Healey_Cct_Data	UIL5875 Additional 80MVA airtrunk	2023	6.30	3.05	7.00
Healey_Cct_Data	UIL5875 Additional 80MVA airtrunk	2024	15.30	7.41	17.00
Healey_Cct_Data	UIL5875 Additional 80MVA airtrunk	2025	17.10	8.28	19.00
Healey_Cct_Data	UIL5875 Additional 80MVA airtrunk	2026	12.60	6.10	14.00
Healey_Cct_Data	UIL5875 Additional 80MVA airtrunk	2027	9.90	4.79	11.00
Healey_Cct_Data	UIL5875 Additional 80MVA airtrunk	2028	3.60	1.74	4.00
Huntingwood	ENL3842 Arnotts UCL10878	2023	5.13	2.48	5.70
Huntingwood	M4 southern site not yet a cam	2025	1.76	0.36	1.80

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Huntingwood	UCL10645 Ferrers Rd signage (night time most liekly)	2024	1.17	0.57	1.30
Huntingwood	UCL10797 M4 Servo Eastern Creek (60%)	2025	1.76	0.36	1.80
Huntingwood	UCL10882 Temporary 11KV data centre supply Honeman	2024	8.10	3.92	9.00
Huntingwood	UCL10882 Temporary 11KV data centre supply Honeman	2024	8.10	3.92	9.00
Huntingwood	UCL10882 Temporary 11kV data centre supply to Honeman CL	2024	8.10	3.92	9.00
Huntingwood	UCL11150 3.5MVA retail beggs rd	2025	2.94	0.60	3.00
Huntingwood	UCS0543 165 Wallgrove rd - Industrial Note 7 PM SUBS all loads already added (Raw).	2024	3.22	1.56	3.58
Huntingwood	UIL4364-5 SYD51 Data (Raw)	2024	2.25	1.09	2.50
Huntingwood	UIL4364-6 SYD51 Data (Raw)	2025	2.25	1.09	2.50
Huntingwood	UIL4364-7 SYD51 Data (Raw)	2026	2.25	1.09	2.50
Huntingwood	UIL4364-8 SYD51 Data (Raw)	2027	2.25	1.09	2.50
Huntingwood	UIL4364-9 SYD51 Data (Raw)	2028	2.25	1.09	2.50
Huntingwood	UIL5285-5 SYD53 Data (Raw)	2024	3.04	1.47	3.38
Huntingwood	UIL5285-6 SYD53 Data (Raw)	2025	3.04	1.47	3.38
Huntingwood	UIL5285-7 SYD53 Data (Raw)	2026	3.04	1.47	3.38
Huntingwood	UIL5285-8 SYD53 Data (Raw)	2027	3.04	1.47	3.38
Huntingwood	UIL5285-9 SYD53 Data (Raw)	2028	3.04	1.47	3.38
Huntingwood	UIL5654 28 wallgrove Rd Minchinburry industrial load application	2023	0.45	0.22	0.50
Huntingwood	UIL5822 Motor sport from clyde	2023	0.93	0.45	1.03
Huntingwood	UIL5848 ASAHI LOAD INCREASE (Raw)	2025	3.87	1.87	4.30
Huntingwood	UIL6141 Warehouse flushcomber Rd 60% div	2023	0.44	0.09	0.45
Mamre	ARP4412 Wonderland driver	2023	0.00	0.00	0.00
Mamre	DBL2633 MS Data Construction Supply	2023	0.51	0.10	0.52
Mamre	Fraser Altis Warehouse Lot 11 The Yards	2024	0.69	0.14	0.70
Mamre	Fraser Altis Warehouse Lot 3 The Yards	2023	0.44	0.09	0.45
Mamre	Fraser Altis Warehouse Lot 6 The Yards	2024	1.00	0.20	1.02
Mamre	Fraser Altis Warehouse Lot 8 The Yards	2024	0.61	0.12	0.62
Mamre	PR812 Sydney Metro SS Auxilliary Supply (Patons Lane, Orchard Hills)	2024	0.15	0.03	0.15
Mamre	UCL10480 Explorers Way, St Clair	2023	0.31	0.15	0.34
Mamre	UCS0581 Sterling Rd	2023	0.29	0.06	0.30
Mamre	UIL5606 Fraser Altis Warehouse Lot 5 The Yards	2023	3.51	1.70	3.90
Mamre	UIL5875 Industrial laod (half to be on SY1252, Half to be on MM1362 via switching) 60% applied	2023	1.17	0.57	1.30
Mamre	UIL5893-1 Snack Brands - Orchard Hills	2023	5.49	1.11	5.60
Mamre	UIL5893-2 Snack Brands - Orchard Hills	2023	5.49	1.11	5.60
Mamre	UIL5908 Luddenham Rd, Orchard Hills (UIS0907 Stage 1)	2024	0.99	0.48	1.10
Mamre	UIL5910 Luddenham Road, Orchard Hills (UIS0907)	2024	0.59	0.12	0.60
Mamre	UIL5927 Warehouse 3B1 & 3B2 Oakdale West Estate	2023	1.76	0.36	1.80
Mamre	UIL5929 Distribution Dr Orchard Hills	2023	0.61	0.12	0.62
Mamre	UIL5951 Dial a dump	2023	0.90	0.44	1.00
Mamre	UIL5960 Tyre shredding plant - Grady Cres, Erskine Park	2023	1.71	0.83	1.90
Mamre	UIL6062 Data Centre Load 6 MVA after Coles Transferred to SEP	2023	2.94	0.60	3.00
Mamre	UIL6062 Data Centre Load 6 MVA after Coles Transferred to SEP	2023	2.94	0.60	3.00
Mamre	UIL6062 Syd 15 - to be double cabled	2023	5.88	1.19	6.00
Mamre	UIL6062 Syd 15 Data Centre (not diversified load)	2023	5.88	1.19	6.00
Mamre	UIL6063 SYD15 Data Centre transfer to 132kV	2025	-17.64	3.58	-18.00
Mamre	UIL6118 Fraser Altis Warehouse Lot 9 The Yards	2023	0.38	0.08	0.39
Mamre	UIL6172 Grady Cres, Erskine Park	2023	0.59	0.12	0.60
Mamre	UIL6324 No.1 - No.21 Grady Cres, Erskine Park Warehouse 2	2023	0.63	0.13	0.64
Mamre	UIS0849 Mamre Rd & Bakers Ln, Kemps Creek (Frasers Altis)	2023	0.09	0.04	0.10
Mamre	UIS0904 Wonderland Drive, Eastern Creek	2023	0.00	0.00	0.00
Mamre	UIS0907 Luddenham Rd, Orchard Hills	2024	1.47	0.30	1.50
Mamre	UIS0914 Luddenham Road Orchard Hills (UIS0907 Stage 3)	2025	1.47	0.30	1.50
Mamre	UIS0987-1 Orchard Hills Industrial Stage 1 - Fast Foods x 4	2023	1.13	0.23	1.15
Mamre	UIS0987-2 Warehouse 3, Warehouse 4, Warehouse 5 + 6	2025	1.20	0.24	1.22
Mamre	UIS0992 Industrial Sterling Rd South 80%	2024	0.31	0.06	0.32
North_Eastern_Creek	ENL3879 6MVA load near UC0543 - new feeder HW or NES ZS	2024	0.00	0.00	0.00
North_Eastern_Creek	SYD55 Temporary data centre supply 30MVA total -(10MVA) from 2021 to 2024 double cabled	2023	9.00	4.36	10.00
North_Eastern_Creek	SYD55 Temporary data centre supply 30MVA total -(10MVA)ouble cabled	2026	9.00	4.36	10.00
North_Eastern_Creek	SYD55 Temporary Data centre supply30MVA total -(10MVA)A over 2021 to 2024	2025	9.00	4.36	10.00
North_Eastern_Creek	UCL6096 Bingo this Cam only around 1.65 however reserved for BINGO future stages	2023	4.41	0.90	4.50
North_Eastern_Creek	UCL9774 1.2MVA industrial load (Raw) (80%)	2023	0.90	0.44	1.00
North_Eastern_Creek	UIL5684 Interchage dr industrial 60%	2024	0.99	0.48	1.10
North_Eastern_Creek	UIL5883 upgrade load	2024	0.72	0.35	0.80
North_Eastern_Creek	UIL6096 Stage 2.5 of Bingo dial a dump (no diversity) Note may be on NE1290 based on latest MOS	2023	1.62	0.33	1.65
Quakers_Hill	ARP4757	2023	0.00	0.00	0.00

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Quakers_Hill	UCL10169 116-132 Quakers rd additoinal 800 A	2025	0.50	0.24	0.55
Quakers_Hill	URS20207 Townson Rd - Stage 4	2023	0.21	0.10	0.24
Quakers_Hill	URS20209 Townson Rd - Stage 3	2024	0.44	0.21	0.49
Quakers_Hill	URS20592 Quakers Hill	2024	0.10	0.05	0.12
Quakers_Hill	UUL1802 Backup for Syd Water	2030	2.45	0.50	2.50
Rooty_Hill	ARP4847 STJ	2023	0.00	0.00	0.00
Rooty_Hill	UCL9621 Owen St Glendenning - Western Sydney Animal Hospital	2024	0.27	0.13	0.30
Rooty_Hill	UCL9621 Rayben rd glendenning 60%	2023	0.29	0.14	0.32
Rooty_Hill	UIL5867 79 Owen st Glendenning - load increase 1000KVA PM SUB 60%	2025	0.50	0.24	0.56
Rooty_Hill	UIL6077 15 Owen St large machine 60%	2023	0.32	0.07	0.33
Rooty_Hill	UIL6086 Inudstrial load Glendenning 80%	2023	0.90	0.44	1.00
Rooty_Hill	UIL6086B Industrial load Glendenning Rd 80%	2023	0.90	0.44	1.00
Science_Park	AEROAP Luddenham Enterprise - FY30	2030	1.4	0.3	1.44
Science_Park	AEROAP Luddenham Enterprise - FY31	2031	1.4	0.3	1.44
Science_Park	AEROAP Luddenham Enterprise - FY32	2032	1.4	0.3	1.44
Science_Park	AEROAP Science Park - FY26	2026	2.3	0.0	2.29
Science_Park	AEROAP Science Park - FY27	2027	2.3	0.0	2.29
Science_Park	AEROAP Science Park - FY28	2028	2.3	0.0	2.29
Science_Park	AEROAP Science Park - FY29	2029	2.3	0.0	2.29
Science_Park	AEROAP Science Park - FY30	2030	2.3	0.0	2.29
Science_Park	AEROAP Science Park - FY31	2031	2.3	0.0	2.29
Science_Park	AEROAP Science Park - FY32	2032	2.3	0.0	2.29
South_Erskine_Park	Building 1 Fraser Altis The Yards Café & Amentities	2024	0.08	0.02	0.08
South_Erskine_Park	Building 13 Fraser Altis The Yards Warehouse 13A + 13B	2024	2.94	0.60	3.00
South_Erskine_Park	Building 4 Fraser Altis The Yards Warehouse 4	2024	2.94	0.60	3.00
South_Erskine_Park	ENL4320-1 NEXT DC Data Centre No.1	2023	7.35	1.49	7.50
South_Erskine_Park	ENL4320-2 NEXT DC Data Centre No.2	2023	7.35	1.49	7.50
South_Erskine_Park	MS Data transferred to 132kV	2024	-10.78	2.19	-11.00
South_Erskine_Park	NEXT DC transferred to 132kV	2024	-11.76	2.39	-12.00
South_Erskine_Park	UIL0001 GPT Warehouse No.1	2023	1.42	0.29	1.45
South_Erskine_Park	UIL0002 GPT Warehouse No.3	2024	1.42	0.29	1.45
South_Erskine_Park	UIL0003 GPT Warehouse No.6	2025	1.40	0.28	1.43
South_Erskine_Park	UIL0004 GPT Warehouse No.2	2026	1.42	0.29	1.45
South_Erskine_Park	UIL0005 GPT Warehouse No.4	2028	1.70	0.34	1.73
South_Erskine_Park	UIL0006 GPT Warehouse No.5	2029	1.42	0.29	1.45
South_Erskine_Park	UIL5501-1 Coles Warehouse	2023	7.84	1.59	8.00
South_Erskine_Park	UIL5877 Goodman Warehouse 1B1 + 1B2 + 1C	2023	0.86	0.18	0.88
South_Erskine_Park	UIL5921 Goodman Warehouse 2C + 2D	2024	1.18	0.24	1.20
South_Erskine_Park	UIL5926 Goodman Warehouse 3A	2023	1.37	0.28	1.40
South_Erskine_Park	UIL5927 Goodman Warehouse 3B1 + 3B2	2023	1.76	0.36	1.80
South_Erskine_Park	UIL5928 Goodman Warehouse 2A Australia Post Distribution	2023	2.84	0.58	2.90
South_Erskine_Park	UIL5930 Goodman Warehouse 3C + 3D	2024	0.69	0.14	0.70
South_Erskine_Park	UIL5942 Warehouse 4B Goodman	2023	1.42	0.29	1.45
South_Erskine_Park	UIL6000 Fraser Altis The Yards Warehouse 2	2024	3.09	0.63	3.16
South_Erskine_Park	UIS0882 Mirvac Initial Estate Supply	2023	0.10	0.02	0.10
Syd_55	Syd55 SYD 55 132kV supply Eastern Creek loop- Syd west 217,218 22C (incl 30MVA dist load and x 2 for N-1 and times 0.6MVA diversity	2027	14.40	6.97	16.00
Syd_55	Syd55 SYD 55 132kV supply Eastern Creek loop- Syd west 217,218 22C (incl 30MVA dist load and x 2 for N-1 and times 0.6MVA diversity	2028	14.40	6.97	16.00
Syd_55	Syd55 SYD 55 132kV supply Eastern Creek loop- Syd west 217,218 22C (incl 30MVA dist load and x 2 for N-1 and times 0.6MVA diversity	2029	14.40	6.97	16.00
Syd_55	Syd55 SYD 55 132kV supply Eastern Creek loop- Syd west 217,218 22C (incl 30MVA dist load and x 2 for N-1 and times 0.6MVA diversity)	2026	14.40	6.97	16.00
DCI	UIL5696 DCI load increase	2023	5.40	2.62	6.00
DCI	UIL5696 DCI load increase	2024	1.62	0.78	1.80
DCI	UIL5696 DCI load increase	2025	13.50	6.54	15.00
DCI	UIL5696 DCI load increase	2026	9.90	4.79	11.00
DCI	UIL5696 DCI load increase	2026	5.40	2.62	6.00
DCI	UIL5696 DCI load increase	2027	6.30	3.05	7.00
DCI	UIL5696 DCI load increase	2028	2.70	1.31	3.00
West_Wetherill_Park	ENL4295 HVC 18114 Dairy Farmers Wetherill Park	2023	0.78	0.16	0.80
West_Wetherill_Park	UIL5486 13 Sleigh Pl Wetherill Park	2023	0.11	0.06	0.13
West_Wetherill_Park	UIL5872 Coles Distribution Warehouse - OCADO Sydney	2023	5.64	2.73	6.27
West_Wetherill_Park	UIL5970 Austral Bricks Plant 2	2023	6.66	1.35	6.80
Wetherill_Park	UIL5961 Woolworths Distribution Centre	2023	9.02	1.83	9.20
Wetherill_Park	UIL6124 29A Davis Rd Wetherill Park	2023	1.65	0.33	1.68
Wetherill_Park	UIL6357 35-37 Frank St Wetherill Park	2023	3.26	0.66	3.33

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Augusta_DC	UIL6083T Augusta DC	2024	5	180.00
Honeman_DC	UCL10882T Hoenman	2025	5	140.00
Station_DC	UIL6077T Data centre	2024	5	68.00
Eastern_Creek	ENL4182-1 Goodman Oakdale East Estate W2A + W2B + W4A + W4B +W5 x 0.75	2024	2	2.25
Eastern_Creek	UIL5973 ESR Logistics Park Warehouse 1 + 2A + 2B + 3 + Café	2022	2	5.43
Eastern_Creek	UIS0755 Lenore Dr EASTERN CREEK	2024	5	3.40
Mamre	Fraser Altis - The Yards Estate Various Warehouses	2024	2	2.70
Mamre	UCL10195 Digital Realty fourth feeder, Mamre	2022	3	10.30
Mamre	UIL5278 Digital Realty third feeder, Mamre	2022	2	7.00
Mamre	UIL5326 Orchards Hills Warehouse, 579 Mamre Rd	2021	2	0.55
Mamre	UIL5551 Warehouse load Mamre Rd, Orchard Hills	2021	2	2.28
Mamre	UIL5606 Digital Realty Trust SYD14	2022	10	13.80
North_Eastern_Creek	UIL5121 Dial a dump stage 2-3 (Raw)	2023	2	5.00
South_Erskine_Park	ENL4253 Dexus Estate 113-154 Aldington Rd Kemps Creek	2024	3	2.94
South_Erskine_Park	ENL4288 Summit Logistics Hub 706 Mamre Rd Kemps Creek	2025	2	5
South_Erskine_Park	Goodman Oakdale West Precinct	2026	5	12
South_Erskine_Park	Jacfin Parcel - Oakdale Central	2026	5	12
South_Erskine_Park	Mamre Rd Precinct	2026	5	20.00
South_Erskine_Park	NCL1653 Aged Care 230-242 Aldington Rd Kemps Creek	2023	2	1.25
South_Erskine_Park	UCL10591 MS Data Initial Supply No.1	2023	1	6.85
South_Erskine_Park	UCL10591 MS Data Initial Supply No.2	2024	1	6.85
South_Erskine_Park	UIL5706 Mirvac Warehouse 3	2023	1	3.83
South_Erskine_Park	UIL5956 Stockland FIFE Warehouse C	2023	1	1.434
South_Erskine_Park	UIL6004 Fraser Warehouse Lot 12	2023	1	4.1
South_Erskine_Park	UIL6041 ESR Warehouse 1	2024	1	0.90
South_Erskine_Park	UIL6228 Mirvac Warehouse 1	2023	1	2.26
South_Erskine_Park	UIL6229 Mirvac Warehouse 4 & Warehouse 5	2023	1	4.78
South_Erskine_Park	UIL6230 Mirvac Warehouse 9	2023	1	2.3
South_Erskine_Park	UIS0929 Stockland 106-178 Aldington Rd Kemps Creek	2023	5	4.735
South_Erskine_Park	UIS0951 Altis 884-928 Mamre Rd Kemps Creek	2023	2	3.00
South_Erskine_Park	UIS0971 1 Aldington Rd Kemps Creek Lot 1 + Lot 2 + Lot 3	2023	1	2.43
South_Erskine_Park	UIS0977 GPT Estate - 754 Mamre Rd Kemps Creek	2023	6	8.96
South_Erskine_Park	UIS0981 Stockland 198-228 Aldington Rd Kemps Creek	2023	5	4.735
South_Erskine_Park	UIS0996 805-817 Mamre Rd Kemps Creek Warehouses x 2	2023	2	1.2
West_Wetherill_Park	ENL4209-3 Fraser Keyhole Estate	2024	2	4.5
West_Wetherill_Park	ENL4209-4 Fraser Keyhole Estate	2024	2	4.5
Wetherill_Park	URS19357 5 Helen St Smithfield	2022	3	0.08

Generation

Zone Substation	Name	Description	Date
West Castle Hill	Cathay Pacific	4 x 1.875MW diesel	Installed

Configuration Changes

Year	Zone / HVC	From STS	To STS
2015	North Parramatta	Sydney West 132kV	Holroyd 132kV
2015	West Parramatta	Sydney West 132kV	Holroyd 132kV
2016	Granville 132kV	Sydney West 132kV	Holroyd 132kV
2017	Oran Park	Sydney West 132kV	Macarthur 132kV

**Granville was decommissioned and Granville 132kV has taken up the existing load on Granville.*

Sydney West 132kV STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**			**16.3**	**11.8**	**17.0**	**24.6**										
Healey_Cct_Data	MW			16.3	11.8	17.0	24.6	33.7	50.4	68.7	83.1	95.3	102.1	102.1	102.1	102.1	102.1
	MVAr			0.0	0.0	0.6	1.1	11.1	16.6	22.6	27.3	31.3	33.6	33.6	33.6	33.6	33.6
10% POE	**MVA**			**16.3**	**11.8**	**17.0**	**24.6**	**35.5**	**53.1**	**72.3**	**87.5**	**100.3**	**107.5**	**107.5**	**107.5**	**107.5**	**107.5**
	PF			1.000	1.000	0.999	0.999	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW			16.3	11.8	17.0	24.6	33.7	50.4	68.7	83.1	95.3	102.1	102.1	102.1	102.1	102.1
	MVAr			0.0	0.0	0.6	1.1	11.1	16.6	22.6	27.3	31.3	33.6	33.6	33.6	33.6	33.6
50% POE	**MVA**			**16.3**	**11.8**	**17.0**	**24.6**	**35.5**	**53.1**	**72.3**	**87.5**	**100.3**	**107.5**	**107.5**	**107.5**	**107.5**	**107.5**
	PF			1.000	1.000	0.999	0.999	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**																
CDC	MW							27.7	73.3	96.1	96.1	96.1	96.1	96.1	96.1	96.1	96.1
	MVAr							9.1	24.1	31.6	31.6	31.6	31.6	31.6	31.6	31.6	31.6
10% POE	**MVA**							**29.2**	**77.2**	**101.2**	**101.2**	**101.2**	**101.2**	**101.2**	**101.2**	**101.2**	**101.2**
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW							27.7	73.3	96.1	96.1	96.1	96.1	96.1	96.1	96.1	96.1
	MVAr							9.1	24.1	31.6	31.6	31.6	31.6	31.6	31.6	31.6	31.6
50% POE	**MVA**							**29.2**	**77.2**	**101.2**	**101.2**	**101.2**	**101.2**	**101.2**	**101.2**	**101.2**	**101.2**
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**																
DCI	MW							4.6	14.1	25.5	38.4	43.7	46.0	46.0	46.0	46.0	46.0
	MVAr							1.5	4.6	8.4	12.6	14.4	15.1	15.1	15.1	15.1	15.1
10% POE	**MVA**							**4.8**	**14.8**	**26.8**	**40.4**	**46.0**	**48.4**	**48.4**	**48.4**	**48.4**	**48.4**
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW							4.6	14.1	25.5	38.4	43.7	46.0	46.0	46.0	46.0	46.0
	MVAr							1.5	4.6	8.4	12.6	14.4	15.1	15.1	15.1	15.1	15.1
50% POE	**MVA**							**4.8**	**14.8**	**26.8**	**40.4**	**46.0**	**48.4**	**48.4**	**48.4**	**48.4**	**48.4**
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**																
SYD_55	MW									22.8	35.0	47.1	59.3	71.4	71.4	71.4	71.4
	MVAr									7.5	11.5	15.5	19.5	23.5	23.5	23.5	23.5
10% POE	**MVA**									**24.0**	**36.8**	**49.6**	**62.4**	**75.2**	**75.2**	**75.2**	**75.2**
	PF									0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW									22.8	35.0	47.1	59.3	71.4	71.4	71.4	71.4
	MVAr									7.5	11.5	15.5	19.5	23.5	23.5	23.5	23.5
50% POE	**MVA**									**24.0**	**36.8**	**49.6**	**62.4**	**75.2**	**75.2**	**75.2**	**75.2**
	PF									0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**																
Augusta_DC	MW								10.9	48.9	98.2	131.0	141.9	141.9	141.9	141.9	141.9
	MVAr								3.6	16.1	32.3	43.1	46.7	46.7	46.7	46.7	46.7
10% POE	**MVA**								**11.5**	**51.5**	**103.3**	**137.9**	**149.4**	**149.4**	**149.4**	**149.4**	**149.4**
	PF								0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW								10.9	48.9	98.2	131.0	141.9	141.9	141.9	141.9	141.9
	MVAr								3.6	16.1	32.3	43.1	46.7	46.7	46.7	46.7	46.7
50% POE	**MVA**								**11.5**	**51.5**	**103.3**	**137.9**	**149.4**	**149.4**	**149.4**	**149.4**	**149.4**
	PF								0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**																
Honeman_DC	MW								10.8	24.8	50.3	88.6	114.1	122.6	122.6	122.6	122.6
	MVAr								3.6	8.1	16.5	29.1	37.5	40.3	40.3	40.3	40.3
10% POE	**MVA**								**11.4**	**26.1**	**52.9**	**93.3**	**120.1**	**129.1**	**129.1**	**129.1**	**129.1**
	PF								0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW								10.8	24.8	50.3	88.6	114.1	122.6	122.6	122.6	122.6
	MVAr								3.6	8.1	16.5	29.1	37.5	40.3	40.3	40.3	40.3
50% POE	**MVA**								**11.4**	**26.1**	**52.9**	**93.3**	**120.1**	**129.1**	**129.1**	**129.1**	**129.1**
	PF								0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**																
Station_DC	MW								7.6	20.0	38.6	51.0	55.1	55.1	55.1	55.1	55.1
	MVAr								2.5	6.6	12.7	16.8	18.1	18.1	18.1	18.1	18.1
10% POE	**MVA**								**8.0**	**21.0**	**40.6**	**53.6**	**58.0**	**58.0**	**58.0**	**58.0**	**58.0**
	PF								0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW								7.6	20.0	38.6	51.0	55.1	55.1	55.1	55.1	55.1
	MVAr								2.5	6.6	12.7	16.8	18.1	18.1	18.1	18.1	18.1
50% POE	**MVA**								**8.0**	**21.0**	**40.6**	**53.6**	**58.0**	**58.0**	**58.0**	**58.0**	**58.0**
	PF								0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**																
Aerotropolis	MW									18.0	28.4	46.6	44.6	46.1	47.5	61.4	63.3
	MVAr									5.9	9.3	15.3	14.6	15.1	15.6	20.2	20.8
10% POE	**MVA**									**19.0**	**29.9**	**49.0**	**46.9**	**48.5**	**50.0**	**64.6**	**66.7**
	PF									0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
	MW									18.0	28.4	46.6	44.6	46.1	47.5	61.4	63.3
	MVAr									5.9	9.3	15.3	14.6	15.1	15.6	20.2	20.8
50% POE	**MVA**									**19.0**	**29.9**	**49.0**	**46.9**	**48.5**	**50.0**	**64.6**	**66.7**
	PF									0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**	**32.1**	**27.9**	**31.0**	**29.0**	**31.2**	**27.4**										
Arndell Park	MW	32.3	31.0	31.6	30.3	33.0	30.3	30.7	39.9	34.3	33.9	33.7	33.5	33.4	33.3	33.2	33.2
	MVAr	0.0	0.0	2.0	3.2	3.9	5.8	3.2	4.1	3.5	3.5	3.5	3.5	3.5	3.4	3.4	3.4
10% POE	**MVA**	**32.3**	**31.0**	**31.7**	**30.5**	**33.2**	**30.9**	**30.8**	**40.1**	**34.5**	**34.1**	**33.9**	**33.7**	**33.6**	**33.5**	**33.4**	**33.4**
	PF	1.000	1.000	0.998	0.994	0.993	0.982	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
	MW	29.6	28.3	28.9	27.9	30.6	27.9	28.3	37.5	31.9	31.5	31.3	31.2	31.1	30.9	30.9	30.8
	MVAr	0.0	0.0	1.8	2.9	3.6	5.3	2.9	3.9	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.2
50% POE	**MVA**	**29.6**	**28.3**	**28.9**	**28.0**	**30.8**	**28.4**	**28.4**	**37.7**	**32.1**	**31.7**	**31.5**	**31.3**	**31.2**	**31.1**	**31.0**	**31.0**
	PF	1.000	1.000	0.998	0.994	0.993	0.982	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
Actual	**MVA**	**35.7**	**33.4**	**33.7**	**35.4**	**31.1**	**29.4**										
Baulkham Hills 11kV	MW	35.4	33.1	35.6	34.3	35.1	35.9	35.5	35.9	35.9	35.5	35.4	35.5	35.7	35.9	36.2	36.5
	MVAr	5.0	4.3	3.4	7.4	14.8	14.9	14.7	14.9	14.9	14.7	14.7	14.7	14.8	14.8	15.0	15.1
10% POE	**MVA**	**35.7**	**33.4**	**35.7**	**35.1**	**38.1**	**38.9**	**38.5**	**38.9**	**38.8**	**38.4**	**38.4**	**38.4**	**38.6**	**38.8**	**39.2**	**39.5**
	PF	0.990	0.992	0.996	0.978	0.921	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924
	MW	31.0	29.0	31.3	30.1	31.1	32.1	31.7	32.1	32.1	31.7	31.6	31.7	31.9	32.1	32.4	32.7
	MVAr	4.3	3.8	3.0	6.5	13.2	13.3	13.1	13.3	13.3	13.1	13.1	13.1	13.2	13.3	13.4	13.5
50% POE	**MVA**	**31.3**	**29.3**	**31.5**	**30.8**	**33.8**	**34.7**	**34.3**	**34.8**	**34.7**	**34.3**	**34.2**	**34.3**	**34.5**	**34.7**	**35.0**	**35.4**
	PF	0.990	0.992	0.996	0.978	0.921	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924	0.924
Actual	**MVA**	**80.6**	**82.1**	**76.8**	**73.3**	**75.2**	**79.7**										
One Steel Mini Mill	MW	74.6	75.9	68.4	68.3	69.5	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3
	MVAr	30.6	31.3	35.9	26.7	28.9	8.0	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1
10% POE	**MVA**	**80.6**	**82.1**	**77.3**	**73.3**	**75.2**	**79.7**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**
	PF	0.925	0.925	0.885	0.932	0.923	0.995	0.931	0.931	0.931	0.931	0.931	0.931	0.931	0.931	0.931	0.931
Major customer	MW	74.6	75.9	68.4	68.3	69.5	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3
	MVAr	30.6	31.3	35.9	26.7	28.9	8.0	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1	31.1
50% POE	**MVA**	**80.6**	**82.1**	**77.3**	**73.3**	**75.2**	**79.7**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**	**85.2**
	PF	0.925	0.925	0.885	0.932	0.923	0.995	0.931	0.931	0.931	0.931	0.931	0.931	0.931	0.931	0.931	0.931
Actual	**MVA**	**14.6**	**16.9**	**12.8**	**12.5**												
Bringelly	MW	13.7	14.0	13.5	12.1												
	MVAr	3.0	5.9	4.6	3.7												
10% POE	**MVA**	**14.1**	**15.2**	**14.3**	**12.7**												
	PF	0.976	0.921	0.947	0.956												
	MW	12.2	12.6	12.1	10.8												
	MVAr	2.7	5.3	4.1	3.3												
50% POE	**MVA**	**12.5**	**13.6**	**12.7**	**11.3**												
	PF	0.976	0.921	0.947	0.956												
Actual	**MVA**	**49.4**	**42.2**	**43.3**	**48.2**	**42.8**	**38.5**										
Doonside	MW	46.4	42.7	48.7	44.8	47.2	48.6	47.1	46.5	46.3	45.4	45.3	45.6	46.2	46.8	47.6	48.4
	MVAr	10.9	1.7	3.9	8.3	1.9	0.6	6.0	5.9	5.9	5.8	5.8	5.8	5.9	6.0	6.1	6.2
10% POE	**MVA**	**47.7**	**42.7**	**48.9**	**45.5**	**47.3**	**48.6**	**47.5**	**46.9**	**46.7**	**45.8**	**45.6**	**46.0**	**46.6**	**47.2**	**48.0**	**48.8**
	PF	0.973	0.999	0.997	0.983	0.999	1.000	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
	MW	39.3	36.8	41.9	38.2	41.1	42.6	41.1	40.5	40.3	39.4	39.5	39.9	40.5	41.1	41.9	42.7
	MVAr	9.2	1.4	3.4	7.1	1.7	0.6	5.2	5.1	5.1	5.0	5.0	5.1	5.2	5.2	5.3	5.4
50% POE	**MVA**	**40.4**	**36.9**	**42.0**	**38.8**	**41.1**	**42.5**	**41.4**	**40.8**	**40.6**	**39.7**	**39.8**	**40.2**	**40.8**	**41.4**	**42.2**	**43.0**
	PF	0.973	0.999	0.997	0.983	0.999	1.000	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Actual	**MVA**	**19.7**	**18.6**	**20.5**	**24.5**	**25.8**	**20.9**										
Eastern Crrek	MW	19.2	18.3	20.2	24.2	25.8	21.0	31.1	56.7	58.3	59.2	59.9	60.1	60.1	60.1	60.2	60.2
	MVAr	4.5	3.3	3.4	3.5	1.4	4.7	4.9	8.8	9.1	9.2	9.3	9.4	9.4	9.4	9.4	9.4
10% POE	**MVA**	**19.7**	**18.6**	**20.5**	**24.5**	**25.8**	**21.5**	**31.5**	**57.4**	**59.0**	**59.9**	**60.6**	**60.8**	**60.9**	**60.9**	**60.9**	**60.9**
	PF	0.974	0.984	0.986	0.990	0.998	0.976	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988
	MW	19.2	18.3	20.2	24.2	25.8	21.0	31.1	56.7	58.3	59.2	59.9	60.1	60.1	60.1	60.2	60.2
	MVAr	4.5	3.3	3.4	3.5	1.4	4.7	4.9	8.8	9.1	9.2	9.3	9.4	9.4	9.4	9.4	9.4
50% POE	**MVA**	**19.7**	**18.6**	**20.5**	**24.5**	**25.8**	**21.5**	**31.5**	**57.4**	**59.0**	**59.9**	**60.6**	**60.8**	**60.9**	**60.9**	**60.9**	**60.9**
	PF	0.974	0.984	0.986	0.990	0.998	0.976	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988

Note: # Oran Park is being supplied from a mobile substation prior to the zone substation being built.

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**27.0**	**25.3**	**28.1**	**32.6**	**34.9**	**42.6**										
Huntingwood	MW	26.4	25.1	25.3	32.4	34.8	42.5	48.0	63.0	70.7	75.3	80.0	84.6	84.7	84.7	84.7	84.8
	MVAr	5.8	3.2	3.2	3.5	1.2	2.8	3.1	4.1	4.6	4.9	5.2	5.5	5.5	5.5	5.5	5.5
10% POE	**MVA**	**27.0**	**25.3**	**25.5**	**32.6**	**34.9**	**42.6**	**48.1**	**63.2**	**70.8**	**75.5**	**80.1**	**84.8**	**84.8**	**84.9**	**84.9**	**84.9**
	PF	0.977	0.992	0.992	0.994	0.999	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
	MW	26.4	25.1	25.3	32.4	34.8	42.5	48.0	63.0	70.7	75.3	80.0	84.6	84.7	84.7	84.7	84.8
	MVAr	5.8	3.2	3.2	3.5	1.2	2.8	3.1	4.1	4.6	4.9	5.2	5.5	5.5	5.5	5.5	5.5
50% POE	**MVA**	**27.0**	**25.3**	**25.5**	**32.6**	**34.9**	**42.6**	**48.1**	**63.2**	**70.8**	**75.5**	**80.1**	**84.8**	**84.8**	**84.9**	**84.9**	**84.9**
	PF	0.977	0.992	0.992	0.994	0.999	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
Actual	**MVA**	**57.2**	**55.5**	**58.9**	**56.2**	**51.9**	**55.7**										
Mamre	MW	50.5	53.4	61.4	57.1	57.9	63.8	93.7	101.3	91.7	93.2	94.9	96.3	97.5	98.1	98.5	98.6
	MVAr	7.0	6.5	7.7	5.6	7.3	1.9	2.8	3.0	2.7	2.8	2.8	2.9	2.9	2.9	2.9	2.9
10% POE	**MVA**	**51.0**	**53.8**	**61.9**	**57.3**	**58.4**	**63.8**	**93.8**	**101.4**	**91.8**	**93.2**	**94.9**	**96.4**	**97.5**	**98.2**	**98.5**	**98.6**
	PF	0.991	0.993	0.992	0.995	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	MW	47.1	49.7	56.4	52.1	53.1	58.8	88.7	96.3	86.8	88.2	89.9	91.4	92.5	93.2	93.5	93.6
	MVAr	6.5	6.0	7.1	5.2	6.7	1.7	2.6	2.9	2.6	2.6	2.7	2.7	2.7	2.8	2.8	2.8
50% POE	**MVA**	**47.6**	**50.0**	**56.9**	**52.4**	**53.5**	**58.9**	**88.8**	**96.4**	**86.8**	**88.2**	**90.0**	**91.4**	**92.5**	**93.2**	**93.5**	**93.7**
	PF	0.991	0.993	0.992	0.995	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Actual	**MVA**	**10.6**	**11.8**	**13.5**	**13.9**	**12.4**	**13.1**										
North Eastern	MW	10.2	11.4	13.2	13.7	12.1	12.8	28.0	31.4	15.8	23.6	23.6	23.6	23.6	23.5	23.5	23.5
Creek	MVAr	3.0	3.0	3.1	2.7	2.7	3.0	6.6	7.4	3.7	5.6	5.6	5.5	5.5	5.5	5.5	5.5
10% POE	**MVA**	**10.6**	**11.8**	**13.5**	**13.9**	**12.4**	**13.1**	**28.8**	**32.3**	**16.3**	**24.3**	**24.2**	**24.2**	**24.2**	**24.2**	**24.2**	**24.2**
	PF	0.959	0.967	0.973	0.981	0.976	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
	MW	10.2	11.4	13.2	13.7	12.1	12.8	28.0	31.4	15.8	23.6	23.6	23.6	23.6	23.5	23.5	23.5
	MVAr	3.0	3.0	3.1	2.7	2.7	3.0	6.6	7.4	3.7	5.6	5.6	5.5	5.5	5.5	5.5	5.5
50% POE	**MVA**	**10.6**	**11.8**	**13.5**	**13.9**	**12.4**	**13.1**	**28.8**	**32.3**	**16.3**	**24.3**	**24.2**	**24.2**	**24.2**	**24.2**	**24.2**	**24.2**
	PF	0.959	0.967	0.973	0.981	0.976	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
Actual	**MVA**	**44.2**	**42.8**	**44.0**	**44.8**	**39.9**	**37.8**										
Quakers Hill	MW	41.2	42.5	47.0	42.0	44.6	45.9	44.9	44.2	44.0	43.3	43.0	42.9	43.1	45.2	45.5	45.8
	MVAr	9.9	13.5	9.8	2.2	4.2	2.0	8.3	8.2	8.1	8.0	7.9	7.9	7.9	8.3	8.4	8.4
10% POE	**MVA**	**42.4**	**44.6**	**48.0**	**42.0**	**44.8**	**45.9**	**45.6**	**45.0**	**44.8**	**44.0**	**43.7**	**43.7**	**43.8**	**45.9**	**46.2**	**46.5**
	PF	0.973	0.953	0.979	1.001	0.996	0.999	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
	MW	36.2	37.5	41.2	36.5	39.2	40.5	39.4	38.8	38.7	38.0	37.7	37.6	37.8	39.9	40.2	40.5
	MVAr	8.7	11.9	8.6	1.9	3.7	1.8	7.3	7.2	7.1	7.0	7.0	6.9	7.0	7.4	7.4	7.5
50% POE	**MVA**	**37.3**	**39.3**	**42.1**	**36.4**	**39.4**	**40.5**	**40.1**	**39.5**	**39.4**	**38.6**	**38.3**	**38.3**	**38.4**	**40.6**	**40.9**	**41.2**
	PF	0.973	0.953	0.979	1.001	0.996	0.999	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
Actual	**MVA**	**42.6**	**38.7**	**38.7**	**35.9**	**39.6**	**34.2**										
Rooty_Hill	MW	38.4	38.8	40.7	36.9	38.0	38.6	40.1	39.5	39.5	38.7	38.4	38.3	38.4	38.4	38.6	38.8
	MVAr	18.6	9.3	2.5	3.5	18.4	1.5	11.5	11.4	11.4	11.1	11.1	11.0	11.0	11.1	11.1	11.2
10% POE	**MVA**	**42.6**	**39.9**	**40.7**	**37.1**	**42.2**	**38.7**	**41.7**	**41.1**	**41.1**	**40.3**	**39.9**	**39.9**	**39.9**	**40.0**	**40.2**	**40.4**
	PF	0.900	0.972	0.998	0.996	0.900	0.999	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961
	MW	34.7	35.1	36.7	33.0	34.1	34.8	36.3	35.7	35.7	34.9	34.7	34.6	34.6	34.7	34.9	35.1
	MVAr	16.8	8.4	2.2	3.1	16.5	1.4	10.4	10.3	10.3	10.1	10.0	10.0	10.0	10.0	10.0	10.1
50% POE	**MVA**	**38.6**	**36.1**	**36.8**	**33.1**	**37.9**	**34.8**	**37.7**	**37.2**	**37.1**	**36.3**	**36.1**	**36.0**	**36.0**	**36.1**	**36.3**	**36.5**
	PF	0.900	0.972	0.998	0.996	0.900	0.999	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961
Actual	**MVA**																
Science_Park	MW										7.8	9.5	11.3	13.0	15.8	18.7	21.5
	MVAr										2.6	3.1	3.7	4.3	5.2	6.1	7.1
10% POE	**MVA**										**8.2**	**10.0**	**11.9**	**13.7**	**16.7**	**19.7**	**22.7**
	PF										0.950	0.950	0.950	0.950	0.950	0.950	0.950
	MW										7.8	9.5	11.3	13.0	15.8	18.7	21.5
	MVAr										2.6	3.1	3.7	4.3	5.2	6.1	7.1
50% POE	**MVA**										**8.2**	**10.0**	**11.9**	**13.7**	**16.7**	**19.7**	**22.7**
	PF										0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**																
South	MW							62.3	65.7	74.4	84.2	94.0	107.7	116.8	119.5	119.5	119.5
Erskine Park	MVAr							20.5	21.6	24.5	27.7	30.9	35.4	38.4	39.3	39.3	39.3
10% POE	**MVA**							**65.6**	**69.2**	**78.4**	**88.7**	**98.9**	**113.4**	**123.0**	**125.8**	**125.8**	**125.8**
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
	MW							62.3	65.7	74.4	84.2	94.0	107.7	116.8	119.5	119.5	119.5
	MVAr							20.5	21.6	24.5	27.7	30.9	35.4	38.4	39.3	39.3	39.3
50% POE	**MVA**							**65.6**	**69.2**	**78.4**	**88.7**	**98.9**	**113.4**	**123.0**	**125.8**	**125.8**	**125.8**
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**32.7**	**31.8**	**27.8**	**24.3**	**24.3**	**21.7**										
West	MW	29.9	29.3	25.8	23.4	23.1	21.5	32.0	35.4	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7
Wetherill Park	MVAr	13.2	12.4	10.4	6.5	7.5	3.3	11.1	12.3	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
10% POE	**MVA**	**32.7**	**31.8**	**27.8**	**24.3**	**24.3**	**21.7**	**33.9**	**37.4**	**41.0**	**41.0**	**40.9**	**40.9**	**40.9**	**40.9**	**40.9**	**40.9**
	PF	0.915	0.922	0.928	0.964	0.952	0.989	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
	MW	29.9	29.3	25.8	23.4	23.1	21.5	32.0	35.4	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7
	MVAr	13.2	12.4	10.4	6.5	7.5	3.3	11.1	12.3	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
50% POE	**MVA**	**32.7**	**31.8**	**27.8**	**24.3**	**24.3**	**21.7**	**33.9**	**37.4**	**41.0**	**41.0**	**40.9**	**40.9**	**40.9**	**40.9**	**40.9**	**40.9**
	PF	0.915	0.922	0.928	0.964	0.952	0.989	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
Actual	**MVA**	**29.1**	**27.6**	**28.5**	**26.8**	**27.2**	**27.0**										
Wetherill Park	MW	27.7	26.3	28.5	26.3	26.6	26.8	37.8	37.7	37.6	37.5	37.5	37.4	37.4	37.4	37.4	37.3
	MVAr	9.1	8.6	0.0	5.1	5.6	3.1	7.9	7.9	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
10% POE	**MVA**	**29.1**	**27.6**	**28.5**	**26.8**	**27.2**	**27.0**	**38.7**	**38.5**	**38.5**	**38.3**	**38.3**	**38.2**	**38.2**	**38.2**	**38.2**	**38.1**
	PF	0.950	0.950	1.000	0.982	0.979	0.993	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
	MW	27.7	26.3	28.5	26.3	26.6	26.8	37.8	37.7	37.6	37.5	37.5	37.4	37.4	37.4	37.4	37.3
	MVAr	9.1	8.6	0.0	5.1	5.6	3.1	7.9	7.9	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
50% POE	**MVA**	**29.1**	**27.6**	**28.5**	**26.8**	**27.2**	**27.0**	**38.7**	**38.5**	**38.5**	**38.3**	**38.3**	**38.2**	**38.2**	**38.2**	**38.2**	**38.1**
	PF	0.950	0.950	1.000	0.982	0.979	0.993	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
Actual	**MVA**	**475.7**	**454.7**	**473.8**	**469.1**	**453.4**	**452.7**										
Undiversified	MW	445.9	441.7	476.2	457.6	464.8	491.6	676.6	843.9	991.4	1163.7	1312.5	1394.2	1429.3	1439.7	1458.3	1464.8
	MVAr	120.5	103.0	89.8	82.0	98.3	52.5	153.3	195.6	247.5	302.0	349.2	374.3	385.4	388.2	394.1	396.0
10% POE	**MVA**	**465.6**	**457.8**	**490.6**	**467.4**	**480.8**	**497.0**	**699.1**	**872.5**	**1028.6**	**1209.4**	**1365.8**	**1451.5**	**1488.3**	**1499.1**	**1518.7**	**1525.4**
	PF	0.958	0.965	0.971	0.979	0.967	0.989	0.968	0.967	0.964	0.962	0.961	0.961	0.960	0.960	0.960	0.960
	MW	418.2	415.3	446.4	428.6	438.2	465.2	650.2	817.5	965.2	1137.5	1286.6	1368.4	1403.4	1413.8	1432.5	1438.9
	MVAr	114.5	98.7	86.1	78.0	93.1	49.9	148.5	190.8	242.7	297.2	344.4	369.6	380.7	383.5	389.3	391.2
50% POE	**MVA**	**437.0**	**430.8**	**460.5**	**438.1**	**453.4**	**470.2**	**672.0**	**845.5**	**1001.7**	**1182.6**	**1339.3**	**1425.0**	**1461.8**	**1472.6**	**1492.2**	**1498.9**
	PF	0.957	0.964	0.969	0.978	0.967	0.989	0.967	0.967	0.964	0.962	0.961	0.960	0.960	0.960	0.960	0.960

5.32 Vineyard STS Demand Forecast

Discussion

The Industrial load and Residential precincts within the Northwest sector. Demand is expected to be up to 90-120MVA in the area over the next 20 - 30 years. We are already into this large growth period with the majority of recent applications being for new residential developments in the Marsden Park, Schofields, Riverstone and vineyard areas.

The Castle Towers expansion has commenced with demolition and asset relocation of indoor substations. The final loading of the revamped shopping centre has been estimated at 38MVA by the applicant. There is ongoing discussions and analysis to determine a suitable arrangement to supply this load.

As part of the North West Rail project a North West Rail Link traction supply at 132kV will be supplied from the Rouse Hill Switching Station.

As part of the North West sector future load growth, Endeavour Energy has recently secured a site for the proposed Box Hill Zone at Mount Carmel Road North at Box Hill.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Bella Vista	3 x 45	135
Box_Hill		
Cheriton Avenue	2 x 45	90
Marsden Park	1 x 45	45
Mungerie Park	3 x 45	135
Parklea	3 x 45	135
Schofields	2 x 45	90
South Marsden Park	Approved (1 x 15)	(15)
West Castle Hill	2 x 35/44/52/65	130

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2025	South_Windsor	Hawkesbury	Box_Hill	Vineyard	3.50
2023	Mungerie_Park	Liverpool_STS	Trifalga_Data_Centre	Vineyard	5.00
2023	Mungerie_Park	Liverpool_STS	Trifalga_Data_Centre	Vineyard	5.00
2024	Riverstone	Liverpool_STS	Box_Hill	Vineyard	2.00
2024	Kellyville	Sydney_North	West_Castle_Hill	Vineyard	0.40
2024	Kenthurst	Sydney_North	Mungerie_Park	Vineyard	0.80
2024	Mungerie_Park	Vineyard	Box_Hill	Vineyard	12.00
2023	Mungerie_Park	Vineyard	Parklea	Vineyard	2.70
2023	Cheriton_Avenue	Vineyard	Castle_Hill	Carlingford	0.95
2025	Cheriton_Avenue	Vineyard	Jasper_Road	Baulkham_Hills	1.20
2023	Mungerie_Park	Vineyard	Kellyville	Sydney_North	3.40

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Bella_Vista	UCL9423 8 Elizabeth Macarthur Dr, Bella Vista	2023	1.62	0.78	1.80
Box_Hill	Box Hill - Commercial/Industrial	2024	0.90	0.44	1.00
Box_Hill	Box Hill - Commercial/Industrial	2025	0.90	0.44	1.00
Box_Hill	Box Hill - Commercial/Industrial	2026	0.90	0.44	1.00
Box_Hill	Box Hill - Commercial/Industrial	2027	0.90	0.44	1.00
Box_Hill	Box Hill - Commercial/Industrial	2028	0.90	0.44	1.00
Box_Hill	Box Hill - Commercial/Industrial	2029	0.90	0.44	1.00
Box_Hill	Box Hill - Commercial/Industrial	2030	0.90	0.44	1.00
Box_Hill	Box Hill - Commercial/Industrial	2031	0.90	0.44	1.00
Box_Hill	Box Hill - Commercial/Industrial	2032	0.90	0.44	1.00
Box_Hill	Box Hill - Residential	2024	2.91	1.41	3.23
Box_Hill	Box Hill - Residential	2025	3.76	1.82	4.18
Box_Hill	Box Hill - Residential	2026	2.92	1.41	3.24
Box_Hill	Box Hill - Residential	2027	2.92	1.41	3.24
Box_Hill	Box Hill - Residential	2028	3.45	1.67	3.83
Box_Hill	Box Hill - Residential	2029	3.36	1.63	3.74
Box_Hill	Box Hill - Residential	2030	3.36	1.63	3.74
Box_Hill	Box Hill - Residential	2031	3.64	1.76	4.04
Box_Hill	Box Hill - Residential	2032	3.64	1.76	4.04
Box_Hill	Gables Rezoning Box Hill North	2027	0.43	0.09	0.44
Box_Hill	Gables Rezoning Box Hill North	2028	2.11	0.43	2.15
Box_Hill	Gables Rezoning Box Hill North	2029	3.09	0.63	3.15

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Box_Hill	Vineyard Precinct - 200 residential dwellings	2025	0.97	0.47	1.08
Box_Hill	Vineyard Precinct - 200 residential dwellings	2026	0.97	0.47	1.08
Box_Hill	Vineyard Precinct - 200 residential dwellings	2027	0.97	0.47	1.08
Box_Hill	Vineyard Precinct - 200 residential dwellings	2028	0.97	0.47	1.08
Box_Hill	Vineyard Precinct - 200 residential dwellings	2029	0.97	0.47	1.08
Box_Hill	Vineyard Precinct - 200 residential dwellings	2030	0.97	0.47	1.08
Box_Hill	Vineyard Precinct - 200 residential dwellings	2031	0.97	0.47	1.08
Box_Hill	Vineyard Precinct - 200 residential dwellings	2032	0.97	0.47	1.08
Marsden_Park	ARP4464 Richmond road widneing	2023	0.00	0.00	0.00
Marsden_Park	ENL4134 Another double cabled feeder for this	2024	0.00	0.00	0.00
Marsden_Park	Marsden Park - 550 residential dwellings	2025	2.89	1.40	3.21
Marsden_Park	Marsden Park - 550 residential dwellings	2026	2.89	1.40	3.21
Marsden_Park	Marsden Park - 550 residential dwellings	2027	1.68	0.81	1.86
Marsden_Park	Marsden Park - 550 residential dwellings	2028	2.92	1.41	3.24
Marsden_Park	Marsden Park - 550 residential dwellings	2029	2.92	1.41	3.24
Marsden_Park	Marsden Park - 550 residential dwellings	2030	2.92	1.41	3.24
Marsden_Park	Marsden Park - 550 residential dwellings	2031	2.92	1.41	3.24
Marsden_Park	Marsden Park - 550 residential dwellings	2032	2.92	1.41	3.24
Marsden_Park	Marsden Park North - 250 residential dwellings	2032	2.35	1.14	2.61
Marsden_Park	Marsden Park North - 300 residential dwellings	2025	0.63	0.30	0.70
Marsden_Park	Marsden Park North - 300 residential dwellings	2026	0.63	0.30	0.70
Marsden_Park	Marsden Park North - 300 residential dwellings	2027	0.63	0.30	0.70
Marsden_Park	Marsden Park North - 300 residential dwellings	2028	0.63	0.30	0.70
Marsden_Park	Marsden Park North - 300 residential dwellings	2029	2.35	1.14	2.61
Marsden_Park	Marsden Park North - 300 residential dwellings	2030	2.35	1.14	2.61
Marsden_Park	Marsden Park North - 300 residential dwellings	2031	2.35	1.14	2.61
Marsden_Park	UCL10206 Age care facility marsden park	2024	0.43	0.21	0.48
Marsden_Park	UCL10479 Marsden Park Commercial - 60% of 2.35	2024	1.27	0.61	1.41
Marsden_Park	UCL10650 Ribbonwood Dr	2024	0.86	0.41	0.95
Marsden_Park	UML9968-86 Series of UML's	2024	3.06	1.48	3.40
Marsden_Park	URS18947 Richmond Rd	2023	0.76	0.37	0.84
Marsden_Park	URS20129 Joining grange to excelsior	2024	0.40	0.19	0.44
Marsden_Park	URS20472 Newpark Precinct	2023	1.21	0.58	1.34
Marsden_Park	URS20647 Marsden Park development Abell rd	2024	0.70	0.34	0.78
Marsden_Park	URS20647a Abell Rd	2024	0.70	0.34	0.78
Marsden_Park	URS20934 Clydesdale Estate	2025	1.41	0.68	1.57
Marsden_Park	URS21101 Stage 45 - 97 lots	2023	0.47	0.23	0.52
Marsden_Park	URS21102 Stage 46 Marsden Park - 92 lots	2023	0.45	0.22	0.50
Marsden_Park	URS21103 Stage 47 Marsden Park - 99 lots	2023	0.48	0.23	0.53
Marsden_Park	URS21104 Marsden Park Stage 48 - 100 lots	2025	0.49	0.24	0.54
Marsden_Park	URS21107 Marsden Park residential development rd 604	2024	0.15	0.07	0.16
Marsden_Park	URS21107 Marsden Park residential development rd 604	2024	0.29	0.14	0.32
Marsden_Park	URS21108 21109 Elara stage 52 and 53 97+47 dwellings	2024	0.70	0.34	0.78
Marsden_Park	URS21293 Marsden Park richmond round superlots housing/units (Back calc ADMD)	2024	0.76	0.37	0.84
Marsden_Park	URS21295 Richmond Rd Marsden Park - 84 lots	2024	0.41	0.20	0.45
Marsden_Park	URS22271 Proposed lot 1136 Road 9 Marsden park 156 lots feeder MS1202	2023	0.76	0.37	0.84
Marsden_Park	URS22286 367 lots Parkway dr Marsden Park	2023	1.78	0.86	1.98
Marsden_Park	URS22287 URS23328 as well	2023	0.65	0.13	0.66
Marsden_Park	URS22741 URS22739-URS22743 Riverstone parade Dev	2025	0.58	0.28	0.64
Marsden_Park	URS22742 URS22739-URS22743 Riverstone parade Dev	2024	0.60	0.29	0.66
Marsden_Park	URS23329 Marsden park development	2025	0.31	0.15	0.34
Marsden_Park	URS23865 Bolwarra Dr	2024	0.05	0.03	0.06
Marsden_Park	URS23867 4 stages total 45 lots.	2024	0.22	0.11	0.24
Marsden_Park	URS23872 Retirement village marsden park 1/3	2024	0.05	0.03	0.06
Marsden_Park	URS23984 Abell rd	2024	0.69	0.33	0.77
Marsden_Park	URS23984a Abell Rd	2024	0.68	0.33	0.76
Marsden_Park	URS24021 NewPark Precinct	2024	0.25	0.12	0.28
Marsden_Park	URS24558 Abell rd developments elara precinct 6	2024	0.20	0.10	0.23
Marsden_Park	URS24647 Lot 8 of 11 lot development	2024	0.39	0.19	0.43
Marsden_Park	URS25442 Resdiential development diamond back Rd	2023	0.89	0.18	0.91
Marsden_Park	URS25540 Abell Rd	2024	1.22	0.59	1.35
Marsden_Park	URS25542 Abell rd dimaondbk pde	2024	0.92	0.45	1.03
Marsden_Park	URS25697 Stage 7 western Marsden park	2024	0.42	0.08	0.43
Marsden_Park	URS25734 Abell Rd	2025	0.30	-0.06	0.30
Marsden_Park	URS25735 Abell Rd	2025	0.31	0.06	0.31
Marsden_Park	URS26188 Western end of Marsden park 7J	2024	0.53	0.11	0.55
Mungerie_Park	Box Hill - Residential	2023	3.12	1.51	3.46
Mungerie_Park	North Kellyville (33%)	2023	1.21	0.58	1.34
Mungerie_Park	North Kellyville (33%)	2024	1.66	0.81	1.85
Mungerie_Park	North Kellyville (33%)	2025	1.44	0.70	1.60
Mungerie_Park	North Kellyville (33%)	2026	0.40	0.20	0.45
Mungerie_Park	North Kellyville (33%)	2027	0.40	0.20	0.45

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Mungerie_Park	North Kellyville (33%)	2028	0.40	0.20	0.45
Mungerie_Park	North Kellyville (33%)	2029	0.40	0.20	0.45
Mungerie_Park	North Kellyville (33%)	2030	0.40	0.20	0.45
Mungerie_Park	North Kellyville (33%)	2031	0.40	0.20	0.45
Mungerie_Park	North Kellyville (33%)	2032	0.40	0.20	0.45
Mungerie_Park	UCL10150-1 Trifalgar Data Centre Temporary Supply	2024	4.50	2.18	5.00
Mungerie_Park	UCL10150-2 Trifalgar Data Centre Temporary Supply	2024	4.50	2.18	5.00
Mungerie_Park	UCL10510 127A Old Pitt Town Rd, Box Hill	2024	1.08	0.52	1.20
Mungerie_Park	UCL10640 318 Annangrove Rd, Rouse Hill	2023	1.26	0.61	1.40
Mungerie_Park	UCL11065 kilbenny st KFC (60%)	2023	0.14	0.03	0.14
Mungerie_Park	UCL9610 3 Money Cl, Rouse Hill	2023	0.41	0.20	0.45
Mungerie_Park	UCS0570 273 Annangrove Rd, Rouse Hill	2026	0.81	0.16	0.83
Mungerie_Park	UCS0572 Annangrove Rd, Rouse Hill	2025	0.37	0.08	0.38
Mungerie_Park	UIL6092 5 Money Cl, Rouse Hill	2024	0.27	0.13	0.30
Mungerie_Park	UIL6236 7 Money Cl, Rouse Hill	2025	0.40	0.08	0.41
Mungerie_Park	UIL6283 316 Annangrove Rd, Rouse Hill	2026	0.81	0.16	0.82
Mungerie_Park	ULL3241 The Water Ln, Box Hill	2024	0.08	0.02	0.09
Mungerie_Park	ULL3316 38 Barry Rd, Kellyville	2024	0.12	0.02	0.13
Mungerie_Park	UML10090 2 Capital Pl, Rouse Hill	2024	0.49	0.10	0.50
Mungerie_Park	URS26617 33 Mason Rd, Box Hill	2026	0.07	0.02	0.08
Mungerie_Park	UUL1896 Pumping Station SP1022	2024	0.16	0.08	0.18
Mungerie_Park	UUL1981-1 Sydney Water HVC 12706 Stage 2A	2025	0.33	0.07	0.34
Mungerie_Park	UUL1981-2 Sydney Water HVC 12706 Stage 2B	2026	2.69	0.55	2.74
Parklea	UCL8379 2 Hector Court, Kellyville	2024	1.20	0.58	1.33
Parklea	ULL3356 Glenwood HS 60%	2023	0.82	0.17	0.84
Parklea	URS23689 The ponds houses	2024	0.34	0.07	0.35
Parklea	URS25256 56 houses off conrad Rd	2024	0.27	0.13	0.30
Parklea	UUL1968 The ponds upgrade PM SUB	2023	0.49	0.10	0.50
Schofields	Alex Avenue Release - 400Lots	2025	1.94	0.94	2.16
Schofields	Alex Avenue Release - 400Lots	2026	1.94	0.94	2.16
Schofields	Alex Avenue Release - 400Lots	2027	1.94	0.94	2.16
Schofields	Alex Avenue Release - 400Lots	2028	1.94	0.94	2.16
Schofields	Alex Avenue Release - 400Lots	2029	1.94	0.94	2.16
Schofields	ARP4505 hambledon rd	2024	0.00	0.00	0.00
Schofields	ENL3373 34-72 Tallawong Rd, Rouse Hill	2026	4.54	2.20	5.04
Schofields	ENL3699 Landcom north of Area20 3.9MVA	2023	0.00	0.00	0.00
Schofields	PLT1535 Road widening gordon road near Pole sub 1024	2025	0.00	0.00	0.00
Schofields	Riverstone East - 400 residential dwellings	2029	1.94	0.94	2.16
Schofields	Riverstone East - 400 residential dwellings	2030	1.94	0.94	2.16
Schofields	Riverstone East - 400 residential dwellings	2031	1.94	0.94	2.16
Schofields	Riverstone East - 400 residential dwellings	2032	1.94	0.94	2.16
Schofields	Riverstone East - 550 residential dwellings (1/2)	2028	1.34	0.65	1.49
Schofields	Riverstone East - 600 residential dwellings (1/2)	2025	1.46	0.71	1.62
Schofields	Riverstone East - 600 residential dwellings (1/2)	2026	1.46	0.71	1.62
Schofields	Riverstone East - 600 residential dwellings (1/2)	2027	1.46	0.71	1.62
Schofields	Riverstone Precinct - 400 residential dwellings (1/2)	2025	0.97	0.47	1.08
Schofields	Riverstone Precinct - 400 residential dwellings (1/2)	2026	0.97	0.47	1.08
Schofields	Riverstone Precinct - 400 residential dwellings (1/2)	2027	0.97	0.47	1.08
Schofields	Riverstone Precinct - 400 residential dwellings (1/2)	2028	0.97	0.47	1.08
Schofields	Schofields - 240 residential dwellings	2028	1.17	0.56	1.30
Schofields	Schofields - 250 residential dwellings	2025	1.22	0.59	1.35
Schofields	Schofields - 250 residential dwellings	2026	1.22	0.59	1.35
Schofields	Schofields - 250 residential dwellings	2027	1.22	0.59	1.35
Schofields	UCL10214 89 Alex Avenue Commercial load	2024	0.39	0.19	0.43
Schofields	UCL10273 commercial load south marsden ultimo rd	2024	0.44	0.21	0.49
Schofields	UCL10366 church cudgegong rd	2025	0.14	0.07	0.15
Schofields	UCl10398 Commercial load richmond rd south marsden (80% Diversit)	2025	0.37	0.18	0.42
Schofields	UCL10452 Pelican rd railway terrace Coles diversified 80%	2023	1.44	0.70	1.60
Schofields	UCL10941 Ultimo pl 80%	2024	0.32	0.07	0.33
Schofields	UIL5971 ultimo pl Marsden Park 60%	2024	0.14	0.07	0.15
Schofields	ULL3374 Fields in auerdorme west	2024	0.16	0.03	0.16
Schofields	UML10036 Units Rivo east area New Feeder	2025	1.03	0.21	1.06
Schofields	UML10048 Grima St	2024	0.50	0.10	0.51
Schofields	UML10049 Units near Boro st	2025	0.38	0.08	0.39
Schofields	UML10049B Pelican Rd units (boro st)	2025	0.38	0.08	0.38
Schofields	UML10050 Rugby St units	2024	0.31	0.06	0.31
Schofields	UML10244 Boundary Rd Schofields	2024	0.00	0.00	0.00
Schofields	UML8895 Load on SC1216 atm	2024	0.00	0.00	0.00
Schofields	UML9156 Cudgegong rd machquarie road 95 town houses	2024	0.46	0.22	0.51
Schofields	UML9503 Grima st units 123	2024	0.37	0.18	0.41
Schofields	UML9504 Grima st units 137	2024	0.41	0.20	0.45
Schofields	UML9614 Pelican road additional 54 units	2023	0.16	0.08	0.18

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Schofields	UMl9685 2.7MVA	2024	1.76	0.85	1.95
Schofields	UML9858 Jerralong Dr isla	2024	0.59	0.29	0.66
Schofields	UML9994 nit develpoment 177	2024	0.53	0.25	0.58
Schofields	URS17947 96 Railway Tce Riverstone - 10 houses	2025	0.12	0.06	0.13
Schofields	URS17947 Rilaway terrac riversotne rd	2024	0.05	0.02	0.05
Schofields	URS18743 Riverstone Rd Riverstone	2024	0.41	0.20	0.45
Schofields	URS19374 124 Tallawong Rd - 39 lots	2024	0.19	0.09	0.21
Schofields	URS19522 Boundary Rd Schofields - 40 lots near tallawong	2024	0.19	0.09	0.22
Schofields	URS19522 Tallawong Rd	2023	0.21	0.04	0.21
Schofields	URS20204 Clark St - Riverstone East (MVA diff added to com)	2025	0.22	0.11	0.25
Schofields	URS20414 tallwong rd 39 plus 41 lots	2023	0.39	0.19	0.43
Schofields	URS20420 160 Tallawong Rd	2025	0.22	0.11	0.24
Schofields	URS20874 St Alabns RD 40 lots	2024	0.19	0.09	0.22
Schofields	URS20987 Cranbourne St Riverstone - 48 lots	2024	0.23	0.11	0.26
Schofields	URS21011 Cranbourne St Riverstone - 115 units	2024	0.34	0.17	0.38
Schofields	URS21053 Tallawong Rd Rouse Hill - 64 lots	2024	0.31	0.15	0.35
Schofields	URS21200 125 Tallwong rd 45 lots	2023	0.22	0.11	0.24
Schofields	URS21499 Tallawong Rd Rouse Hill - 34 lots	2024	0.17	0.08	0.18
Schofields	URS21792-1 Schofields Rd - 1381 units A	2023	1.34	0.65	1.49
Schofields	URS21792-2 Schofields Rd - 1381 units B	2024	2.00	0.97	2.22
Schofields	URS21792-3 One PM Sub for this development near ZS	2024	0.37	0.18	0.41
Schofields	URS21824 new residential development Aerodrome lots 2b (Assign total load for ADMD)	2024	0.25	0.12	0.28
Schofields	URS22152 Townson Rd Colebee 60 lots SC 1208	2024	0.29	0.14	0.32
Schofields	URS22162 44 lots clarke and cranebourne rd	2024	0.21	0.10	0.24
Schofields	URS22163 Stage 3	2023	0.15	0.07	0.16
Schofields	URS22164 Stage 2	2023	0.14	0.07	0.15
Schofields	URS22587 Colebee development 54 lots (Back calc ADMD)	2025	0.26	0.13	0.29
Schofields	URS23294 URS23336 Boundary road houses 57 + 5 lots	2024	0.30	0.15	0.33
Schofields	URS23394 Burdekin Rd Quakers 28 units 87 houses	2025	0.56	0.27	0.62
Schofields	URS23465 141 Tallawong Rd, Rouse Hill	2024	0.20	0.10	0.23
Schofields	URS23987 Aerodrome	2024	0.17	0.08	0.19
Schofields	URS23988 Aerodrome	2024	0.10	0.05	0.11
Schofields	URS24026 Aerdrome fruther lots	2024	0.16	0.08	0.17
Schofields	URS24561 72 residential Aerodrome stage 6	2024	0.35	0.17	0.39
Schofields	URS24571 dongola Circuit	2024	0.27	0.13	0.30
Schofields	URS24576 150 Guntawong Rd	2023	0.39	0.19	0.43
Schofields	URS24920 Stage 1	2023	0.22	0.11	0.24
Schofields	URS24983-4 Oaks st	2024	0.21	0.10	0.23
Schofields	URS25359 Burdekin Rd Quakers	2024	0.41	0.20	0.45
Schofields	URS25424 Ducts ready for future cams with street lighting	2023	0.00	0.00	0.00
Schofields	URS25443 Tallawong Rd Lot 46	2024	0.25	0.12	0.28
Schofields	URS25693 Aerodrome	2023	0.46	0.09	0.46
Schofields	URS25695 Aerodrome	2023	0.23	0.05	0.24
Schofields	URS25710 Guntawong tallawong Rds	2024	0.37	0.08	0.38
Schofields	URS25802 Town houses bligh st	2025	0.27	0.06	0.28
Schofields	URS26081 clarke st 49 houses	2024	0.26	0.05	0.26
Schofields	URS26247 Nirmal St	2024	0.06	0.01	0.06
Schofields	URS26457 20 hoses	2023	0.11	0.02	0.11
Schofields	URS26494 8 lots off PM SUB 54687	2025	0.04	0.01	0.04
Schofields	URS26577 URS 26577 and URS 27181 lissanthe street South Marsden	2025	0.21	0.04	0.22
Schofields	URS26644 Aerodrome	2024	1.07	0.22	1.09
Schofields	URS26685 Guntawong Rd units	2025	0.27	0.05	0.27
Schofields	URS27112 Upgrade 54687 to 500KVA	2025	0.26	0.05	0.27
Schofields	URS27116 24 lots westminister st Riverstone	2025	0.13	0.03	0.13
Schofields	UUL1960 CarPark station	2023	0.29	0.06	0.30
Schofields	West Schofields - 200 residential dwellings (1/2)	2025	0.97	0.47	1.08
Schofields	West Schofields - 200 residential dwellings (1/2)	2027	0.97	0.47	1.08
Schofields	West Schofields - 200 residential dwellings (1/2)	2028	0.97	0.47	1.08
Schofields	West Schofields - 200 residential dwellings (1/2)	2029	0.97	0.47	1.08
Schofields	West Schofields - 200 residential dwellings (1/2)	2030	0.97	0.47	1.08
Schofields	West Schofields - 200 residential dwellings (1/2)	2031	0.97	0.47	1.08
Schofields	West Schofields - 200 residential dwellings (1/2)	2032	0.97	0.47	1.08
Schofields	West Schofields - 250 residential dwellings (1/2)	2026	0.97	0.47	1.08
South_Marsden_Park	ARP3978 Grange Aven undergrounding and PM SUB 54454	2023	0.00	0.00	0.00
South_Marsden_Park	Marsden Park Industrial - 205 hectares of employmen	2029	2.70	1.31	3.00
South_Marsden_Park	Marsden Park Industrial - 205 hectares of employmen	2030	0.90	0.44	1.00
South_Marsden_Park	Marsden Park Industrial - 205 hectares of employmen	2031	0.90	0.44	1.00
South_Marsden_Park	Marsden Park Industrial - 205 hectares of employmen	2032	0.90	0.44	1.00
South_Marsden_Park	Marsden Park Industrial - 205 hectares of employment land	2025	2.70	1.31	3.00
South_Marsden_Park	Marsden Park Industrial - 205 hectares of employment land	2026	2.70	1.31	3.00
South_Marsden_Park	Marsden Park Industrial - 205 hectares of employment land	2027	2.70	1.31	3.00

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
South_Marsden_Park	Marsden Park Industrial - 205 hectares of employment land	2028	2.70	1.31	3.00
South_Marsden_Park	UIL5914 Holinsworth rd warehouse 80% Div	2023	0.45	0.22	0.50
South_Marsden_Park	UIL5979 Industrial 80%	2023	0.35	0.17	0.39
South_Marsden_Park	UIL6104 Astoria road 60% utilisation	2023	0.82	0.17	0.84
South_Marsden_Park	UIL6297 hawthorn rd 60% div	2024	0.88	0.18	0.90
South_Marsden_Park	UIS0942 Industiral Subdivision 60% diversity	2024	3.24	1.57	3.60
South_Marsden_Park	UML10051 Apartments South st	2024	0.23	0.05	0.24
South_Marsden_Park	UML8616 Grange Ave - 257 units	2025	0.76	0.37	0.85
South_Marsden_Park	URS20129b Grange Aveneu units	2023	0.78	0.16	0.79
South_Marsden_Park	URS21329 south st (note will need future tie when area is developed	2024	1.20	0.24	1.22
South_Marsden_Park	URS21735 Glengarrie rd	2024	0.66	0.32	0.73
South_Marsden_Park	URS24674 Grange ave residential 93 lots and 47 units	2024	0.62	0.13	0.63
South_Marsden_Park	URS25140 98 residents	2024	0.52	0.11	0.53
South_Marsden_Park	West Schofields - 200 residential dwellings (1/2)	2025	0.97	0.47	1.08
South_Marsden_Park	West Schofields - 200 residential dwellings (1/2)	2027	0.97	0.47	1.08
South_Marsden_Park	West Schofields - 200 residential dwellings (1/2)	2028	0.97	0.47	1.08
South_Marsden_Park	West Schofields - 200 residential dwellings (1/2)	2029	0.97	0.47	1.08
South_Marsden_Park	West Schofields - 200 residential dwellings (1/2)	2030	0.97	0.47	1.08
South_Marsden_Park	West Schofields - 200 residential dwellings (1/2)	2031	0.97	0.47	1.08
South_Marsden_Park	West Schofields - 200 residential dwellings (1/2)	2032	0.97	0.47	1.08
South_Marsden_Park	West Schofields - 250 residential dwellings (1/2)	2026	0.97	0.47	1.08
Trifalga_Data_Centre	UCL10820 Trifalga Data Centre	2025	9.50	3.12	10.00
Trifalga_Data_Centre	UCL10820 Trifalga Data Centre	2026	9.50	3.12	10.00
Trifalga_Data_Centre	UCL10820 Trifalga Data Centre	2027	9.50	3.12	10.00
Trifalga_Data_Centre	UCL10820 Trifalga Data Centre	2028	9.50	3.12	10.00
Trifalga_Data_Centre	UCL10820 Trifalga Data Centre	2029	9.50	3.12	10.00
Trifalga_Data_Centre	UCL10820 Trifalga Data Centre	2030	9.50	3.12	10.00
Trifalga_Data_Centre	UCL10820 Trifalga Data Centre	2031	9.50	3.12	10.00
Trifalga_Data_Centre	UCL10820 Trifalga Data Centre	2032	9.50	3.12	10.00
West_Castle_Hill	UCL11284 Opp 25 Gilbert Rd Castle Hill	2026	0.43	0.09	0.44
West_Castle_Hill	UCL9918 172 Showground Rd, Castle Hill	2024	0.49	0.24	0.54
West_Castle_Hill	URS25391 York Rd, Kellyville	2024	0.31	0.15	0.34

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Bella_Vista	NWRL Bella Vista Precinct, Apartments (30%)	2012	24	3.17
Bella_Vista	NWRL Bella Vista Precinct, Commercial (30%)	2012	24	5.70
Bella_Vista	NWRL Bella Vista Precinct, Houses (30%)	2012	24	0.32
Bella_Vista	NWRL Bella Vista Precinct, Industrial (30%)	2012	24	-0.14
Bella_Vista	NWRL Bella Vista Precinct, Townhouses (30%)	2012	24	1.29
Bella_Vista	NWRL Norwest Precinct, Apartments (70%)	2012	24	7.05
Bella_Vista	NWRL Norwest Precinct, Commercial (70%)	2012	24	18.36
Bella_Vista	NWRL Norwest Precinct, Houses (70%)	2012	24	0.76
Bella_Vista	NWRL Norwest Precinct, Industrial (70%)	2012	24	-1.26
Bella_Vista	NWRL Norwest Precinct, Townhouses (70%)	2012	24	3.31
Cheriton_Avenue	NWRL Castle Hill Precinct, Apartments (50%)	2012	24	7.43
Cheriton_Avenue	NWRL Castle Hill Precinct, Commercial (50%)	2012	24	9.28
Cheriton_Avenue	NWRL Castle Hill Precinct, Houses (50%)	2012	24	-0.54
Cheriton_Avenue	NWRL Castle Hill Precinct, Townhouses (50%)	2012	24	0.22
Cheriton_Avenue	NWRL Showground Road Precinct, Apartments (10%)	2012	24	1.11
Cheriton_Avenue	NWRL Showground Road Precinct, Commercial (10%)	2012	24	1.12
Cheriton_Avenue	NWRL Showground Road Precinct, Houses (10%)	2012	24	-0.05
Cheriton_Avenue	NWRL Showground Road Precinct, Industrial (10%)	2012	24	0.14
Cheriton_Avenue	NWRL Showground Road Precinct, Townhouses (10%)	2012	24	0.15
Mungerie_Park	NWRL Cudgegong Road Precinct, Apartments (30%)	2012	24	0.99
Mungerie_Park	NWRL Cudgegong Road Precinct, Commercial (30%)	2012	24	0.21
Mungerie_Park	NWRL Cudgegong Road Precinct, Houses (30%)	2012	24	2.43
Mungerie_Park	NWRL Cudgegong Road Precinct, Industrial (30%)	2012	24	5.04
Mungerie_Park	NWRL Cudgegong Road Precinct, Townhouses (30%)	2012	24	1.29
Mungerie_Park	NWRL Kellyville Precinct, Apartments (25%)	2012	24	3.47
Mungerie_Park	NWRL Kellyville Precinct, Commercial (25%)	2012	24	0.56
Mungerie_Park	NWRL Kellyville Precinct, Houses (25%)	2012	24	-1.08
Mungerie_Park	NWRL Kellyville Precinct, Townhouses (25%)	2012	24	1.08
Mungerie_Park	NWRL Rouse Hill Precinct, Apartments (100%)	2012	24	1.65
Mungerie_Park	NWRL Rouse Hill Precinct, Commercial (100%)	2012	24	8.08
Mungerie_Park	NWRL Rouse Hill Precinct, Houses (100%)	2012	24	2.16
Mungerie_Park	NWRL Rouse Hill Precinct, Townhouses (100%)	2012	24	0.22
Mungerie_Park	UML7629 2-6 Mason Rd, Box Hill (Sub 2 - Com)	2023	2	1.49
Parklea	NWRL Bella Vista Precinct, Apartments (70%)	2012	24	7.39
Parklea	NWRL Bella Vista Precinct, Commercial (70%)	2012	24	13.31
Parklea	NWRL Bella Vista Precinct, Houses (70%)	2012	24	0.76
Parklea	NWRL Bella Vista Precinct, Industrial (70%)	2012	24	0.32
Parklea	NWRL Bella Vista Precinct, Townhouses (70%)	2012	24	2.31
Parklea	NWRL Kellyville Precinct, Apartments (75%)	2012	24	10.40
Parklea	NWRL Kellyville Precinct, Commercial (75%)	2012	24	1.68
Parklea	NWRL Kellyville Precinct, Houses (75%)	2012	24	-3.24
Parklea	NWRL Kellyville Precinct, Townhouses (75%)	2012	24	2.48
Schofields	NWRL Cudgegong Road Precinct, Apartments (70%)	2012	24	2.31
Schofields	NWRL Cudgegong Road Precinct, Commercial (70%)	2012	24	0.49
Schofields	NWRL Cudgegong Road Precinct, Houses (70%)	2012	24	5.67
Schofields	NWRL Cudgegong Road Precinct, Industrial (70%) (RAW)	2012	24	11.76
Schofields	NWRL Cudgegong Road Precinct, Townhouses (70%)	2012	24	3.78
South_Marsden_Park	URS18742 South St Units	2023	3	0.93
West_Castle_Hill	NWRL Norwest Precinct, Apartments (30%)	2012	24	3.02
West_Castle_Hill	NWRL Norwest Precinct, Commercial (30%)	2012	24	7.87
West_Castle_Hill	NWRL Norwest Precinct, Houses (30%)	2012	24	0.32
West_Castle_Hill	NWRL Norwest Precinct, Industrial (30%)	2012	24	-0.54
West_Castle_Hill	NWRL Norwest Precinct, Townhouses (30%)	2012	24	1.42
West_Castle_Hill	NWRL Showground Road Precinct, Apartments (90%)	2012	24	9.95
West_Castle_Hill	NWRL Showground Road Precinct, Commercial (90%)	2012	24	10.04
West_Castle_Hill	NWRL Showground Road Precinct, Houses (90%)	2012	24	-0.49
West_Castle_Hill	NWRL Showground Road Precinct, Industrial (90%)	2012	24	1.22
West_Castle_Hill	NWRL Showground Road Precinct, Townhouses (90%)	2012	24	1.35

Generation

Zone Substation	Name	Description	Date
West Castle Hill	Cathay Pacific	4 x 1.875MW diesel	Installed

Configuration Changes

No configuration change

Vineyard STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**52.7**	**47.5**	**42.0**	**51.8**	**45.6**	**44.2**										
Bella Vista	MW	50.2	48.6	51.2	49.7	50.6	51.2	54.1	55.7	57.3	58.7	60.3	61.8	63.3	64.5	65.6	66.6
	MVAr	13.2	11.2	1.1	8.8	0.0	9.8	4.8	5.0	5.1	5.3	5.4	5.5	5.7	5.8	5.9	6.0
10% POE	**MVA**	**51.9**	**49.9**	**51.2**	**48.9**	**50.6**	**50.2**	**54.3**	**55.9**	**57.6**	**58.9**	**60.5**	**62.1**	**63.5**	**64.8**	**65.9**	**66.8**
	PF	0.967	0.974	1.000	1.016	1.000	1.019	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	45.3	43.5	46.1	44.5	45.6	46.1	49.0	50.5	52.2	53.7	55.3	56.9	58.3	59.5	60.7	61.6
	MVAr	11.9	10.0	1.0	7.8	0.0	8.8	4.4	4.5	4.7	4.8	5.0	5.1	5.2	5.3	5.4	5.5
50% POE	**MVA**	**46.8**	**44.7**	**46.1**	**43.8**	**45.6**	**45.2**	**49.2**	**50.7**	**52.4**	**53.9**	**55.5**	**57.1**	**58.5**	**59.8**	**60.9**	**61.8**
	PF	0.967	0.974	1.000	1.016	1.000	1.019	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	**MVA**																
Box Hill	MW								16.5	24.6	28.6	33.0	39.1	46.0	50.4	55.0	59.7
	MVAr								5.4	8.1	9.4	10.9	12.9	15.1	16.6	18.1	19.6
10% POE	**MVA**								**17.4**	**25.9**	**30.1**	**34.8**	**41.2**	**48.4**	**53.0**	**57.9**	**62.8**
	PF								0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
	MW								16.5	24.6	28.6	33.0	39.1	46.0	50.4	55.0	59.7
	MVAr								5.4	8.1	9.4	10.9	12.9	15.1	16.6	18.1	19.6
50% POE	**MVA**								**17.4**	**25.9**	**30.1**	**34.8**	**41.2**	**48.4**	**53.0**	**57.9**	**62.8**
	PF								0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**	**33.8**	**33.9**	**24.0**	**27.3**	**23.0**	**22.9**										
Cheriton Avenue	MW	30.8	31.7	26.2	25.4	25.9	26.4	26.0	26.8	26.6	27.3	28.0	28.8	29.5	30.1	30.7	31.3
	MVAr	8.0	3.6	5.4	3.2	0.5	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3
10% POE	**MVA**	**31.8**	**31.9**	**26.8**	**25.6**	**25.9**	**26.4**	**26.0**	**26.8**	**26.6**	**27.3**	**28.1**	**28.8**	**29.5**	**30.2**	**30.8**	**31.3**
	PF	0.968	0.994	0.979	0.992	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	27.0	27.8	23.5	22.6	23.1	23.7	23.3	24.1	23.9	24.6	25.4	26.1	26.8	27.5	28.1	28.6
	MVAr	7.0	3.1	4.9	2.8	0.5	1.0	0.9	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2
50% POE	**MVA**	**27.9**	**28.0**	**24.0**	**22.8**	**23.1**	**23.7**	**23.3**	**24.1**	**23.9**	**24.6**	**25.4**	**26.1**	**26.9**	**27.5**	**28.1**	**28.6**
	PF	0.968	0.994	0.979	0.992	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Actual	**MVA**		**3.2**	**5.4**	**10.3**	**10.5**	**13.7**										
Marsden Park	MW		3.0	5.4	10.2	10.5	13.6	19.4	32.0	37.6	40.3	42.2	45.1	49.5	53.9	58.4	62.8
	MVAr		1.0	0.3	1.4	1.3	1.5	9.4	15.5	18.2	19.5	20.4	21.9	24.0	26.1	28.3	30.4
10% POE	**MVA**		**3.2**	**5.4**	**10.3**	**10.5**	**13.7**	**21.5**	**35.6**	**41.8**	**44.7**	**46.8**	**50.1**	**55.0**	**59.9**	**64.9**	**69.8**
	PF		0.950	0.998	0.991	0.993	0.994	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
	MW		3.0	5.4	10.2	10.5	13.6	19.4	32.0	37.6	40.3	42.2	45.1	49.5	53.9	58.4	62.8
	MVAr		1.0	0.3	1.4	1.3	1.5	9.4	15.5	18.2	19.5	20.4	21.9	24.0	26.1	28.3	30.4
50% POE	**MVA**		**3.2**	**5.4**	**10.3**	**10.5**	**13.7**	**21.5**	**35.6**	**41.8**	**44.7**	**46.8**	**50.1**	**55.0**	**59.9**	**64.9**	**69.8**
	PF		0.950	0.998	0.991	0.993	0.994	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Actual	**MVA**	**58.5**	**61.0**	**76.3**	**82.6**	**87.2**	**81.2**										
Mungerie Park	MW	56.1	63.8	83.2	81.2	85.5	80.0	69.8	70.5	73.2	76.8	77.6	78.4	79.4	80.2	81.6	82.9
	MVAr	10.8	9.5	14.7	15.5	17.1	14.0	12.7	12.8	13.3	13.9	14.1	14.2	14.4	14.5	14.8	15.0
10% POE	**MVA**	**57.1**	**64.5**	**84.5**	**82.6**	**87.2**	**81.2**	**70.9**	**71.7**	**74.4**	**78.1**	**78.8**	**79.7**	**80.7**	**81.5**	**82.9**	**84.2**
	PF	0.982	0.989	0.985	0.982	0.981	0.985	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
	MW	49.5	56.8	73.5	81.2	85.5	80.0	69.8	70.5	73.2	76.8	77.6	78.4	79.4	80.2	81.6	82.9
	MVAr	9.5	8.4	13.0	15.5	17.1	14.0	12.7	12.8	13.3	13.9	14.1	14.2	14.4	14.5	14.8	15.0
50% POE	**MVA**	**50.5**	**57.4**	**74.7**	**82.6**	**87.2**	**81.2**	**70.9**	**71.7**	**74.4**	**78.1**	**78.8**	**79.7**	**80.7**	**81.5**	**82.9**	**84.2**
	PF	0.982	0.989	0.985	0.982	0.981	0.985	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
Actual	**MVA**																
Trifalga_DC	MW							9.5	9.5	17.1	24.7	32.3	39.9	47.5	55.1	62.7	70.3
	MVAr							3.1	3.1	5.6	8.1	10.6	13.1	15.6	18.1	20.6	23.1
10% POE	**MVA**							**10.0**	**10.0**	**18.0**	**26.0**	**34.0**	**42.0**	**50.0**	**58.0**	**66.0**	**74.0**
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Major customer	MW							9.5	9.5	17.1	24.7	32.3	39.9	47.5	55.1	62.7	70.3
	MVAr							3.1	3.1	5.6	8.1	10.6	13.1	15.6	18.1	20.6	23.1
50% POE	**MVA**							**10.0**	**10.0**	**18.0**	**26.0**	**34.0**	**42.0**	**50.0**	**58.0**	**66.0**	**74.0**
	PF							0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Actual	**MVA**				**19.8**	**9.6**	**11.0**										
North West Rail	MW				19.1	9.2	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
Rouse Hill	MVAr				5.0	2.9	2.8	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
10% POE	**MVA**				**19.8**	**9.6**	**11.0**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**
	PF				0.967	0.953	0.966	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Major customer	MW				19.1	9.2	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
	MVAr				5.0	2.9	2.8	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
50% POE	**MVA**				**19.8**	**9.6**	**11.0**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**	**11.1**
	PF				0.967	0.953	0.966	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Actual	**MVA**	**19.6**	**21.2**	**26.7**	**32.3**	**28.0**	**27.4**										
Schofields	MW	18.8	21.9	28.5	29.4	27.3	30.1	35.3	49.4	60.4	70.8	77.4	83.9	89.1	92.4	95.8	99.0
	MVAr	1.3	3.9	5.4	3.5	1.1	2.2	4.4	6.1	7.5	8.8	9.6	10.4	11.0	11.4	11.9	12.3
10% POE	**MVA**	**18.9**	**22.3**	**29.0**	**29.6**	**27.3**	**30.2**	**35.5**	**49.8**	**60.9**	**71.3**	**78.0**	**84.5**	**89.7**	**93.1**	**96.5**	**99.8**
	PF	0.998	0.985	0.983	0.993	0.999	0.997	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
	MW	16.9	19.0	25.2	25.3	24.3	27.0	32.2	46.5	57.4	67.8	74.4	80.9	86.1	89.5	92.9	96.1
	MVAr	1.2	3.4	4.7	3.0	0.9	2.0	4.0	5.8	7.1	8.4	9.2	10.0	10.7	11.1	11.5	11.9
50% POE	**MVA**	**16.9**	**19.3**	**25.6**	**25.4**	**24.4**	**27.1**	**32.4**	**46.8**	**57.9**	**68.3**	**75.0**	**81.5**	**86.8**	**90.2**	**93.6**	**96.9**
	PF	0.998	0.985	0.983	0.993	0.999	0.997	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**4.7**	**6.9**	**8.8**	**10.6**	**11.5**	**12.1**										
South Marsden Park	MW	4.6	6.9	8.4	10.3	11.3	11.8	13.5	19.7	23.5	26.4	29.4	32.5	35.6	37.1	38.8	40.5
	MVAr	1.2	0.2	2.5	2.4	2.1	2.5	2.9	4.2	5.0	5.7	6.3	7.0	7.6	8.0	8.3	8.7
10% POE	**MVA**	**4.7**	**6.9**	**8.8**	**10.6**	**11.5**	**12.1**	**13.8**	**20.2**	**24.0**	**27.0**	**30.1**	**33.2**	**36.4**	**38.0**	**39.7**	**41.4**
	PF	0.967	1.000	0.960	0.974	0.983	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978
	MW	4.6	6.9	8.4	10.3	11.3	11.8	13.5	19.7	23.5	26.4	29.4	32.5	35.6	37.1	38.8	40.5
	MVAr	1.2	0.2	2.5	2.4	2.1	2.5	2.9	4.2	5.0	5.7	6.3	7.0	7.6	8.0	8.3	8.7
50% POE	**MVA**	**4.7**	**6.9**	**8.8**	**10.6**	**11.5**	**12.1**	**13.8**	**20.2**	**24.0**	**27.0**	**30.1**	**33.2**	**36.4**	**38.0**	**39.7**	**41.4**
	PF	0.967	1.000	0.960	0.974	0.983	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978	0.978
Actual	**MVA**	**106.8**	**86.3**	**80.6**	**86.5**	**73.7**	**70.8**										
Parklea	MW	98.3	91.6	91.1	86.8	89.4	89.7	94.0	96.4	97.7	98.1	99.0	100.0	101.0	101.8	102.6	103.2
	MVAr	29.3	23.6	21.8	20.0	20.8	14.7	15.4	15.7	15.9	16.0	16.2	16.3	16.5	16.6	16.8	16.9
10% POE	**MVA**	**102.5**	**94.6**	**93.7**	**89.1**	**91.8**	**90.9**	**95.3**	**97.7**	**98.9**	**99.4**	**100.3**	**101.3**	**102.3**	**103.1**	**104.0**	**104.6**
	PF	0.958	0.968	0.973	0.975	0.974	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
	MW	85.4	80.6	79.6	75.4	78.4	78.9	83.3	85.6	86.9	87.3	88.2	89.2	90.2	91.0	91.8	92.4
	MVAr	25.5	20.7	19.0	17.3	18.2	12.9	13.6	14.0	14.2	14.3	14.4	14.6	14.7	14.9	15.0	15.1
50% POE	**MVA**	**89.1**	**83.2**	**81.8**	**77.3**	**80.5**	**80.0**	**84.4**	**86.8**	**88.0**	**88.4**	**89.4**	**90.4**	**91.4**	**92.2**	**93.0**	**93.6**
	PF	0.958	0.968	0.973	0.975	0.974	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
Actual	**MVA**	**47.5**	**45.1**	**40.3**	**39.4**	**33.8**	**35.9**										
West Castle Hill	MW	44.5	41.0	43.8	40.7	40.9	42.8	44.3	47.0	48.6	50.2	51.4	52.6	53.6	54.4	55.2	55.8
	MVAr	11.4	14.6	5.0	0.5	4.0	0.7	8.2	8.7	9.0	9.3	9.5	9.7	9.9	10.1	10.2	10.3
10% POE	**MVA**	**45.9**	**43.5**	**44.1**	**40.7**	**41.1**	**42.8**	**45.1**	**47.8**	**49.4**	**51.0**	**52.3**	**53.5**	**54.5**	**55.3**	**56.1**	**56.7**
	PF	0.969	0.942	0.994	1.000	0.995	1.000	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
	MW	40.0	36.9	39.0	36.0	36.5	38.1	39.6	42.2	43.9	45.4	46.7	47.8	48.9	49.7	50.5	51.1
	MVAr	10.2	13.2	4.4	0.5	3.6	0.6	7.3	7.8	8.1	8.4	8.7	8.9	9.1	9.2	9.4	9.5
50% POE	**MVA**	**41.3**	**39.2**	**39.2**	**36.0**	**36.7**	**38.0**	**40.2**	**43.0**	**44.6**	**46.2**	**47.5**	**48.6**	**49.7**	**50.6**	**51.4**	**52.0**
	PF	0.969	0.942	0.994	1.000	0.995	1.000	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983	0.983
Actual	**MVA**	**323.5**	**305.1**	**304.1**	**360.5**	**323.0**	**319.2**										
Undiversified	MW	303.2	308.5	337.9	352.7	350.6	356.2	367.0	408.2	460.2	512.5	541.3	572.8	605.0	630.6	657.1	682.7
	MVAr	75.2	67.5	56.2	60.2	49.7	49.3	61.9	72.3	86.4	100.2	107.2	115.3	124.2	131.6	139.2	146.7
10% POE	**MVA**	**312.9**	**316.7**	**343.4**	**357.1**	**355.6**	**358.5**	**373.6**	**416.5**	**470.6**	**525.0**	**554.8**	**587.5**	**621.2**	**648.0**	**675.8**	**702.6**
	PF	0.969	0.974	0.984	0.988	0.986	0.994	0.982	0.980	0.978	0.976	0.976	0.975	0.974	0.973	0.972	0.972
	MW	268.7	274.4	300.7	324.5	324.3	329.8	340.6	381.9	433.8	486.3	515.1	546.6	578.9	604.6	631.1	656.7
	MVAr	66.6	60.1	49.9	55.8	46.6	46.1	58.3	68.7	82.8	96.6	103.6	111.7	120.6	128.0	135.7	143.2
50% POE	**MVA**	**273.7**	**281.7**	**305.6**	**328.6**	**329.0**	**332.0**	**346.9**	**389.9**	**444.1**	**498.6**	**528.4**	**561.1**	**594.8**	**621.7**	**649.5**	**676.4**
	PF	0.982	0.974	0.984	0.987	0.986	0.993	0.982	0.979	0.977	0.975	0.975	0.974	0.973	0.972	0.972	0.971

5.33 Wallerawang STS Demand Forecast

Discussion

Wallerawang STS has two of 60MVA 132/66/11kV auto-transformers, providing firm capacity of 60MVA. Wallerawang supplies Lithgow, Portland and Meadow Flat zone substations.

There are no significant developments in the foreseeable future that will affect the load growth of the Wallerawang 66kV STS supply area.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Wallerawang 132 / 66	2 x 60	120
Lithgow	2 x 15/30	60
Meadow Flat	1 x 2.5	2.5
Portland	2 x 10	20

Proposed Load Transfers

No Load Transfers Proposed at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Lithgow	NRL14405 Browns Gap Rd, Hartley	2023	0.02	0.01	0.02
Lithgow	NRL15043 226 Cuthill Rd, Sodwalls	2024	0.01	0.00	0.01
Lithgow	NRS3486 8 Heritage Cl, South Bowenfels	2024	0.05	0.01	0.05
Lithgow	NUL0650 Sewerage pump Tweed Rd, Bowenfels	2023	0.08	0.04	0.09
Lithgow	UIL6166 14 Donald St, Lithgow	2023	0.20	0.04	0.20
Lithgow	ULL3291 Thales Lithgow	2024	0.55	0.27	0.62
Lithgow	URS25883 Great western Highway, bowenfels	2024	0.34	0.07	0.35
Meadow_Flat	NRL14968 GT Western Hwy Mt Lambie MOS	2023	0.04	0.01	0.04
Portland	NCL1691 1024 Pipers Flat Rd, Portland	2023	0.65	0.31	0.72
Portland	URS26696 284 Portland Cullen Bullen Rd	2024	0.15	0.07	0.17

Planned Lot Releases & Redevelopment

No Lot Releases Proposed at this location

Generation

No Generation known at this location

Wallerawang STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	14.1	11.8	13.8	14.5	12.2	12.0										
Lithgow	MW	13.7	11.5	13.6	14.4	12.1	12.0	12.1	12.8	13.0	12.7	12.8	12.9	13.2	13.4	13.7	14.0
	MVAr	3.6	2.6	2.4	2.2	1.7	0.0	1.8	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1
10% POE	MVA	14.1	11.8	13.8	14.5	12.2	12.0	12.3	13.0	13.1	12.9	12.9	13.1	13.3	13.5	13.9	14.2
	PF	0.966	0.975	0.985	0.988	0.990	1.000	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	13.7	11.5	13.6	14.4	12.1	12.0	12.1	12.8	13.0	12.7	12.8	12.9	13.2	13.4	13.7	14.0
	MVAr	3.6	2.6	2.4	2.2	1.7	0.0	1.8	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1
50% POE	MVA	14.1	11.8	13.8	14.5	12.2	12.0	12.3	13.0	13.1	12.9	12.9	13.1	13.3	13.5	13.9	14.2
	PF	0.966	0.975	0.985	0.988	0.990	1.000	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	MVA	0.9	0.9	1.0	0.9	0.9	1.0										
Meadow Flat	MW	0.9	0.9	1.0	0.9	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2
	MVAr	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10% POE	MVA	0.9	0.9	1.0	0.9	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2
	PF	0.996	1.000	1.000	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	MW	0.9	0.9	1.0	0.9	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2
	MVAr	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50% POE	MVA	0.9	0.9	1.0	0.9	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2
	PF	0.996	1.000	1.000	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Actual	MVA	2.8	2.8	2.5	2.3	2.3	2.5										
Portland	MW	2.8	2.8	2.5	2.3	2.3	2.5	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3
	MVAr	0.2	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
10% POE	MVA	2.8	2.8	2.5	2.3	2.3	2.5	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3
	PF	0.998	1.000	1.000	0.999	1.000	0.995	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	2.8	2.8	2.5	2.3	2.3	2.5	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3
	MVAr	0.2	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
50% POE	MVA	2.8	2.8	2.5	2.3	2.3	2.5	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3
	PF	0.998	1.000	1.000	0.999	1.000	0.995	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Actual	MVA	5.6	6.1	2.0	2.0	6.3	6.2										
Springvale Colliery	MW	4.7	5.1	1.9	1.9	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	MVAr	3.2	3.2	0.7	0.6	3.1	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
10% POE	MVA	5.7	6.1	2.0	2.0	6.3	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
	PF	0.827	0.849	0.935	0.949	0.866	0.860	0.863	0.863	0.863	0.863	0.863	0.863	0.863	0.863	0.863	0.863
Major customer	MW	4.7	5.1	1.9	1.9	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	MVAr	3.2	3.2	0.7	0.6	3.1	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
50% POE	MVA	5.7	6.1	2.0	2.0	6.3	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
	PF	0.827	0.849	0.935	0.949	0.866	0.860	0.863	0.863	0.863	0.863	0.863	0.863	0.863	0.863	0.863	0.863
Actual	MVA	2.9	2.8	2.8	2.8	1.5	1.5										
Sydney Trains Wallerawang	MW	2.9	2.8	2.7	2.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	MVAr	0.2	0.0	0.0	0.0	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
10% POE	MVA	2.9	2.8	2.7	2.7	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	PF	0.998	1.000	1.000	1.000	0.981	0.981	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
Major customer	MW	2.9	2.8	2.7	2.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	MVAr	0.2	0.0	0.0	0.0	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
50% POE	MVA	2.9	2.8	2.7	2.7	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	PF	0.998	1.000	1.000	1.000	0.981	0.981	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993	0.993
Actual	MVA	26.3	24.4	22.0	22.6	23.2	23.2										
Undiversified	MW	25.0	23.2	21.6	22.2	22.2	22.3	23.0	23.9	24.0	23.7	23.8	24.0	24.2	24.5	24.9	25.3
	MVAr	7.3	5.8	3.1	3.0	5.3	3.7	5.3	5.4	5.4	5.4	5.4	5.4	5.5	5.5	5.6	5.6
10% POE	MVA	26.4	24.4	21.9	22.4	23.2	23.2	24.0	24.9	25.0	24.7	24.8	25.0	25.2	25.5	25.9	26.3
	PF	0.944	0.950	0.984	0.987	0.957	0.961	0.958	0.959	0.960	0.959	0.959	0.960	0.960	0.960	0.961	0.961
	MW	25.0	23.2	21.6	22.2	22.2	22.3	23.0	23.9	24.0	23.7	23.8	24.0	24.2	24.5	24.9	25.3
	MVAr	7.3	5.8	3.1	3.0	5.3	3.7	5.3	5.4	5.4	5.4	5.4	5.4	5.5	5.5	5.6	5.6
50% POE	MVA	26.4	24.4	21.9	22.4	23.2	23.2	24.0	24.9	25.0	24.7	24.8	25.0	25.2	25.5	25.9	26.3
	PF	0.944	0.950	0.984	0.987	0.957	0.961	0.958	0.959	0.960	0.959	0.959	0.960	0.960	0.960	0.961	0.961
Actual	MVA	36.3	20.5	33.2	35.3	34.1	27.4										
Diversified (Meter)	MW	19.2	19.2	31.9	31.9	32.9	26.6	23.0	23.9	24.0	23.7	23.8	24.0	24.2	24.5	24.9	25.3
	MVAr	7.3	7.3	9.1	10.3	8.9	6.4	5.5	5.7	5.8	5.7	5.7	5.8	5.8	5.9	6.0	6.1
10% POE	MVA	20.5	20.5	33.2	33.5	34.1	27.4	23.7	24.5	24.7	24.4	24.5	24.6	24.9	25.2	25.6	26.0
	PF	0.935	0.935	0.961	0.951	0.965	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972
	MW	19.2	19.2	31.9	31.9	32.9	26.6	23.0	23.9	24.0	23.7	23.8	24.0	24.2	24.5	24.9	25.3
	MVAr	7.3	7.3	9.1	10.3	8.9	6.4	5.5	5.7	5.8	5.7	5.7	5.8	5.8	5.9	6.0	6.1
50% POE	MVA	20.5	20.5	33.2	33.5	34.1	27.4	23.7	24.5	24.7	24.4	24.5	24.6	24.9	25.2	25.6	26.0
	PF	0.935	0.935	0.961	0.951	0.965	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972
Est. System Normal																	
	MVA			13.0	12.6	15.9	10.6										

Note: Diversified values which are greater than undiversified values are due to abnormal switching.

5.34 Warrimoo STS Demand Forecast

Discussion

Warrimoo STS has two 60MVA 132/66/11kV auto-transformers, providing a firm capacity of 60MVA. Warrimoo supplies Springwood and Blaxland zone substations.

There are no significant developments in the foreseeable future that will affect the load growth of the Warrimoo STS supply area.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
Warrimoo	2 x 60	120
Blaxland	2 x 22/26/35	70
Springwood	2 x 25/35	70

Proposed Load Transfers

No Load Transfers proposed at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Blaxland	UCL11267 12-24 Hope St, Blaxland	2024	0.39	0.08	0.40
Springwood	UCL10353 Woolworths at Macquarie Rd, Springwood	2025	0.61	0.30	0.68

Planned Lot Releases & Redevelopment

No Lot Releases Proposed at this location

Generation

Substation	Name	Description	Date
Blaxland ZS	Gas Fired Generation	1MVA of load at Attunga Rd, Blaxland landfill	2021

Warrimoo STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**29.7**	**31.2**	**25.8**	**28.3**	**22.5**	**18.8**										
Blaxland	MW	24.1	24.8	26.4	26.1	26.6	26.6	26.4	26.6	26.7	26.5	26.5	26.7	26.9	27.1	27.4	27.7
	MVAr	6.9	6.1	1.0	1.1	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
10% POE	**MVA**	**25.0**	**25.5**	**26.4**	**26.1**	**26.6**	**26.6**	**26.4**	**26.6**	**26.7**	**26.5**	**26.5**	**26.7**	**26.9**	**27.1**	**27.4**	**27.8**
	PF	0.961	0.971	0.999	0.999	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	21.0	21.5	22.7	22.0	22.7	22.8	22.6	22.8	23.0	22.7	22.8	22.9	23.2	23.4	23.7	24.0
	MVAr	6.0	5.3	0.9	0.9	0.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
50% POE	**MVA**	**21.8**	**22.1**	**22.7**	**22.0**	**22.7**	**22.8**	**22.6**	**22.9**	**23.0**	**22.8**	**22.8**	**22.9**	**23.2**	**23.4**	**23.7**	**24.0**
	PF	0.961	0.971	0.999	0.999	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Actual	**MVA**	**33.3**	**28.5**	**27.7**	**29.2**	**23.8**	**19.5**										
Springwood	MW	26.2	26.0	30.6	27.7	27.8	27.4	27.3	27.2	27.9	27.6	27.7	27.9	28.1	28.4	28.7	29.1
	MVAr	6.4	6.9	5.6	4.9	4.5	2.7	4.1	4.1	4.2	4.1	4.1	4.2	4.2	4.2	4.3	4.4
10% POE	**MVA**	**26.9**	**26.9**	**31.1**	**28.1**	**28.2**	**27.5**	**27.6**	**27.5**	**28.2**	**27.9**	**28.0**	**28.2**	**28.4**	**28.7**	**29.1**	**29.5**
	PF	0.971	0.967	0.983	0.985	0.987	0.995	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	22.8	22.7	26.1	23.2	23.7	23.5	23.4	23.2	24.0	23.7	23.8	23.9	24.2	24.5	24.8	25.2
	MVAr	5.6	6.0	4.8	4.1	3.9	2.3	3.5	3.5	3.6	3.5	3.6	3.6	3.6	3.7	3.7	3.8
50% POE	**MVA**	**23.5**	**23.5**	**26.5**	**23.5**	**24.0**	**23.6**	**23.6**	**23.5**	**24.2**	**24.0**	**24.0**	**24.2**	**24.5**	**24.7**	**25.1**	**25.5**
	PF	0.971	0.967	0.983	0.985	0.987	0.995	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	**MVA**	**62.9**	**59.7**	**53.5**	**57.5**	**46.3**	**38.3**										
Undiversified	MW	50.2	50.8	57.0	53.7	54.4	54.0	53.6	53.7	54.6	54.1	54.2	54.5	55.0	55.5	56.2	56.9
	MVAr	13.3	13.0	6.7	5.9	5.1	3.5	5.0	4.9	5.1	5.0	5.0	5.1	5.1	5.1	5.2	5.3
10% POE	**MVA**	**52.0**	**52.4**	**57.5**	**54.2**	**54.8**	**54.1**	**54.0**	**54.0**	**54.9**	**54.4**	**54.5**	**54.8**	**55.3**	**55.8**	**56.5**	**57.2**
	PF	0.966	0.969	0.991	0.992	0.993	0.997	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	43.8	44.2	48.7	45.2	46.4	46.3	46.0	46.1	46.9	46.4	46.6	46.9	47.3	47.8	48.5	49.2
	MVAr	11.6	11.3	5.7	5.0	4.3	3.0	4.2	4.2	4.3	4.3	4.3	4.3	4.4	4.4	4.5	4.6
50% POE	**MVA**	**45.3**	**45.6**	**49.2**	**45.5**	**46.7**	**46.4**	**46.3**	**46.4**	**47.2**	**46.7**	**46.8**	**47.2**	**47.6**	**48.1**	**48.8**	**49.5**
	PF	0.966	0.969	0.991	0.992	0.993	0.997	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	**MVA**	**61.1**	**55.0**	**54.7**	**58.9**	**44.8**	**38.8**										
Diversified (Meter)	MW	50.9	51.5	54.3	54.0	57.1	56.2	53.2	53.3	54.1	53.7	53.8	54.1	54.5	55.0	55.7	56.4
	MVAr	17.1	15.6	11.7	11.6	10.1	7.6	12.7	12.7	12.9	12.8	12.8	12.9	13.0	13.1	13.3	13.5
10% POE	**MVA**	**53.7**	**53.8**	**55.5**	**55.2**	**58.0**	**56.7**	**54.7**	**54.8**	**55.6**	**55.2**	**55.3**	**55.6**	**56.1**	**56.6**	**57.3**	**58.0**
	PF	0.948	0.957	0.978	0.978	0.985	0.991	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
	MW	44.2	44.8	46.4	45.4	48.7	48.1	45.6	45.7	46.5	46.1	46.2	46.5	47.0	47.4	48.1	48.8
	MVAr	14.8	13.5	10.0	9.7	8.6	6.5	10.9	10.9	11.1	11.0	11.0	11.1	11.2	11.3	11.5	11.6
50% POE	**MVA**	**46.6**	**46.8**	**47.4**	**46.5**	**49.4**	**48.6**	**46.9**	**47.0**	**47.8**	**47.4**	**47.5**	**47.8**	**48.3**	**48.8**	**49.5**	**50.2**
	PF	0.948	0.957	0.978	0.978	0.985	0.991	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
Est. System Normal																	
	MVA			**53.4**	**57.2**		**38.0**										

Note: Diversified values which are greater than undiversified values are due to abnormal switching.

5.35 West Liverpool STS Demand Forecast

Discussion

West Liverpool STS has four 120MVA 132/33kV transformers providing a firm capacity of 360MVA.

Major residential development areas are progressively adding to the demand of West Liverpool STS. The largest of these include Austral, Edmondson Park and Middleton Grange.

The development of the Yarrunga Employment Lands adjacent to West Liverpool STS is progressing with an estimated forecast load of 10MVA over the next 10 years. High density development in Warwick Farm north of Liverpool CBD will continue to increase load on Homepride ZS and subsequently on West Liverpool STS. This development represents a combined load increase of 80MVA for West Liverpool STS over the next 15 years.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
West Liverpool	4 x 120	480
Anzac Village	3 x 25 (33/11kV)	75
Bonnyrigg	3 x 35	105
Canley Vale	3 x 25	75
Casula	2 x 35	70
Edmondson Park	2 x 35	70
Homepride	3 x 15/19/25	75
Hinchinbrook	3 x 25	75
Kemps Creek	2 x 25	50
Moorebank	2 x 22/35 + 1 x 22/29/35	105
Prestons	3 x 25	75
West Liverpool ZS	3 x 35	105

Proposed Load Transfers

Year	From ZS	From STS	To ZS	To STS	MVA
2023	Kemps_Creek	West_Liverpool	South_Erskine_Park	Sydney_West_132kV	0.85

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Edmondson_Park	UCL10292 51 MacDonald Rd, Ingleburn	2023	0.35	0.11	0.36
Edmondson_Park	UCL10914 School - Buchan Ave Edmondson Park	2023	0.81	0.17	0.83
Hinchinbrook	UCL10739 195 Fifteenth Ave (connected in Flynn Ave)	2023	0.08	0.04	0.09
Hinchinbrook	ULL2943 50 Federick St - School AC Upgrade	2023	0.17	0.08	0.19
Homepride	ENL3301-2 Liverpool Hospital Expansion - Part 2	2023	2.16	1.05	2.40
Homepride	ENL3301-3 Liverpool Hospital Expansion - Part 3	2023	0.90	0.44	1.00
Homepride	UCL10744 No.5 Viscount Place Warwick Farm Homemaker Centre	2023	0.73	0.36	0.82
Homepride	ULL3309 Liverpool Public School in CBD	2023	0.87	0.18	0.89
Kemps_Creek	AEROAP Badgerys Creek - FY23	2023	1.81	0.37	1.85
Kemps_Creek	AEROAP Badgerys Creek - FY24	2024	1.81	0.37	1.85
Kemps_Creek	AEROAP Badgerys Creek - FY25	2025	1.81	0.37	1.85
Kemps_Creek	AEROAP Badgerys Creek - FY26	2026	1.81	0.37	1.85
Kemps_Creek	AEROAP Badgerys Creek - FY27	2027	1.81	0.37	1.85
Kemps_Creek	AEROAP Badgerys Creek - FY28	2028	1.81	0.37	1.85
Kemps_Creek	AEROAP Badgerys Creek - FY29	2029	1.81	0.37	1.85
Kemps_Creek	AEROAP Badgerys Creek - FY30	2030	1.81	0.37	1.85
Kemps_Creek	AEROAP Badgerys Creek - FY31	2031	1.81	0.37	1.85
Kemps_Creek	AEROAP Badgerys Creek - FY32	2032	1.81	0.37	1.85
Kemps_Creek	AEROAP Oakey Creek - FY32	2032	2.12	0.43	2.16
Kemps_Creek	AEROAP Rossmore - FY28	2028	3.01	0.61	3.07
Kemps_Creek	AEROAP Rossmore - FY29	2029	3.01	0.61	3.07
Kemps_Creek	AEROAP Rossmore - FY30	2030	3.01	0.61	3.07
Kemps_Creek	AEROAP Rossmore - FY31	2031	3.01	0.61	3.07
Kemps_Creek	AEROAP Rossmore - FY32	2032	3.01	0.61	3.07
Kemps_Creek	AEROAP Sydney Water - FY26	2026	1.18	0.24	1.20
Kemps_Creek	AEROAP Sydney Water - FY27	2027	1.18	0.24	1.20
Kemps_Creek	AEROAP Sydney Water - FY28	2028	0.21	0.04	0.22
Kemps_Creek	AEROAP Sydney Water - FY29	2029	0.21	0.04	0.22
Kemps_Creek	AEROAP Sydney Water - FY30	2030	0.21	0.04	0.22
Kemps_Creek	AEROAP Sydney Water - FY31	2031	0.21	0.04	0.22
Kemps_Creek	AEROAP Sydney Water - FY32	2032	0.21	0.04	0.21
Kemps_Creek	DBL2559-1 Metro TBM Airport Business Park Station No.1	2023	3.82	0.78	3.90
Kemps_Creek	DBL2559-1 Metro TBM Airport Business Park Station No.2	2023	3.51	1.70	3.90

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Kemps_Creek	DBL2559-2 Metro TBM Airport Business Park Station No.1 (disconnect)	2026	-3.82	0.78	-3.90
Kemps_Creek	DBL2559-2 Metro TBM Airport Business Park Station No.2 (disconnect)	2026	-3.51	1.70	-3.90
Kemps_Creek	DBL2561-1 Metro Science Park, Luddenham	2023	0.83	0.17	0.85
Kemps_Creek	DBL2561-2 Metro Science Park, Luddenham (disconnect)	2027	-0.83	0.17	-0.85
Kemps_Creek	DBL2631-1 Multiplex WSA Terminal Construction	2023	2.06	0.42	2.10
Kemps_Creek	DBL2631-2 Multiplex WSA Terminal Construction (disconnect)	2024	-2.06	0.42	-2.10
Kemps_Creek	DBL2635-1 Metro WSA Construction Supply	2023	4.90	0.99	5.00
Kemps_Creek	DBL2635-2 Metro WSA Construction Supply (disconnect)	2026	-4.90	0.99	-5.00
Kemps_Creek	ENL4150-1 M12 Batching Plant	2024	0.93	0.19	0.95
Kemps_Creek	ENL4150-2 M12 Batching Plant (disconnect)	2027	-0.93	0.19	-0.95
Kemps_Creek	ENL4271 Sydney Water SP1229 Pitt St Badgerys Creek	2025	0.29	0.06	0.30
Kemps_Creek	ENL4400-1 WSA.Co Construction Supply	2023	1.96	0.40	2.00
Kemps_Creek	ENL4400-2 WSA.Co Construction Supply (disconnect)	2024	-1.96	0.40	-2.00
Kemps_Creek	ENL9999 CSR (Sean Porter)	2024	0.74	0.15	0.76
Kemps_Creek	NCL1780 Kemps Creek Public School	2023	0.68	0.14	0.69
Kemps_Creek	NIL0288 Martin Rd Kemps Creek	2023	0.52	0.25	0.58
Kemps_Creek	UCL10836 819 Luddenham Rd, Luddenham - M12 supply	2023	0.06	0.00	0.06
Kemps_Creek	UIL6039 No.4. 55 Martin Rd Badgerys Creek	2024	0.34	0.17	0.38
Kemps_Creek	UIL6325 CSR Asphalt Plant - 225 Martin Rd Badgerys Creek	2023	3.33	0.68	3.40
Kemps_Creek	UUL1937 M12 ITS Supply near Duff Lane Kemps Creek	2025	0.12	0.02	0.12
Kemps_Creek	UUL1941 M12 & Metro Entry to WSA	2023	0.25	0.12	0.28
Prestons	UCL10726 Bunnings Trade Warehouse - Leppington	2023	0.25	0.12	0.28
Prestons	UCL10978 2000 Camden Valley Way Edmondson Park - Club	2024	0.52	0.11	0.53
Prestons	UIL5859 11 & 88 Kurrajong Rd Prestons 3 x Warehouses	2023	0.61	0.30	0.68
Prestons	UIL5897 275 Kurrajong Rd Prestons	2023	0.25	0.12	0.28
Prestons	UIL6089 Lot 6 Nuwi Ave Prestons	2023	0.58	0.28	0.64
West_Liverpool_ZS	UCL9804 No.80 Jedda Rd Prestons	2023	0.78	0.38	0.87
West_Liverpool_ZS	UIL5835 5 Yarrawa St Prestons	2023	0.51	0.25	0.57
West_Liverpool_ZS	UIL6076 Jedda Rd Prestons	2023	0.17	0.08	0.19
West_Liverpool_ZS	UIL6177 5 Meltio Court Prestons	2023	0.94	0.19	0.96
West_Liverpool_ZS	UIL6189 2-10 Yarrunga St Prestons	2023	0.25	0.05	0.26
West_Liverpool_ZS	UIL6286 No.63 Jedda Rd Prestons 2 x Warehouses	2023	0.98	0.20	1.00

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Bonnyrigg	New Leaf Housing Redevelopment Bonnyrigg	2012	12	2.56
Bonnyrigg	New Leaf Housing Redevelopment Bonnyrigg	2012	12	2.56
Bonnyrigg	URS24351 No.615 Cabramatta Rd Cabramatta x 8 new lots	2024	2	0.0432
Edmondson_Park	Edmondson Park Precinct LCC South Area + CCC	2018	15	27.00
Edmondson_Park	ENL3520-1 Edmondson Park Town Centre North Precinct 9 = High Density & Commercial (MVA diff added to com)	2021	5	3.78
Edmondson_Park	ENL4311 -1 Ed Square Stage 2 Residential + Tesla Subs	2024	2	3.495
Edmondson_Park	ENL4311-2 Ed Square Stage 2 Retail and School	2024	2	4
Edmondson_Park	UIL5336 Williamson Rd Ingleburn - 20 Industrial Units	2023	2	0.32
Edmondson_Park	URS23445 Precinct 12 Stage A Willowdale	2022	2	0.29
Edmondson_Park	URS23728 Precinct 5 Edmondson Park	2022	3	0.07
Hinchinbrook	Austral Precinct compliment of precinct - 6600 Lots	2021	12	35.64
Hinchinbrook	Austral Precinct east and north areas - 1900 Lots	2019	5	10.26
Hinchinbrook	Middleton Grange Release Area - 2850 Lots	2008	15	15.39
Hinchinbrook	USC0576 Middleton Grange Town Centre - 978 Units + Retail	2023	5	9.72
Homepride	Liverpool CBD North (City Centre Plan) Residential & Commercial	2011	35	37.50
Homepride	UCL10741 175-181 Elizabeth Dr Liverpool Mixed R & C Dev	2024	2	0.74
Kemps_Creek	Austral Precinct west area - 250 Lots	2026	3	1.35
Kemps_Creek	Austral Precinct west area - 250 Lots	2027	3	1.35
Kemps_Creek	Austral Precinct west area - 250 Lots	2028	3	1.35
Kemps_Creek	Austral Precinct west area - 250 Lots	2029	3	1.35
Kemps_Creek	ENL3680 No.555 Fifteenth Ave Austral Mixed Commercial	2024	3	0.53
Kemps_Creek	ENL4117 Fourth Ave Austral	2022	3	1.07
Kemps_Creek	URS18492 404 Fourth Ave Austral	2022	3	0.21
Kemps_Creek	URS25050 240-270 Thirteenth Ave Austral 140 Lots	2023	2	0.76
Kemps_Creek	URS25052 133 Residential Lots - Thirteenth Ave Austral	2024	3	0.72
Kemps_Creek	URS25052 Thirteenth Ave Austral 140 Lots	2024	2	0.76
Kemps_Creek	URS25300 70 Residential Lots - Twelfth Ave Austral	2024	3	0.38
Kemps_Creek	URS25300 Twelfth Ave Austral 70 Lots	2024	2	0.38
Kemps_Creek	UUL1988 Sydney Water Pumping Station Austral Precinct	2024	3	1.30
Prestons	Edmondson Park Precinct North Area LCC only	2018	10	15.58
Prestons	ENL3520-2 Edmondson Park Town Centre North Precinct 9 = High Density & Commercial (MVA diff added to com)	2024	5	5.32
Prestons	ENL3520-3 Edmondson Park Town Centre North Precinct 9 = Medium Density	2024	3	3.70
Prestons	ENL4177 Edmondson Park TC East Precinct Stage 9A+9B+9C	2023	2	0.5742
Prestons	UCL9824 Edmondson Park Mosque 2094 CVWay Edmondson	2024	2	0.69
Prestons	UML9378 Block D 15 Rynan Ave Edmondson Park	2023	1	0.11
Prestons	UML9759 Passendale Rd Edmondson Park	2024	1	0.1188
Prestons	URS15605 Stage 8 & 9 Camden Valley Way Prestons	2024	2	0.18
Prestons	URS24103 400 Strathyre Dr Prestons	2022	3	0.25
Prestons	URS24225 Ardennes Ave Edmondson Park	2024	2	0.33
Prestons	URS26675 49 Residential Lots Braidwood Cr Prestons	2024	3	0.2646
West_Liverpool_ZS	UIL6073 28 Yarrunga St Prestons	2023	2	1.62

Generation

Zone Substation	Name	Description	Date
Liverpool	Alcatel	3 x 660kW (not available at this stage)	Installed
Liverpool	Liverpool Hospital	1 x 1.5MVA diesel	Installed
Kemps Creek	SITA Generation	1 x 2.8MW Waste Generator	Oct-16

Configuration Changes

No configuration change

West Liverpool STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**38.2**	**35.0**	**30.7**	**33.6**	**32.7**	**30.5**										
Bonnyrigg	MW	36.7	36.2	35.5	32.5	35.1	34.8	34.3	33.8	33.7	33.1	33.0	33.1	33.5	33.8	34.3	34.8
	MVAr	9.3	9.1	7.3	1.0	0.3	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2
10% POE	**MVA**	**37.8**	**37.3**	**36.3**	**32.6**	**35.1**	**34.9**	**34.4**	**33.9**	**33.8**	**33.2**	**33.1**	**33.2**	**33.5**	**33.8**	**34.3**	**34.8**
	PF	0.970	0.970	0.980	0.999	1.000	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
	MW	31.4	31.1	30.9	28.0	30.8	30.6	30.1	29.6	29.5	28.9	28.8	28.9	29.3	29.6	30.1	30.6
	MVAr	7.9	7.8	6.3	0.9	0.2	2.0	1.9	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.9	2.0
50% POE	**MVA**	**32.4**	**32.1**	**31.5**	**28.0**	**30.8**	**30.6**	**30.2**	**29.7**	**29.6**	**29.0**	**28.9**	**29.0**	**29.3**	**29.7**	**30.2**	**30.7**
	PF	0.970	0.970	0.980	0.999	1.000	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998
Actual	**MVA**			**4.8**	**5.1**	**9.1**	**11.3**										
Edmondson Park	MW			4.7	5.1	9.0	11.2	15.1	20.6	26.0	28.1	30.1	31.8	33.2	34.2	35.0	35.3
	MVAr			0.9	0.7	1.3	1.6	7.3	10.0	12.6	13.6	14.6	15.4	16.1	16.6	16.9	17.1
10% POE	**MVA**			**4.8**	**5.1**	**9.1**	**11.3**	**16.7**	**22.9**	**28.9**	**31.3**	**33.4**	**35.3**	**36.9**	**38.0**	**38.8**	**39.3**
	PF			0.983	0.991	0.990	0.990	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
	MW			4.7	5.1	9.0	11.2	15.1	20.6	26.0	28.1	30.1	31.8	33.2	34.2	35.0	35.3
	MVAr			0.9	0.7	1.3	1.6	7.3	10.0	12.6	13.6	14.6	15.4	16.1	16.6	16.9	17.1
50% POE	**MVA**			**4.8**	**5.1**	**9.1**	**11.3**	**16.7**	**22.9**	**28.9**	**31.3**	**33.4**	**35.3**	**36.9**	**38.0**	**38.8**	**39.3**
	PF			0.983	0.991	0.990	0.990	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Actual	**MVA**	**50.2**	**43.2**	**49.9**	**50.7**	**45.9**	**44.2**										
Hinchinbrook	MW	52.6	43.9	52.8	46.9	49.5	51.4	54.0	57.8	63.7	69.0	73.6	77.0	79.8	81.8	83.2	83.9
	MVAr	10.2	8.5	10.2	9.1	9.9	9.6	10.4	11.2	12.3	13.4	14.2	14.9	15.5	15.8	16.1	16.2
10% POE	**MVA**	**53.6**	**44.7**	**53.8**	**47.8**	**50.5**	**52.2**	**55.0**	**58.9**	**64.9**	**70.3**	**75.0**	**78.4**	**81.3**	**83.4**	**84.8**	**85.4**
	PF	0.982	0.982	0.982	0.982	0.980	0.983	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982
	MW	45.7	38.5	46.9	40.9	43.7	45.6	48.2	52.0	57.9	63.2	67.8	71.2	74.0	76.1	77.5	78.2
	MVAr	8.8	7.4	9.1	7.9	8.8	8.5	9.3	10.1	11.2	12.2	13.1	13.8	14.3	14.7	15.0	15.1
50% POE	**MVA**	**46.5**	**39.2**	**47.8**	**41.7**	**44.6**	**46.4**	**49.1**	**53.0**	**59.0**	**64.4**	**69.1**	**72.5**	**75.4**	**77.5**	**79.0**	**79.6**
	PF	0.982	0.982	0.982	0.982	0.980	0.983	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982
Actual	**MVA**	**36.6**	**39.7**	**36.7**	**34.6**	**32.8**	**32.1**										
Homepride	MW	36.3	38.4	36.6	34.4	32.6	32.1	36.9	38.1	39.7	40.7	42.2	43.9	45.7	47.3	49.0	50.5
	MVAr	5.2	9.9	3.0	3.6	3.9	1.7	5.2	5.4	5.6	5.7	6.0	6.2	6.4	6.7	6.9	7.1
10% POE	**MVA**	**36.6**	**39.7**	**36.7**	**34.6**	**32.8**	**32.1**	**37.2**	**38.5**	**40.1**	**41.2**	**42.6**	**44.4**	**46.1**	**47.8**	**49.5**	**51.0**
	PF	0.990	0.969	0.997	0.995	0.993	0.999	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
	MW	36.3	38.4	36.6	34.4	32.6	32.1	36.9	38.1	39.7	40.7	42.2	43.9	45.7	47.3	49.0	50.5
	MVAr	5.2	9.9	3.0	3.6	3.9	1.7	5.2	5.4	5.6	5.7	6.0	6.2	6.4	6.7	6.9	7.1
50% POE	**MVA**	**36.6**	**39.7**	**36.7**	**34.6**	**32.8**	**32.1**	**37.2**	**38.5**	**40.1**	**41.2**	**42.6**	**44.4**	**46.1**	**47.8**	**49.5**	**51.0**
	PF	0.990	0.969	0.997	0.995	0.993	0.999	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
Actual	MVA	**14.2**	**12.7**	**12.0**	**11.6**	**10.3**	**10.5**										
Kemps Creek	MW	13.8	12.1	13.1	11.5	12.6	12.7	31.8	33.0	36.5	29.4	31.1	36.2	41.3	46.2	50.5	56.3
	MVAr	2.0	3.4	1.4	0.9	3.1	3.0	6.3	6.5	7.2	5.8	6.1	7.1	8.1	9.1	9.9	11.1
10% POE	MVA	**13.9**	**12.5**	**13.2**	**11.6**	**13.0**	**13.0**	**32.4**	**33.7**	**37.2**	**30.0**	**31.7**	**36.9**	**42.1**	**47.1**	**51.5**	**57.3**
	PF	0.990	0.962	0.994	0.997	0.971	0.973	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
	MW	11.9	10.8	11.4	10.3	11.3	11.3	30.5	31.7	35.1	28.1	29.8	34.9	40.0	44.9	49.2	54.9
	MVAr	1.7	3.1	1.2	0.8	2.8	2.7	6.0	6.2	6.9	5.5	5.9	6.9	7.9	8.8	9.7	10.8
50% POE	MVA	**12.0**	**11.2**	**11.5**	**10.3**	**11.6**	**11.6**	**31.1**	**32.3**	**35.8**	**28.6**	**30.4**	**35.5**	**40.8**	**45.7**	**50.1**	**56.0**
	PF	0.990	0.962	0.994	0.997	0.971	0.973	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**30.8**	**30.0**	**34.5**	**36.5**	**29.4**	**28.8**										
Prestons	MW	28.6	30.1	36.8	34.3	33.1	34.7	38.1	41.4	45.5	47.7	48.7	49.0	49.2	49.2	49.4	49.6
	MVAr	8.6	8.8	9.8	0.4	1.7	0.9	7.7	8.4	9.2	9.6	9.8	9.9	9.9	9.9	10.0	10.0
10% POE	**MVA**	**29.9**	**31.4**	**38.1**	**34.3**	**33.1**	**34.8**	**38.9**	**42.3**	**46.4**	**48.7**	**49.7**	**50.0**	**50.1**	**50.2**	**50.4**	**50.6**
	PF	0.958	0.960	0.966	1.000	0.999	1.000	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
	MW	23.9	25.9	32.1	29.2	28.7	30.4	33.8	37.1	41.2	43.4	44.5	44.8	44.9	45.1	45.3	45.5
	MVAr	7.2	7.6	8.6	0.4	1.5	0.8	6.8	7.5	8.3	8.8	9.0	9.0	9.1	9.1	9.1	9.2
50% POE	**MVA**	**25.0**	**27.0**	**33.2**	**29.2**	**28.7**	**30.4**	**34.5**	**37.9**	**42.0**	**44.3**	**45.4**	**45.7**	**45.9**	**46.0**	**46.2**	**46.5**
	PF	0.958	0.960	0.966	1.000	0.999	1.000	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Actual	**MVA**	**37.9**	**34.2**	**34.0**	**35.2**	**32.7**	**38.2**										
West Liverpool	MW	37.2	35.1	35.3	34.0	31.3	37.2	40.0	40.0	39.6	39.0	38.6	38.5	38.5	38.5	38.5	38.6
ZS	**MVAr**	9.4	7.8	0.9	1.5	2.4	3.6	5.9	5.9	5.8	5.7	5.7	5.6	5.6	5.6	5.6	5.7
10% POE	**MVA**	**38.3**	**36.0**	**35.4**	**34.0**	**31.4**	**37.4**	**40.4**	**40.4**	**40.1**	**39.4**	**39.1**	**38.9**	**38.9**	**38.9**	**38.9**	**39.0**
	PF	0.969	0.976	1.000	0.999	0.997	0.995	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	34.7	32.2	32.1	30.2	28.0	33.8	36.6	36.6	36.2	35.6	35.2	35.1	35.1	35.0	35.1	35.2
Major customer	MVAr	8.8	7.1	0.8	1.4	2.2	3.3	5.4	5.4	5.3	5.2	5.2	5.1	5.1	5.1	5.1	5.2
50% POE	**MVA**	**35.8**	**33.0**	**32.2**	**30.2**	**28.0**	**34.0**	**37.0**	**37.0**	**36.6**	**35.9**	**35.6**	**35.5**	**35.5**	**35.4**	**35.5**	**35.6**
	PF	0.969	0.976	1.000	0.999	0.997	0.995	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	**MVA**	**208.0**	**194.9**	**202.4**	**207.4**	**192.9**	**195.7**										
Undiversified	MW	205.1	195.8	214.9	198.8	203.2	214.2	250.1	264.9	284.7	287.2	297.5	309.6	321.1	331.0	339.9	349.0
	MVAr	44.6	47.5	33.4	17.3	22.8	22.6	44.9	49.5	54.8	56.0	58.5	61.3	63.8	65.9	67.7	69.5
10% POE	**MVA**	**210.2**	**201.6**	**218.2**	**200.0**	**205.0**	**215.8**	**255.0**	**270.6**	**291.3**	**294.0**	**304.6**	**317.1**	**329.0**	**339.2**	**348.3**	**357.6**
	PF	0.976	0.971	0.985	0.994	0.991	0.992	0.981	0.979	0.977	0.977	0.976	0.976	0.976	0.976	0.976	0.976
	MW	183.9	176.9	194.8	178.0	184.0	195.1	231.1	245.8	265.7	268.1	278.5	290.6	302.2	312.2	321.2	330.4
	MVAr	39.7	42.9	29.8	15.7	20.7	20.5	41.9	46.4	51.8	53.0	55.5	58.3	60.8	62.9	64.7	66.5
50% POE	**MVA**	**188.4**	**182.1**	**197.7**	**179.1**	**185.6**	**196.6**	**235.7**	**251.3**	**272.0**	**274.7**	**285.4**	**297.9**	**309.8**	**320.1**	**329.3**	**338.7**
	PF	0.976	0.971	0.985	0.994	0.991	0.992	0.980	0.978	0.977	0.976	0.976	0.976	0.975	0.975	0.975	0.976
Actual	**MVA**	**194.0**	**179.4**	**174.7**	**198.2**	**194.4**	**186.0**										
Diversified	MW	202.9	198.0	211.2	197.1	209.0	219.8	247.3	261.9	281.5	283.9	294.1	306.0	317.5	327.2	336.0	345.0
(Meter)	MVAr	1.6	0.7	15.1	7.0	5.0	0.1	8.5	9.0	9.6	9.7	10.1	10.5	10.9	11.2	11.5	11.8
10% POE	**MVA**	**202.9**	**198.0**	**211.7**	**197.3**	**209.1**	**219.8**	**247.4**	**262.0**	**281.6**	**284.0**	**294.2**	**306.2**	**317.6**	**327.4**	**336.2**	**345.2**
	PF	1.000	1.000	0.997	0.999	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	179.8	175.2	189.5	176.3	188.6	198.9	228.4	243.0	262.6	265.1	275.3	287.3	298.7	308.6	317.5	326.6
	MVAr	1.4	0.6	13.5	6.3	4.5	0.1	7.8	8.3	9.0	9.1	9.4	9.8	10.2	10.5	10.9	11.2
50% POE	**MVA**	**179.8**	**175.2**	**190.0**	**176.4**	**188.6**	**198.9**	**228.5**	**243.1**	**262.8**	**265.2**	**275.5**	**287.5**	**298.9**	**308.8**	**317.7**	**326.8**
	PF	1.000	1.000	0.997	0.999	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MVA					**173**											

Note:

There are 62 MVAr if capacitors installed at the 33kV busbar.
Diversified values which are greater than undiversified values are due to abnormal switching.

5.36 West Tomerong STS Demand Forecast

Discussion

West Tomerong STS has two 60 MVA 132/33kV transformers providing a firm rating of 60 MVA.

West Tomerong STS was commissioned in 2014. The need for West Tomerong STS was driven by significant sub transmission voltage and capacity constraints.

The current major land development area within the proposed West Tomerong STS supply catchment is a 600-lot residential subdivision and retail/commercial development at “Bayswood”, Vincentia located north of Huskisson ZS where initial residential stages and retail shops are now taking load.

Another potential residential land release area of up to 800 lots is being planned for West Culburra with a master concept plan approval being sought from the NSW Department of Planning and Infrastructure.

Shoalhaven City Council (SCC) released a settlement strategy for the Sussex Inlet area in August 2007. A substantial lot release area for up to 3000 residential lots is proposed over the next 20-30 years.

Substation Details

Zone Substation	Transformer Description (MVA)	Installed Capacity (MVA)
West Tomerong	2 x 60	120
Culburra	2 x 10	20
Huskisson	2 x 20	40
South Nowra	2 x 25	50
Sussex Inlet	2 x 15	30
Tomerong ZS	2 x 15	30
Yatte Yattah	1 x 6.5	6.5

Proposed Load Transfers

No Load Transfers proposed at this location

Future Spot Loads

Zone Substation	Customer Name / Description	Year	MW	MVAr	MVA
Huskisson	UCL11192 Huskisson, Commercial load	2023	0.09	0.02	0.09
Huskisson	UIL6202 Woollamia, Industrial load	2023	0.24	0.05	0.25
Huskisson	UML10181 Huskisson, Units	2023	0.12	0.02	0.12
South_Nowra	ARP4917 Falls Creek, Trf(NSW)	2023	0.14	0.03	0.14
South_Nowra	NCL1661 South Nowra, Solar 3MW (& GEN19207)	2023	-2.70	1.31	-3.00
South_Nowra	UIL6200 South Nowra, Industrial	2024	0.22	0.05	0.23
Sussex_Inlet	NRL15251 Sussex Inlet	2023	0.05	0.01	0.05

Planned Lot Releases & Redevelopment

Zone Substation	Description	Forecast Year	Years	MVA
Huskisson	UIS0820 Huskisson, Industrial Subdivision - 6 lots	2021	3	0.50
Huskisson	UIS0821 Huskisson - 11 Industrial Lots	2020	8	0.90
Huskisson	UIS0995 Sanctuary Point, 37 Lot Industrial Subdivision	2024	7	2.296
Huskisson	UML9883 Huskisson, Residential Units	2023	1	0.12
South_Nowra	UIS0886 South Nowra, Industrial	2022	5	1.26
South_Nowra	UIS0890 Yerriyong, Stage 5 - 13 Lots in Aviation Tech. Park	2022	6	1.184
South_Nowra	UIS0891 Yerriyong, Stage 6 - 7 Lots in Aviation Tech. Park	2022	4	1.172
South_Nowra	URS18522 Old Southern Rd, 25 lots	2019	4	0.12
South_Nowra	URS18669 68 & 67 - South Nowra, 78 Lots	2019	5	0.37
South_Nowra	URS21628 South Nowra, 21 lots	2021	4	0.10
South_Nowra	URS23032 South Nowra, 59 lots	2021	5	0.28
South_Nowra	URS24592 South Nowra, 9 x Lots	2022	2	0.04
Sussex_Inlet	NRS2372 Wandanian, 5 Lots	2023	2	0.04
Sussex_Inlet	NRS3512 Sussex Inlet, 7 Large Lots	2023	2	0.06
Sussex_Inlet	URS11952 Sussex inlet, 157 lots	2014	10	0.74
Sussex_Inlet	URS18734-1 Sussex Inlet, (was 31 lots) now 79 lots	2020	4	0.37
Sussex_Inlet	URS19596 Sussex Inlet, Stages C & D, 57 Lots	2018	5	0.27
Sussex_Inlet	URS26537 Sussex Inlet, 80 Lots	2023	4	0.4042
Tomerong_ZS	ARP2644 Jerberra Estate, 87 rural residential lots	2019	8	0.41
Tomerong_ZS	URS17734 Sanctuary Point, 39 Lots	2019	4	0.18
Tomerong_ZS	URS21626 St Georges Basin, 54 Units	2024	1	0.18
Tomerong_ZS	URS22903 St Georges Basin, 63 x Lots	2021	5	0.30
Tomerong_ZS	URS23642 St Georges Basin, 41 x Lots	2022	4	0.19
Tomerong_ZS	URS24108 Woollamia, 12 Large Rural Lots	2023	3	0.10
Tomerong_ZS	URS25785 St Georges Basin, 5 x Lots	2023	1	0.02
Yatte_Yattah	URS19147 Manyana, Residential 40 lots	2019	4	0.19
Yatte_Yattah	URS26100 Fishermans Paradise, 16 lots & (13 Fut.)	2023	4	0.1363

Generation

No Generation known at this location

Configuration Changes

Year	Zone / HVC	From STS	To STS
2015	Brundee	Shoalhaven	West Tomerong
2015	Culburra	Shoalhaven	West Tomerong
2015	Huskisson	Shoalhaven	West Tomerong
2015	South Nowra	Shoalhaven	West Tomerong
2015	Sussex Inlet	Shoalhaven	West Tomerong
2017	Yatte Yattah	Dapto 132kV	West Tomerong

West Tomerong STS Demand Forecast

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**										
Brundee	MW	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	MVAr	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
10% POE	**MVA**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
	PF	0.831	0.824	0.821	0.813	0.825	0.820	0.822	0.822	0.822	0.822	0.822	0.822	0.822	0.822	0.822	0.822
Major customer	MW	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	MVAr	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
50% POE	**MVA**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
	PF	0.831	0.824	0.821	0.813	0.825	0.820	0.822	0.822	0.822	0.822	0.822	0.822	0.822	0.822	0.822	0.822
Actual	**MVA**	**11.5**	**9.5**	**9.4**	**10.1**	**10.5**	**8.9**										
Culburra	MW	11.1	9.4	9.6	9.8	10.3	8.8	8.7	8.6	8.7	8.5	8.5	8.6	8.7	8.8	9.1	9.3
	MVAr	3.1	0.8	1.9	2.5	2.0	1.3	1.8	1.7	1.8	1.7	1.7	1.7	1.8	1.8	1.8	1.9
10% POE	**MVA**	**11.5**	**9.5**	**9.8**	**10.1**	**10.5**	**8.9**	**8.9**	**8.8**	**8.9**	**8.7**	**8.7**	**8.7**	**8.9**	**9.0**	**9.2**	**9.4**
	PF	0.964	0.996	0.982	0.968	0.982	0.989	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
	MW	11.1	9.4	9.6	9.8	10.3	8.8	8.7	8.6	8.7	8.5	8.5	8.6	8.7	8.8	9.1	9.3
	MVAr	3.1	0.8	1.9	2.5	2.0	1.3	1.8	1.7	1.8	1.7	1.7	1.7	1.8	1.8	1.8	1.9
50% POE	**MVA**	**11.5**	**9.5**	**9.8**	**10.1**	**10.5**	**8.9**	**8.9**	**8.8**	**8.9**	**8.7**	**8.7**	**8.7**	**8.9**	**9.0**	**9.2**	**9.4**
	PF	0.964	0.996	0.982	0.968	0.982	0.989	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Actual	**MVA**	**15.5**	**12.5**	**12.2**	**15.0**	**14.1**	**12.2**										
Huskisson	MW	15.3	12.4	12.2	14.9	14.0	8.9	9.5	9.6	10.0	10.2	10.7	11.3	11.8	12.1	12.5	12.9
	MVAr	2.5	1.9	1.1	1.7	1.7	8.4	3.2	3.2	3.4	3.4	3.6	3.8	4.0	4.1	4.2	4.4
10% POE	**MVA**	**15.5**	**12.5**	**12.2**	**15.0**	**14.1**	**12.2**	**10.0**	**10.1**	**10.6**	**10.7**	**11.3**	**11.9**	**12.4**	**12.8**	**13.2**	**13.6**
	PF	0.987	0.988	0.996	0.993	0.993	0.728	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
	MW	15.3	12.4	12.2	14.9	14.0	8.9	9.5	9.6	10.0	10.2	10.7	11.3	11.8	12.1	12.5	12.9
	MVAr	2.5	1.9	1.1	1.7	1.7	8.4	3.2	3.2	3.4	3.4	3.6	3.8	4.0	4.1	4.2	4.4
50% POE	**MVA**	**15.5**	**12.5**	**12.2**	**15.0**	**14.1**	**12.2**	**10.0**	**10.1**	**10.6**	**10.7**	**11.3**	**11.9**	**12.4**	**12.8**	**13.2**	**13.6**
	PF	0.987	0.988	0.996	0.993	0.993	0.728	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948	0.948
Actual	**MVA**	**10.5**	**9.2**	**9.9**	**10.2**	**8.7**	**8.1**										
South Nowra	MW	10.1	8.7	10.7	9.5	9.6	9.4	7.8	8.8	9.3	9.4	9.3	9.3	9.2	9.2	9.2	9.2
	MVAr	3.3	2.6	3.2	2.4	2.5	2.4	2.2	2.5	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6
10% POE	**MVA**	**10.6**	**9.1**	**11.1**	**9.7**	**9.9**	**9.7**	**8.2**	**9.2**	**9.7**	**9.8**	**9.7**	**9.6**	**9.6**	**9.6**	**9.6**	**9.5**
	PF	0.950	0.958	0.958	0.970	0.967	0.968	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
	MW	8.9	7.7	9.0	8.5	8.6	8.3	6.8	7.8	8.3	8.3	8.3	8.2	8.2	8.2	8.2	8.2
	MVAr	2.9	2.3	2.7	2.1	2.3	2.2	1.9	2.2	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3
50% POE	**MVA**	**9.4**	**8.0**	**9.4**	**8.7**	**8.9**	**8.6**	**7.1**	**8.1**	**8.6**	**8.7**	**8.6**	**8.6**	**8.5**	**8.5**	**8.5**	**8.5**
	PF	0.950	0.958	0.958	0.970	0.967	0.968	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962	0.962
Actual	**MVA**	**7.5**	**5.0**	**5.3**	**6.2**	**6.0**	**5.2**										
Sussex Inlet	MW	7.3	5.0	5.3	6.2	6.0	5.2	5.3	5.4	5.6	5.5	5.6	5.7	5.9	6.1	6.3	6.6
	MVAr	1.7	0.7	0.7	0.9	0.8	0.3	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	1.0
10% POE	**MVA**	**7.5**	**5.0**	**5.3**	**6.2**	**6.0**	**5.2**	**5.3**	**5.4**	**5.6**	**5.6**	**5.6**	**5.7**	**5.9**	**6.1**	**6.4**	**6.6**
	PF	0.974	0.989	0.992	0.990	0.991	0.998	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	7.3	5.0	5.3	6.2	6.0	5.2	5.3	5.4	5.6	5.5	5.6	5.7	5.9	6.1	6.3	6.6
	MVAr	1.7	0.7	0.7	0.9	0.8	0.3	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	1.0
50% POE	**MVA**	**7.5**	**5.0**	**5.3**	**6.2**	**6.0**	**5.2**	**5.3**	**5.4**	**5.6**	**5.6**	**5.6**	**5.7**	**5.9**	**6.1**	**6.4**	**6.6**
	PF	0.974	0.989	0.992	0.990	0.991	0.998	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	**MVA**	**11.0**	**9.5**	**8.8**	**10.7**	**9.8**	**8.7**										
Tomerong ZS	MW	10.6	9.3	8.6	10.5	9.7	8.7	8.9	9.1	9.3	9.1	9.1	9.1	9.2	9.2	9.3	9.4
	MVAr	2.8	1.6	1.5	1.8	1.4	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
10% POE	**MVA**	**11.0**	**9.5**	**8.8**	**10.7**	**9.8**	**8.7**	**8.9**	**9.2**	**9.4**	**9.2**	**9.1**	**9.2**	**9.2**	**9.3**	**9.4**	**9.5**
	PF	0.967	0.985	0.985	0.986	0.990	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	10.6	9.3	8.6	10.5	9.7	8.7	8.9	9.1	9.3	9.1	9.1	9.1	9.2	9.2	9.3	9.4
	MVAr	2.8	1.6	1.5	1.8	1.4	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
50% POE	**MVA**	**11.0**	**9.5**	**8.8**	**10.7**	**9.8**	**8.7**	**8.9**	**9.2**	**9.4**	**9.2**	**9.1**	**9.2**	**9.2**	**9.3**	**9.4**	**9.5**
	PF	0.967	0.985	0.985	0.986	0.990	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	**MVA**	**3.2**	**5.1**	**2.4**	**4.4**	**3.6**	**3.6**										
Yatte Yattah	MW	3.1	4.8	2.4	4.0	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4
	MVAr	0.8	1.6	0.4	1.8	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5
10% POE	**MVA**	**3.2**	**5.1**	**2.4**	**4.4**	**3.7**	**3.7**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.7**	**3.7**
	PF	0.972	0.952	0.987	0.912	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917
	MW	3.1	4.8	2.4	4.0	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4
	MVAr	0.8	1.6	0.4	1.8	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5
50% POE	**MVA**	**3.2**	**5.1**	**2.4**	**4.4**	**3.7**	**3.7**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.7**	**3.7**
	PF	0.972	0.952	0.987	0.912	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917	0.917

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**59.5**	**51.1**	**48.4**	**56.9**	**53.2**	**47.2**										
Undiversified	MW	57.8	49.9	49.0	55.1	53.4	44.7	43.8	45.2	46.6	46.3	46.9	47.5	48.4	49.1	50.1	51.0
	MVAr	14.3	9.5	9.0	11.3	10.0	15.0	10.5	10.8	11.2	11.2	11.3	11.5	11.8	11.9	12.2	12.4
10% POE	**MVA**	**59.7**	**51.0**	**50.0**	**56.5**	**54.5**	**48.8**	**45.3**	**46.7**	**48.2**	**47.9**	**48.5**	**49.2**	**50.1**	**50.8**	**51.8**	**52.8**
	PF	0.969	0.979	0.981	0.976	0.979	0.915	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
	MW	56.6	48.9	47.4	54.1	52.3	43.6	42.8	44.2	45.6	45.3	45.8	46.5	47.4	48.1	49.0	50.0
	MVAr	13.9	9.2	8.5	11.1	9.8	14.7	10.2	10.5	10.9	10.9	11.1	11.2	11.5	11.7	11.9	12.1
50% POE	**MVA**	**58.4**	**50.0**	**48.3**	**55.5**	**53.4**	**47.8**	**44.2**	**45.7**	**47.1**	**46.8**	**47.4**	**48.1**	**49.0**	**49.7**	**50.7**	**51.7**
	PF	0.969	0.979	0.981	0.976	0.979	0.913	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
Actual	**MVA**	**50.4**	**41.5**	**42.6**	**48.4**	**48.6**	**43.3**										
Diversified	MW	43.6	40.7	44.1	42.2	45.0	48.4	43.2	44.6	46.0	45.7	46.2	46.9	47.8	48.5	49.4	50.3
	MVAr	9.6	5.1	5.8	5.9	5.1	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7
10% POE	**MVA**	**44.6**	**41.0**	**44.5**	**42.6**	**45.3**	**48.4**	**43.2**	**44.6**	**46.0**	**45.7**	**46.2**	**46.9**	**47.8**	**48.5**	**49.4**	**50.3**
	PF	0.977	0.992	0.991	0.990	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	MW	38.3	38.7	41.2	37.1	39.9	43.1	42.2	43.6	45.0	44.7	45.2	45.9	46.8	47.4	48.4	49.3
	MVAr	8.4	4.8	5.4	5.2	4.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7
50% POE	**MVA**	**39.2**	**39.0**	**41.5**	**37.4**	**40.2**	**43.1**	**42.2**	**43.6**	**45.0**	**44.7**	**45.2**	**45.9**	**46.8**	**47.5**	**48.4**	**49.3**
	PF	0.977	0.992	0.991	0.990	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

4 ENDEAVOUR ENERGY TOTAL AND BULK SUPPLY POINTS

6.1 Endeavour Energy Total

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	681.5	606.5	623.3	669.8	576.3	523.6										
BSP Dapto[3]	MW	671.4	581.6	623.3	666.9	575.7	523.5	609.9	613.2	624.1	620.8	623.1	627.7	637.3	643.3	651.4	658.1
	MVAr	246.2	16.7	7.9	63.0	26.9	10.7	92.2	92.7	94.3	93.8	94.2	94.9	96.3	97.2	98.4	99.4
10% POE	MVA	715.1	581.8	623.3	669.8	576.3	523.6	616.8	620.1	631.2	627.9	630.2	634.8	644.5	650.6	658.8	665.5
	PF	0.939	1.000	1.000	0.996	0.999	1.000	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	671.4	581.6	623.3	666.9	575.7	523.5	579.3	583.4	594.4	591.2	593.5	598.1	608.1	614.2	622.3	628.9
	MVAr	246.2	16.7	7.9	63.0	26.9	10.7	87.6	88.2	89.8	89.3	89.7	90.4	91.9	92.8	94.0	95.0
50% POE	MVA	715.1	581.8	623.3	669.8	576.3	523.6	585.9	590.0	601.1	597.9	600.3	604.9	615.0	621.1	629.3	636.0
	PF	0.939	1.000	1.000	0.996	0.999	1.000	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	MVA	362.7	361.4	368.2	344.5	332.2	319.7										
BSP Holroyd	MW	369.5	359.7	366.8	366.8	375.4	374.5	441.6	512.6	564.3	558.2	587.7	611.9	625.8	640.3	652.6	662.9
	MVAr	6.1	1.3	27.0	2.8	8.7	16.2	19.1	22.2	24.5	24.2	25.5	26.5	27.1	27.8	28.3	28.7
10% POE	MVA	369.5	359.7	367.8	366.8	375.5	374.9	442.0	513.1	564.9	558.7	588.2	612.5	626.4	640.9	653.2	663.6
	PF	1.000	1.000	0.997	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	337.6	331.8	337.5	336.4	345.6	345.6	419.6	490.7	542.4	536.7	566.0	590.3	604.6	618.5	631.1	641.7
	MVAr	5.6	1.2	24.8	2.6	8.0	15.0	18.2	21.3	23.5	23.3	24.5	25.6	26.2	26.8	27.4	27.8
50% POE	MVA	337.6	331.8	338.4	336.4	345.7	346.0	420.0	491.2	542.9	537.2	566.5	590.9	605.2	619.1	631.7	642.3
	PF	1.000	1.000	0.997	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Actual	MVA	5.3	4.9	4.6	4.8	3.9	5.4										
BSP Ilford	MW	5.1	4.8	4.6	5.2	3.9	5.3	5.3	5.3	17.6	17.6	17.6	17.8	18.0	18.2	18.5	18.8
	MVAr	1.3	1.2	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10% POE	MVA	5.3	4.9	4.6	5.2	3.9	5.3	5.3	5.3	17.6	17.6	17.6	17.8	18.0	18.2	18.5	18.8
	PF	0.970	0.970	1.000	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	MW	5.1	4.8	4.6	5.2	3.9	5.3	5.3	5.3	17.6	17.6	17.6	17.8	18.0	18.2	18.5	18.8
	MVAr	1.3	1.2	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50% POE	MVA	5.3	4.9	4.6	5.2	3.9	5.3	5.3	5.3	17.6	17.6	17.6	17.8	18.0	18.2	18.5	18.8
	PF	0.970	0.970	1.000	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Actual	MVA	170.5	138.7	132.8	135.2	122.3	120.9										
BSP Ingleburn	MW	139.7	135.1	138.6	137.9	137.4	136.6	135.6	135.9	136.0	135.1	135.3	136.0	137.1	138.2	139.7	140.8
	MVAr	14.4	53.1	37.6	37.5	32.5	28.5	35.2	35.3	35.3	35.1	35.1	35.3	35.6	35.9	36.3	36.5
10% POE	MVA	140.4	145.2	143.6	142.9	141.2	139.5	140.1	140.4	140.5	139.6	139.8	140.5	141.7	142.8	144.3	145.4
	PF	0.995	0.931	0.965	0.965	0.973	0.979	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
	MW	124.6	121.7	124.8	124.3	124.4	123.9	126.6	126.8	127.1	126.3	126.5	127.1	128.3	129.5	131.0	132.0
	MVAr	12.9	47.8	33.8	33.8	29.5	25.8	32.8	32.9	33.0	32.8	32.8	33.0	33.3	33.6	34.0	34.3
50% POE	MVA	125.2	130.8	129.3	128.8	127.8	126.6	130.8	131.0	131.3	130.5	130.7	131.3	132.6	133.8	135.3	136.4
	PF	0.995	0.931	0.965	0.965	0.973	0.979	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
Actual	MVA	491.7	441.8	459.5	451.3	422.0	323.5										
BSP Liverpool	MW	425.3	417.6	445.2	430.6	449.5	389.7	452.7	493.0	513.6	524.0	535.2	549.3	563.6	576.1	588.1	600.2
	MVAr	48.1	0.0	120.6	59.1	111.8	67.9	81.4	88.7	92.4	94.3	96.3	98.8	101.4	103.6	105.8	108.0
10% POE	MVA	428.0	417.6	461.2	434.6	463.2	395.6	460.0	500.9	521.8	532.4	543.8	558.1	572.7	585.3	597.5	609.9
	PF	0.994	1.000	0.965	0.991	0.970	0.985	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
	MW	375.0	368.7	393.0	380.1	400.8	340.9	424.6	464.9	485.5	496.0	507.3	521.3	535.7	548.2	560.4	572.6
	MVAr	42.4	0.0	106.5	52.2	99.6	59.4	76.4	83.6	87.3	89.2	91.3	93.8	96.4	98.6	100.8	103.0
50% POE	MVA	377.4	368.7	407.1	383.7	413.0	346.1	431.4	472.3	493.3	504.0	515.4	529.7	544.3	557.1	569.4	581.8
	PF	0.994	1.000	0.965	0.991	0.970	0.985	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
Actual	MVA	173.2	161.0	169.0	147.2	144.5	152.4										
BSP Macarthur	MW	141.2	167.5	164.5	160.3	160.9	176.4	160.0	172.0	175.3	178.9	183.7	190.2	199.1	210.3	218.8	225.7
66kV	MVAr	36.9	9.9	37.1	13.1	25.7	17.1	26.3	28.2	28.8	29.4	30.1	31.2	32.7	34.5	35.9	37.0
10% POE	MVA	145.9	167.8	168.6	160.8	163.0	177.2	162.2	174.3	177.7	181.3	186.2	192.7	201.8	213.1	221.7	228.7
	PF	0.968	0.998	0.976	0.997	0.988	0.995	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
	MW	124.7	147.0	143.4	143.1	144.2	160.7	148.2	160.2	163.5	167.1	171.9	178.4	187.4	198.6	207.3	214.4
	MVAr	32.6	8.7	32.3	11.7	23.0	15.6	24.3	26.3	26.8	27.4	28.2	29.3	30.7	32.6	34.0	35.2
50% POE	MVA	128.9	147.2	147.0	143.6	146.0	161.4	150.2	162.4	165.7	169.4	174.2	180.8	189.9	201.2	210.0	217.2
	PF	0.968	0.998	0.976	0.997	0.988	0.995	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
Actual	MVA	233.5	208.2	154.1	172.1	156.8	183.5										
BSP Macarthur	MW	190.2	192.1	177.9	185.5	182.9	203.5	225.2	245.3	259.3	274.9	299.9	320.8	346.1	369.2	388.9	408.6
132kV	MVAr	17.2	35.8	38.6	21.5	29.6	45.1	43.6	47.5	50.3	53.3	58.1	62.2	67.1	71.6	75.4	79.2
10% POE	MVA	191.0	195.4	182.0	186.7	185.2	208.4	229.4	249.9	264.2	280.0	305.5	326.8	352.6	376.1	396.1	416.2
	PF	0.996	0.983	0.977	0.993	0.987	0.976	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982
	MW	177.8	180.3	165.4	166.2	164.7	184.7	213.5	233.7	247.7	263.3	288.3	309.3	334.6	358.0	377.7	397.5
	MVAr	16.1	33.6	35.9	19.3	26.7	40.9	41.4	45.3	48.0	51.0	55.9	59.9	64.9	69.4	73.2	77.0
50% POE	MVA	178.6	183.4	169.2	167.3	166.9	189.2	217.5	238.0	252.3	268.2	293.7	315.0	340.8	364.7	384.8	404.9
	PF	0.996	0.983	0.977	0.993	0.987	0.976	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982

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[3]The variation in VArs at Dapto BSP is attributable to Tallawarra power station. Production of VArs at Tallawarra is not within the control of Endeavour Energy. The forecast of VArs is based on an average of previous years.

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**79.0**	**74.4**	**74.8**	**83.8**	**74.5**	**73.8**										
BSP Marulan	MW	73.8	70.5	74.8	80.1	74.2	73.8	88.9	92.9	96.0	98.2	100.3	102.5	104.7	106.9	109.1	111.0
	MVAr	28.2	23.9	25.4	24.6	6.3	0.0	24.7	25.8	26.7	27.3	27.9	28.5	29.1	29.7	30.3	30.9
10% POE	**MVA**	**79.0**	**74.4**	**79.0**	**83.8**	**74.5**	**73.8**	**92.3**	**96.4**	**99.7**	**102.0**	**104.1**	**106.4**	**108.7**	**110.9**	**113.2**	**115.3**
	PF	0.934	0.947	0.947	0.956	0.996	1.000	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963
	MW	73.8	70.5	74.8	80.1	74.2	73.8	83.4	87.5	90.7	92.9	94.9	97.2	99.4	101.5	103.7	105.7
	MVAr	28.2	23.9	25.4	24.6	6.3	0.0	23.2	24.3	25.2	25.8	26.4	27.0	27.6	28.2	28.9	29.4
50% POE	**MVA**	**79.0**	**74.4**	**79.0**	**83.8**	**74.5**	**73.8**	**86.6**	**90.9**	**94.1**	**96.4**	**98.5**	**100.9**	**103.2**	**105.4**	**107.7**	**109.7**
	PF	0.934	0.947	0.947	0.956	0.996	1.000	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963
Actual	**MVA**	**28.4**	**32.1**	**32.8**	**30.0**	**31.4**	**28.3**										
BSP Mount Piper	MW	26.7	30.6	31.2	28.4	29.9	27.1	41.3	41.3	43.6	43.6	43.6	43.6	43.7	43.8	43.9	44.0
	MVAr	9.7	9.9	10.2	9.8	9.8	8.1	13.7	13.7	14.5	14.5	14.5	14.5	14.5	14.5	14.6	14.6
10% POE	**MVA**	**28.4**	**32.1**	**32.8**	**30.0**	**31.4**	**28.3**	**43.5**	**43.5**	**45.9**	**45.9**	**45.9**	**46.0**	**46.1**	**46.1**	**46.2**	**46.3**
	PF	0.940	0.951	0.951	0.945	0.950	0.958	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949
	MW	26.7	30.6	31.2	28.4	29.9	27.1	41.3	41.3	43.6	43.6	43.6	43.6	43.7	43.8	43.9	44.0
	MVAr	9.7	9.9	10.2	9.8	9.8	8.1	13.7	13.7	14.5	14.5	14.5	14.5	14.5	14.5	14.6	14.6
50% POE	**MVA**	**28.4**	**32.1**	**32.8**	**30.0**	**31.4**	**28.3**	**43.5**	**43.5**	**45.9**	**45.9**	**45.9**	**46.0**	**46.1**	**46.1**	**46.2**	**46.3**
	PF	0.940	0.951	0.951	0.945	0.950	0.958	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949
Actual	**MVA**	**353.0**	**307.4**	**316.0**	**327.8**	**302.2**	**250.0**										
BSP Regentville	MW	306.8	309.3	329.2	329.3	340.3	345.1	337.9	351.8	363.2	362.2	369.2	377.8	385.9	394.1	402.5	411.3
	MVAr	80.8	81.5	86.7	86.8	89.7	23.1	80.4	83.7	86.4	86.1	87.8	89.8	91.8	93.7	95.7	97.8
10% POE	**MVA**	**317.3**	**319.8**	**340.4**	**340.5**	**351.9**	**344.3**	**347.4**	**361.6**	**373.4**	**372.3**	**379.5**	**388.3**	**396.7**	**405.1**	**413.7**	**422.7**
	PF	0.967	0.967	0.967	0.967	0.967	1.002	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
	MW	280.9	283.7	296.4	293.0	304.2	309.9	306.7	320.6	332.2	331.1	338.2	346.8	354.9	363.1	371.6	380.5
	MVAr	74.0	74.7	78.1	77.2	80.1	20.7	72.9	76.2	79.0	78.7	80.4	82.5	84.4	86.3	88.4	90.5
50% POE	**MVA**	**290.5**	**293.3**	**306.5**	**303.0**	**314.6**	**309.2**	**315.2**	**329.5**	**341.4**	**340.3**	**347.6**	**356.4**	**364.8**	**373.2**	**381.9**	**391.1**
	PF	0.967	0.967	0.967	0.967	0.967	1.002	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
Actual	**MVA**	**38.2**	**36.1**	**40.7**	**43.6**	**40.9**	**35.2**										
BSP Sydney North	MW	38.1	36.5	38.5	40.3	41.2	41.8	44.5	45.1	45.4	45.0	44.9	44.9	45.0	45.1	45.4	45.6
	MVAr	3.8	3.7	13.4	25.3	24.7	4.2	16.3	16.5	16.6	16.5	16.4	16.4	16.5	16.5	16.6	16.7
10% POE	**MVA**	**38.3**	**36.7**	**40.8**	**47.6**	**48.0**	**42.0**	**47.3**	**48.0**	**48.3**	**47.9**	**47.8**	**47.8**	**47.9**	**48.1**	**48.3**	**48.6**
	PF	0.995	0.995	0.945	0.847	0.858	0.995	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939
	MW	34.2	33.2	34.9	35.7	36.6	37.1	39.5	40.1	40.5	40.1	40.1	40.1	40.2	40.3	40.6	40.8
	MVAr	3.4	3.3	12.1	22.4	21.9	3.7	14.5	14.7	14.8	14.7	14.7	14.7	14.7	14.8	14.8	14.9
50% POE	**MVA**	**34.3**	**33.3**	**36.9**	**42.1**	**42.7**	**37.3**	**42.1**	**42.8**	**43.1**	**42.7**	**42.7**	**42.7**	**42.8**	**42.9**	**43.2**	**43.5**
	PF	0.995	0.995	0.945	0.847	0.858	0.995	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939
Actual	**MVA**	**1236**	**1181**	**1301**	**1288**	**1110**	**1177**										
BSP Sydney West	MW	1225	1199	1308	1200	1233	1261	1461	1630	1798	1959	2112	2196	2239	2256	2284	2299
	MVAr	139.6	134.0	456.7	154.5	90.9	245.1	213.7	238.5	263.1	286.7	308.9	321.4	327.6	330.1	334.2	336.4
10% POE	**MVA**	**1233**	**1206**	**1385**	**1210**	**1237**	**1285**	**1476**	**1648**	**1817**	**1980**	**2134**	**2220**	**2263**	**2280**	**2308**	**2323**
	PF	0.994	0.994	0.944	0.992	0.997	0.982	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	1104	1081	1163	1069	1110	1138	1364	1533	1702	1863	2016	2101	2143	2161	2188	2203
	MVAr	125.8	120.8	406.2	137.7	81.8	221.2	199.6	224.4	249.0	272.5	294.9	307.4	313.5	316.1	320.2	322.4
50% POE	**MVA**	**1111**	**1087**	**1232**	**1078**	**1113**	**1160**	**1379**	**1550**	**1720**	**1883**	**2037**	**2123**	**2166**	**2184**	**2212**	**2227**
	PF	0.994	0.994	0.944	0.992	0.997	0.982	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	**MVA**	**500.8**	**427.2**	**482.6**	**510.6**	**471.9**	**446.1**										
BSP Vineyard	MW	474.9	470.7	532.3	498.0	515.9	531.9	525.0	568.1	626.4	677.2	707.1	740.0	772.4	798.2	825.4	851.5
	MVAr	81.5	29.0	30.7	21.2	7.5	37.1	44.5	48.1	53.0	57.3	59.9	62.7	65.4	67.6	69.9	72.1
10% POE	**MVA**	**481.8**	**471.6**	**533.2**	**498.4**	**515.9**	**533.2**	**526.9**	**570.2**	**628.6**	**679.6**	**709.6**	**742.7**	**775.1**	**801.1**	**828.3**	**854.5**
	PF	0.986	0.998	0.998	0.999	1.000	0.998	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	425.7	422.0	474.1	443.1	462.3	477.5	485.2	528.4	586.7	637.6	667.5	700.5	733.0	758.9	786.1	812.3
	MVAr	73.1	26.0	27.3	18.8	6.7	33.3	41.1	44.7	49.7	54.0	56.5	59.3	62.1	64.3	66.6	68.8
50% POE	**MVA**	**432.0**	**422.8**	**474.9**	**443.5**	**462.4**	**478.6**	**486.9**	**530.3**	**588.8**	**639.9**	**669.9**	**703.0**	**735.6**	**761.6**	**788.9**	**815.2**
	PF	0.986	0.998	0.998	0.999	1.000	0.998	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Actual	**MVA**	**36.3**	**20.5**	**33.2**	**35.3**	**34.1**	**27.4**										
BSP Wallerawang 66kV	MW	19.2	19.2	31.9	31.9	32.9	26.6	23.0	23.9	24.0	23.7	23.8	24.0	24.2	24.5	24.9	25.3
	MVAr	7.3	7.3	9.1	10.3	8.9	6.4	5.5	5.7	5.8	5.7	5.7	5.8	5.8	5.9	6.0	6.1
10% POE	**MVA**	**20.5**	**20.5**	**33.2**	**33.5**	**34.1**	**27.4**	**23.7**	**24.5**	**24.7**	**24.4**	**24.5**	**24.6**	**24.9**	**25.2**	**25.6**	**26.0**
	PF	0.935	0.935	0.961	0.951	0.965	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972
	MW	19.2	19.2	31.9	31.9	32.9	26.6	23.0	23.9	24.0	23.7	23.8	24.0	24.2	24.5	24.9	25.3
	MVAr	7.3	7.3	9.1	10.3	8.9	6.4	5.5	5.7	5.8	5.7	5.7	5.8	5.8	5.9	6.0	6.1
50% POE	**MVA**	**20.5**	**20.5**	**33.2**	**33.5**	**34.1**	**27.4**	**23.7**	**24.5**	**24.7**	**24.4**	**24.5**	**24.6**	**24.9**	**25.2**	**25.6**	**26.0**
	PF	0.935	0.935	0.961	0.951	0.965	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972
Actual	**MVA**	**51.0**	**47.4**	**90.8**	**66.6**	**50.1**	**61.0**										
BSP Wallerawang 132kV	MW	49.9	46.4	88.4	66.3	50.1	60.5	32.6	32.5	32.8	32.4	32.5	32.7	33.1	33.6	34.2	34.8
	MVAr	10.4	9.7	20.6	6.2	1.0	7.6	5.4	5.4	5.4	5.4	5.4	5.4	5.5	5.6	5.7	5.8
10% POE	**MVA**	**51.0**	**47.4**	**90.8**	**66.6**	**50.1**	**61.0**	**33.0**	**33.0**	**33.3**	**32.8**	**32.9**	**33.2**	**33.6**	**34.0**	**34.6**	**35.2**
	PF	0.979	0.979	0.974	0.996	1.000	0.992	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
	MW	49.9	46.4	88.4	66.3	50.1	60.5	32.6	32.5	32.8	32.4	32.5	32.7	33.1	33.6	34.2	34.8
	MVAr	10.4	9.7	20.6	6.2	1.0	7.6	5.4	5.4	5.4	5.4	5.4	5.4	5.5	5.6	5.7	5.8
50% POE	**MVA**	**51.0**	**47.4**	**90.8**	**66.6**	**50.1**	**61.0**	**33.0**	**33.0**	**33.3**	**32.8**	**32.9**	**33.2**	**33.6**	**34.0**	**34.6**	**35.2**
	PF	0.979	0.979	0.974	0.996	1.000	0.992	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	4442	4048	4283	4311	3873	3728										
Undiversified	MW	4157	4040	4355	4227	4204	4177	4584	4963	5320	5551	5815	6016	6175	6298	6427	6537
	MVAr	732	417	922	536	474	517	702	752	797	830	866	893	916	934	953	969
10% POE	MVA	4244	4081	4487	4277	4251	4219	4646	5029	5389	5622	5890	6092	6253	6378	6508	6620
	PF	0.979	0.990	0.971	0.988	0.989	0.990	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.988	0.988
	MW	3831	3722	3987	3870	3859	3835	4293	4673	5030	5262	5527	5728	5888	6012	6141	6252
	MVAr	689	385	830	490	431	469	657	707	752	785	821	849	872	890	909	925
50% POE	MVA	3915	3760	4105	3916	3902	3873	4351	4734	5095	5330	5597	5800	5963	6087	6219	6331
	PF	0.978	0.990	0.971	0.988	0.989	0.990	0.987	0.987	0.987	0.987	0.987	0.988	0.988	0.988	0.988	0.988
Actual	MVA	4112	3794	4049	4084	3791	3735										
Diversified	MW	3934	3837	4035	3998	4129	4216	4474	4844	5193	5418	5676	5872	6027	6147	6273	6381
	MVAr	196	164	480	476	414	423	419	454	486	508	532	550	565	576	588	598
10% POE	MVA	3939	3841	4063	4026	4150	4237	4494	4865	5215	5442	5701	5897	6053	6174	6301	6409
	PF	0.999	0.999	0.993	0.993	0.995	0.995	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	3604	3528	3706	3622	3767	3857	4190	4561	4910	5136	5395	5591	5747	5868	5994	6103
	MVAr	180	151	441	431	378	387	393	427	460	481	505	524	538	550	562	572
50% POE	MVA	3608	3531	3732	3647	3786	3876	4209	4581	4931	5159	5419	5615	5773	5893	6021	6130
	PF	0.999	0.999	0.993	0.993	0.995	0.995	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996

Summary		Actual						Forecast									
EE Total		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	4112	3794	4049	4084	3791	3735										
Diversified	MW	3934	3837	4035	3998	4129	4216	4474	4844	5193	5418	5676	5872	6027	6147	6273	6381
	MVAr	196	164	480	476	414	423	419	454	486	508	532	550	565	576	588	598
10% POE	MVA	3939	3841	4063	4026	4150	4237	4494	4865	5215	5442	5701	5897	6053	6174	6301	6409
	PF	0.999	0.999	0.993	0.993	0.995	0.995	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	3604	3528	3706	3622	3767	3857	4190	4561	4910	5136	5395	5591	5747	5868	5994	6103
	MVAr	180	151	441	431	378	387	393	427	460	481	505	524	538	550	562	572
50% POE	MVA	3608	3531	3732	3647	3786	3876	4209	4581	4931	5159	5419	5615	5773	5893	6021	6130
	PF	0.999	0.999	0.993	0.993	0.995	0.995	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Growth (p.a.)	MW	156	-76	178	-84	145	90	333	371	349	226	259	196	157	120	127	108
(50% PoE)	%	4.5%	-2.1%	5.0%	-2.3%	4.0%	2.4%	8.6%	8.8%	7.6%	4.6%	5.0%	3.6%	2.8%	2.1%	2.2%	1.8%

Diversified Actual History for 15-20	MW	4107	3790	4020	4056	3772	3716
	MVAr	205	162	478	482	379	373
	MVA	4112	3794	4049	4084	3791	3735
	PF	0.999	0.999	0.993	0.993	0.995	0.995
	Date	30-Jan	19-Dec	18-Jan	01-Feb	28-Nov	01-Feb
	Time	17:15	15:45	17:00	17:30	17:00	15:30
	Day	Mon	Tue	Fri	Sat	Sat	Tue
Growth (p.a.)	MW	854	-316	230	35	-284	-55
(Actual)	%	26.2%	-7.7%	6.1%	0.9%	-7.0%	-1.5%

6.2 Dapto Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	80.7	77.9	80.4	83.5	80.6	71.4										
Bellambi	MW	80.7	76.0	78.5	82.6	79.6	71.0	80.9	80.4	80.9	79.6	79.8	80.6	82.0	83.3	85.0	86.8
	MVAr	16.4	17.0	17.8	12.3	12.8	8.0	9.1	9.0	9.1	8.9	8.9	9.0	9.2	9.3	9.5	9.7
10% POE	MVA	82.3	77.9	80.4	83.5	80.6	71.4	81.4	80.9	81.4	80.1	80.3	81.1	82.5	83.8	85.6	87.4
	PF	0.980	0.976	0.975	0.989	0.987	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	80.7	76.0	78.5	82.6	79.6	71.0	74.6	74.2	74.7	73.4	73.6	74.4	75.8	77.0	78.8	80.6
	MVAr	16.4	17.0	17.8	12.3	12.8	8.0	8.4	8.3	8.4	8.2	8.2	8.3	8.5	8.6	8.8	9.0
50% POE	MVA	82.3	77.9	80.4	83.5	80.6	71.4	75.1	74.6	75.1	73.9	74.1	74.9	76.2	77.5	79.3	81.1
	PF	0.980	0.976	0.975	0.989	0.987	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	MVA	258.7	239.2	231.6	237.7	233.0	225.8										
Dapto 132kV	MW	236.4	212.0	223.4	224.7	225.7	224.2	224.8	225.5	226.7	227.2	228.1	229.2	251.4	252.7	254.2	254.7
	MVAr	87.3	83.7	54.9	54.6	51.6	25.3	31.0	31.2	31.6	31.8	32.1	32.4	39.8	40.2	40.7	40.9
10% POE	MVA	258.7	234.0	231.6	232.0	233.0	225.8	227.6	228.4	229.7	230.2	231.1	232.2	255.7	257.0	258.6	259.1
	PF	0.914	0.906	0.965	0.969	0.969	0.993	0.988	0.987	0.987	0.987	0.987	0.987	0.983	0.983	0.983	0.983
	MW	236.4	212.0	223.4	224.7	225.7	224.2	224.0	225.5	226.7	227.2	228.1	229.2	251.4	252.7	254.2	254.7
	MVAr	87.3	83.7	54.9	54.6	51.6	25.3	30.7	31.2	31.6	31.8	32.1	32.4	39.8	40.2	40.7	40.9
50% POE	MVA	258.7	234.0	231.6	232.0	233.0	225.8	226.8	228.4	229.7	230.2	231.1	232.2	255.7	257.0	258.6	259.1
	PF	0.914	0.906	0.965	0.969	0.969	0.993	0.988	0.987	0.987	0.987	0.987	0.987	0.983	0.983	0.983	0.983
Actual	MVA	110.4	109.6	109.8	108.6	111.3	107.4										
Mount Terry	MW	101.9	100.7	117.0	102.1	104.6	110.2	100.8	101.7	106.6	106.0	106.9	108.3	110.1	112.2	114.7	116.5
	MVAr	34.3	33.9	34.4	19.7	17.9	14.1	25.7	25.9	27.1	27.0	27.2	27.6	28.0	28.6	29.2	29.7
10% POE	MVA	107.5	106.3	121.9	104.0	106.1	111.1	104.0	105.0	110.0	109.3	110.3	111.7	113.7	115.7	118.4	120.2
	PF	0.948	0.948	0.959	0.982	0.986	0.992	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969
	MW	85.9	87.2	97.4	87.7	89.8	94.2	93.1	94.2	99.1	98.5	99.4	100.8	102.7	104.7	107.3	109.0
	MVAr	28.9	29.3	28.6	16.9	15.4	12.1	23.7	24.0	25.2	25.1	25.3	25.7	26.1	26.6	27.3	27.7
50% POE	MVA	90.6	92.0	101.5	89.3	91.1	94.9	96.1	97.2	102.3	101.6	102.5	104.0	105.9	108.0	110.7	112.5
	PF	0.948	0.948	0.959	0.982	0.986	0.992	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969	0.969
Actual	MVA	23.7	35.7	39.1	34.2	30.4	30.6										
Outer Harbour	MW	23.4	34.9	38.3	33.7	30.2	30.6	30.9	30.5	30.3	30.1	30.0	30.0	29.9	29.9	30.0	30.0
	MVAr	3.3	7.6	8.1	6.2	3.9	1.1	5.1	5.0	5.0	5.0	5.0	4.9	4.9	4.9	4.9	4.9
10% POE	MVA	23.7	35.7	39.1	34.2	30.4	30.6	31.3	30.9	30.7	30.5	30.4	30.4	30.3	30.3	30.4	30.4
	PF	0.990	0.977	0.978	0.984	0.992	0.999	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
	MW	23.4	34.9	38.3	33.7	30.2	30.6	30.9	30.5	30.3	30.1	30.0	30.0	29.9	29.9	30.0	30.0
	MVAr	3.3	7.6	8.1	6.2	3.9	1.1	5.1	5.0	5.0	5.0	5.0	4.9	4.9	4.9	4.9	4.9
50% POE	MVA	23.7	35.7	39.1	34.2	30.4	30.6	31.3	30.9	30.7	30.5	30.4	30.4	30.3	30.3	30.4	30.4
	PF	0.990	0.977	0.978	0.984	0.992	0.999	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
Actual	MVA	92.9	91.5	96.8	104.2	101.6	97.3										
Shoalhaven	MW	102.3	103.8	111.9	100.1	102.2	107.5	106.1	106.4	112.0	112.0	112.9	114.2	115.6	117.0	118.8	120.6
	MVAr	17.4	10.8	27.2	24.9	26.0	15.3	15.1	15.1	15.9	15.9	16.1	16.2	16.4	16.6	16.9	17.1
10% POE	MVA	103.8	104.4	115.1	103.2	105.5	108.6	107.1	107.5	113.2	113.1	114.0	115.4	116.7	118.2	120.0	121.8
	PF	0.986	0.995	0.972	0.970	0.969	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
	MW	89.7	91.3	98.0	90.9	93.5	98.0	98.9	99.3	105.0	104.9	105.8	107.2	108.6	110.0	111.8	113.6
	MVAr	15.2	9.5	23.9	22.6	23.8	13.9	14.1	14.1	14.9	14.9	15.0	15.2	15.4	15.6	15.9	16.2
50% POE	MVA	90.9	91.8	100.9	93.7	96.4	99.0	99.9	100.3	106.0	105.9	106.9	108.3	109.7	111.1	112.9	114.7
	PF	0.986	0.995	0.972	0.970	0.969	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
Actual	MVA	179.8	157.0	176.0	163.6	160.5	157.8										
Springhill	MW	171.6	166.2	184.7	167.9	172.8	175.3	178.6	180.1	180.5	178.4	178.0	178.4	162.7	163.7	165.3	166.9
	MVAr	43.0	35.5	46.5	35.4	27.7	42.1	39.9	40.2	40.3	39.8	39.7	39.8	36.3	36.5	36.9	37.2
10% POE	MVA	176.9	170.0	190.4	171.6	175.1	180.3	183.0	184.6	184.9	182.8	182.4	182.8	166.7	167.7	169.4	171.0
	PF	0.970	0.978	0.970	0.979	0.987	0.972	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976
	MW	157.9	153.9	161.2	150.8	155.2	156.9	163.2	164.7	165.1	163.0	162.6	163.1	147.9	148.9	150.4	151.9
	MVAr	39.6	32.9	40.6	31.8	24.9	37.7	36.4	36.8	36.8	36.4	36.3	36.4	33.0	33.2	33.6	33.9
50% POE	MVA	162.8	157.4	166.2	154.1	157.2	161.4	167.2	168.8	169.1	167.1	166.6	167.1	151.5	152.5	154.1	155.7
	PF	0.970	0.978	0.970	0.979	0.987	0.972	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976	0.976
Actual	MVA	50.4	41.5	42.6	48.4	48.6	43.3										
West Tomerong	MW	43.6	40.7	44.1	42.2	45.0	48.4	43.2	44.6	46.0	45.7	46.2	46.9	47.8	48.5	49.4	50.3
	MVAr	9.6	5.1	5.8	5.9	5.1	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7
10% POE	MVA	44.6	41.0	44.5	42.6	45.3	48.4	43.2	44.6	46.0	45.7	46.2	46.9	47.8	48.5	49.4	50.3
	PF	0.977	0.992	0.991	0.990	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	MW	38.3	38.7	41.2	37.1	39.9	43.1	42.2	43.6	45.0	44.7	45.2	45.9	46.8	47.4	48.4	49.3
	MVAr	8.4	4.8	5.4	5.2	4.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7
50% POE	MVA	39.2	39.0	41.5	37.4	40.2	43.1	42.2	43.6	45.0	44.7	45.2	45.9	46.8	47.5	48.4	49.3
	PF	0.977	0.992	0.991	0.990	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**796.5**	**752.3**	**776.3**	**780.2**	**766.0**	**733.7**										
Undiversified	MW	759.8	734.3	797.7	753.3	760.1	767.3	765.3	769.4	783.1	779.0	781.9	787.6	799.6	807.2	817.4	825.7
	MVAr	211.2	193.6	194.7	158.9	144.9	106.5	126.3	127.1	129.7	129.0	129.6	130.7	135.4	136.9	138.9	140.3
10% POE	**MVA**	**797.4**	**769.2**	**823.1**	**771.1**	**775.9**	**776.3**	**777.7**	**781.9**	**795.9**	**791.8**	**794.7**	**800.6**	**813.4**	**821.2**	**831.6**	**840.2**
	PF	0.953	0.955	0.969	0.977	0.980	0.988	0.984	0.984	0.984	0.984	0.984	0.984	0.983	0.983	0.983	0.983
	MW	712.2	694.0	737.8	707.5	713.8	718.0	726.9	732.0	745.8	741.8	744.7	750.5	763.0	770.6	780.8	789.1
	MVAr	199.1	184.9	179.3	149.5	136.8	98.6	118.9	120.0	122.6	122.0	122.5	123.7	128.4	129.9	131.9	133.4
50% POE	**MVA**	**748.2**	**727.8**	**761.2**	**724.3**	**728.9**	**726.3**	**738.6**	**743.8**	**757.9**	**753.8**	**756.8**	**762.8**	**776.2**	**783.9**	**794.3**	**802.8**
	PF	0.952	0.954	0.969	0.977	0.979	0.989	0.984	0.984	0.984	0.984	0.984	0.984	0.983	0.983	0.983	0.983
Actual	**MVA**	**681.5**	**606.5**	**623.3**	**669.8**	**576.3**	**523.6**										
Diversified#[4]	MW	671.4	581.6	623.3	666.9	575.7	523.5	609.9	613.2	624.1	620.8	623.1	627.7	637.3	643.3	651.4	658.1
	MVAr	246.2	16.7	7.9	63.0	26.9	10.7	92.2	92.7	94.3	93.8	94.2	94.9	96.3	97.2	98.4	99.4
10% POE	**MVA**	**715.1**	**581.8**	**623.3**	**669.8**	**576.3**	**523.6**	**616.8**	**620.1**	**631.2**	**627.9**	**630.2**	**634.8**	**644.5**	**650.6**	**658.8**	**665.5**
	PF	0.939	1.000	1.000	0.996	0.999	1.000	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	671.4	581.6	623.3	666.9	575.7	523.5	579.3	583.4	594.4	591.2	593.5	598.1	608.1	614.2	622.3	628.9
	MVAr	246.2	16.7	7.9	63.0	26.9	10.7	87.6	88.2	89.8	89.3	89.7	90.4	91.9	92.8	94.0	95.0
50% POE	**MVA**	**715.1**	**581.8**	**623.3**	**669.8**	**576.3**	**523.6**	**585.9**	**590.0**	**601.1**	**597.9**	**600.3**	**604.9**	**615.0**	**621.1**	**629.3**	**636.0**
	PF	0.939	1.000	1.000	0.996	0.999	1.000	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Tallawarra Generator	MW							-422.0	-422.0	-422.0	-422.0	-422.0	-422.0	-422.0	-422.0	-422.0	-422.0
	MVAr							-82.6	-82.6	-82.6	-82.6	-82.6	-82.6	-82.6	-82.6	-82.6	-82.6
	MVA							**-430.0**	**-430.0**	**-430.0**	**-430.0**	**-430.0**	**-430.0**	**-430.0**	**-430.0**	**-430.0**	**-430.0**
	PF							0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Actual	**MVA**																
Undiversified+	MW							343.3	347.4	361.1	357.0	359.9	365.6	377.6	385.2	395.4	403.7
	MVAr							55.3	56.4	59.3	58.6	59.2	60.5	66.7	68.4	70.7	72.3
10% POE	**MVA**							**347.7**	**351.9**	**365.9**	**361.8**	**364.7**	**370.6**	**383.4**	**391.2**	**401.6**	**410.2**
	PF							0.987	0.987	0.987	0.987	0.987	0.987	0.985	0.985	0.984	0.984
	MW							304.9	310.0	323.8	319.8	322.7	328.5	341.0	348.6	358.8	367.1
	MVAr							47.3	48.8	51.7	51.0	51.7	53.0	59.4	61.1	63.4	65.0
50% POE	**MVA**							**308.6**	**313.8**	**327.9**	**323.8**	**326.8**	**332.8**	**346.2**	**353.9**	**364.3**	**372.8**
	PF							0.988	0.988	0.987	0.988	0.987	0.987	0.985	0.985	0.985	0.985
Actual	**MVA**																
Diversified+	MW							184.7	188.0	198.9	195.7	198.0	202.5	212.1	218.1	226.2	232.9
	MVAr							27.9	28.4	30.1	29.6	29.9	30.6	32.0	33.0	34.2	35.2
10% POE	**MVA**							**186.8**	**190.1**	**201.2**	**197.9**	**200.2**	**204.8**	**214.5**	**220.6**	**228.8**	**235.5**
	PF							0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW							154.2	158.2	169.2	166.0	168.3	173.0	182.9	189.0	197.1	203.7
	MVAr							23.3	23.9	25.6	25.1	25.4	26.1	27.6	28.6	29.8	30.8
50% POE	**MVA**							**155.9**	**160.0**	**171.1**	**167.9**	**170.3**	**174.9**	**185.0**	**191.1**	**199.3**	**206.0**
	PF							0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989

Note:Diversified# Refers to the Dapto transformer metering values plus the generation output at Tallawarra
Diversified+/Undiversified+ Refers to the generation output at Tallawarra being subtracted from Undiversified or Diversified#

[4]The variation in VArs at Dapto BSP is attributable to Tallawarra power station. Production of VArs at Tallawarra is not within the control of Endeavour Energy. The forecast of VArs is based on an average of previous years.

6.3 Holroyd Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**61.9**	**45.2**	**46.1**	**52.8**	**55.1**	**54.8**										
Camellia	MW	60.0	44.1	45.1	52.0	54.4	53.9	111.0	98.8	142.4	126.3	127.3	128.5	130.3	132.5	134.7	137.1
	MVAr	15.1	9.9	9.6	9.1	9.1	9.8	22.7	20.2	29.1	25.8	26.0	26.3	26.6	27.1	27.6	28.0
10% POE	**MVA**	**61.9**	**45.2**	**46.1**	**52.8**	**55.1**	**54.8**	**113.3**	**100.9**	**145.3**	**128.9**	**129.9**	**131.2**	**133.0**	**135.3**	**137.5**	**139.9**
	PF	0.970	0.976	0.978	0.985	0.986	0.984	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
	MW	60.0	44.1	45.1	52.0	54.4	53.9	109.5	97.4	140.9	125.2	126.0	127.3	129.3	131.0	133.1	135.6
	MVAr	15.1	9.9	9.6	9.1	9.1	9.8	22.4	19.9	28.8	25.6	25.8	26.0	26.5	26.8	27.2	27.7
50% POE	**MVA**	**61.9**	**45.2**	**46.1**	**52.8**	**55.1**	**54.8**	**111.7**	**99.4**	**143.8**	**127.8**	**128.6**	**129.9**	**132.0**	**133.7**	**135.9**	**138.4**
	PF	0.970	0.976	0.978	0.985	0.986	0.984	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Actual	**MVA**	**211.0**	**227.8**	**183.6**	**192.7**	**185.1**	**182.2**										
Guildford#	MW	217.3	193.5	196.8	209.3	208.5	206.8	212.3	218.6	218.1	215.9	215.4	215.8	217.4	218.8	221.1	223.3
	MVAr	59.8	27.1	46.0	17.5	8.1	41.3	42.4	43.6	43.6	43.1	43.0	43.1	43.4	43.7	44.1	44.6
10% POE	**MVA**	**225.4**	**195.4**	**202.1**	**210.0**	**208.6**	**210.9**	**216.5**	**222.9**	**222.4**	**220.1**	**219.6**	**220.1**	**221.7**	**223.2**	**225.5**	**227.7**
	PF	0.964	0.990	0.974	0.997	0.999	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
	MW	198.6	175.4	175.6	191.1	191.3	190.4	199.9	206.2	205.8	203.5	203.0	203.5	205.1	206.6	209.0	211.3
	MVAr	54.7	24.6	41.0	16.0	7.4	38.0	39.9	41.2	41.1	40.6	40.5	40.6	41.0	41.3	41.7	42.2
50% POE	**MVA**	**206.0**	**177.1**	**180.3**	**191.8**	**191.4**	**194.2**	**203.9**	**210.3**	**209.8**	**207.5**	**207.0**	**207.5**	**209.2**	**210.7**	**213.1**	**215.5**
	PF	0.964	0.990	0.974	0.997	0.999	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
Actual	**MVA**	**114.0**	**112.5**	**113.0**	**117.6**	**103.4**	**94.1**										
Holroyd	MW	111.0	106.4	113.4	114.1	110.5	103.9	121.1	198.5	207.5	219.6	248.8	271.5	282.2	293.0	301.0	306.8
132kV	MVAr	11.6	14.5	17.6	9.7	11.1	8.0	15.5	41.6	43.2	48.8	58.0	65.8	68.2	71.2	72.8	73.7
10% POE	**MVA**	**112.0**	**107.9**	**114.9**	**114.5**	**111.4**	**104.3**	**122.2**	**204.6**	**213.7**	**227.1**	**258.0**	**282.2**	**293.2**	**304.5**	**312.7**	**318.5**
	PF	0.991	0.987	0.987	0.996	0.992	0.996	0.991	0.970	0.971	0.967	0.964	0.962	0.963	0.962	0.963	0.963
	MW	103.3	99.3	105.3	104.8	102.2	95.6	112.9	190.3	199.2	211.4	240.6	263.3	274.1	285.0	293.1	298.9
	MVAr	11.0	13.7	16.5	9.0	10.4	7.3	14.6	40.7	42.3	47.9	57.1	64.9	67.3	70.3	71.9	72.8
50% POE	**MVA**	**104.3**	**100.6**	**106.8**	**105.2**	**103.1**	**96.0**	**114.0**	**196.3**	**205.4**	**218.9**	**249.7**	**273.9**	**285.0**	**296.3**	**304.7**	**310.6**
	PF	0.991	0.986	0.986	0.996	0.992	0.996	0.991	0.969	0.970	0.966	0.964	0.961	0.962	0.962	0.962	0.962
Actual	**MVA**	**386.9**	**385.6**	**342.7**	**363.0**	**343.7**	**331.2**										
Undiversified	MW	388.4	344.0	355.2	375.3	373.3	364.6	444.4	515.9	568.0	561.8	591.5	615.9	629.9	644.4	656.8	667.2
	MVAr	86.6	51.5	73.2	36.3	28.3	59.1	80.6	105.4	115.9	117.8	127.0	135.2	138.2	142.0	144.5	146.4
10% POE	**MVA**	**399.3**	**348.5**	**363.1**	**377.3**	**375.1**	**369.9**	**452.0**	**528.3**	**581.5**	**576.2**	**607.5**	**633.5**	**647.8**	**662.9**	**675.6**	**686.2**
	PF	0.973	0.987	0.978	0.995	0.995	0.985	0.983	0.976	0.977	0.975	0.974	0.972	0.972	0.972	0.972	0.972
	MW	362.0	318.8	326.0	347.9	347.9	340.0	422.3	493.9	545.9	540.1	569.6	594.1	608.5	622.5	635.2	645.8
	MVAr	80.8	48.2	67.1	34.1	26.9	55.2	76.9	101.8	112.2	114.1	123.4	131.6	134.7	138.3	140.8	142.8
50% POE	**MVA**	**372.2**	**323.0**	**333.2**	**349.8**	**349.6**	**345.0**	**429.6**	**506.0**	**559.1**	**554.2**	**585.4**	**611.4**	**626.1**	**640.7**	**653.6**	**664.5**
	PF	0.973	0.987	0.978	0.995	0.995	0.985	0.983	0.976	0.976	0.975	0.973	0.972	0.972	0.972	0.972	0.972
Actual	**MVA**	**362.7**	**361.4**	**368.2**	**344.5**	**332.2**	**319.7**										
Diversified#	MW	369.5	359.7	366.8	366.8	375.4	374.5	441.6	512.6	564.3	558.2	587.7	611.9	625.8	640.3	652.6	662.9
	MVAr	6.1	1.3	27.0	2.8	8.7	16.2	19.1	22.2	24.5	24.2	25.5	26.5	27.1	27.8	28.3	28.7
10% POE	**MVA**	**369.5**	**359.7**	**367.8**	**366.8**	**375.5**	**374.9**	**442.0**	**513.1**	**564.9**	**558.7**	**588.2**	**612.5**	**626.4**	**640.9**	**653.2**	**663.6**
	PF	1.000	1.000	0.997	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	337.6	331.8	337.5	336.4	345.6	345.6	419.6	490.7	542.4	536.7	566.0	590.3	604.6	618.5	631.1	641.7
	MVAr	5.6	1.2	24.8	2.6	8.0	15.0	18.2	21.3	23.5	23.3	24.5	25.6	26.2	26.8	27.4	27.8
50% POE	**MVA**	**337.6**	**331.8**	**338.4**	**336.4**	**345.7**	**346.0**	**420.0**	**491.2**	**542.9**	**537.2**	**566.5**	**590.9**	**605.2**	**619.1**	**631.7**	**642.3**
	PF	1.000	1.000	0.997	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Guildford^	MW							212.3	218.6	218.1	215.9	215.4	215.8	217.4	218.8	221.1	223.3
	MVAr							42.4	43.6	43.6	43.1	43.0	43.1	43.4	43.7	44.1	44.6
10% POE	**MVA**							**216.5**	**222.9**	**222.4**	**220.1**	**219.6**	**220.1**	**221.7**	**223.2**	**225.5**	**227.7**
	PF							0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
	MW							199.9	206.2	205.8	203.5	203.0	203.5	205.1	206.6	209.0	211.3
	MVAr							39.9	41.2	41.1	40.6	40.5	40.6	41.0	41.3	41.7	42.2
50% POE	**MVA**							**203.9**	**210.3**	**209.8**	**207.5**	**207.0**	**207.5**	**209.2**	**210.7**	**213.1**	**215.5**
	PF							0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981

Note: # Refers to the transformer metering plus the generation output

^Refers to the Guildford# less assumed Marubeni generation

6.4 Ilford Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**5.3**	**4.9**	**4.6**	**4.8**	**3.9**	**5.4**										
Ilford	MW	5.1	4.8	4.6	5.2	3.9	5.3	5.3	5.3	17.6	17.6	17.6	17.8	18.0	18.2	18.5	18.8
	MVAr	1.3	1.2	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10% POE	**MVA**	**5.3**	**4.9**	**4.6**	**5.2**	**3.9**	**5.3**	**5.3**	**5.3**	**17.6**	**17.6**	**17.6**	**17.8**	**18.0**	**18.2**	**18.5**	**18.8**
	PF	0.970	0.970	1.000	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	MW	5.1	4.8	4.6	5.2	3.9	5.3	5.3	5.3	17.6	17.6	17.6	17.8	18.0	18.2	18.5	18.8
	MVAr	1.3	1.2	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
50% POE	**MVA**	**5.3**	**4.9**	**4.6**	**5.2**	**3.9**	**5.3**	**5.3**	**5.3**	**17.6**	**17.6**	**17.6**	**17.8**	**18.0**	**18.2**	**18.5**	**18.8**
	PF	0.970	0.970	1.000	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

6.5 Ingleburn Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**170.5**	**138.7**	**132.8**	**135.2**	**122.3**	**120.9**										
Ingleburn	MW	139.7	135.1	138.6	137.9	137.4	136.6	135.6	135.9	136.0	135.1	135.3	136.0	137.1	138.2	139.7	140.8
	MVAr	14.4	53.1	37.6	37.5	32.5	28.5	35.2	35.3	35.3	35.1	35.1	35.3	35.6	35.9	36.3	36.5
10% POE	**MVA**	**140.4**	**145.2**	**143.6**	**142.9**	**141.2**	**139.5**	**140.1**	**140.4**	**140.5**	**139.6**	**139.8**	**140.5**	**141.7**	**142.8**	**144.3**	**145.4**
	PF	0.995	0.931	0.965	0.965	0.973	0.979	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
	MW	124.6	121.7	124.8	124.3	124.4	123.9	126.6	126.8	127.1	126.3	126.5	127.1	128.3	129.5	131.0	132.0
	MVAr	12.9	47.8	33.8	33.8	29.5	25.8	32.8	32.9	33.0	32.8	32.8	33.0	33.3	33.6	34.0	34.3
50% POE	**MVA**	**125.2**	**130.8**	**129.3**	**128.8**	**127.8**	**126.6**	**130.8**	**131.0**	**131.3**	**130.5**	**130.7**	**131.3**	**132.6**	**133.8**	**135.3**	**136.4**
	PF	0.995	0.931	0.965	0.965	0.973	0.979	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968

6.6 Liverpool Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**12.4**	**18.1**	**16.3**	**14.9**	**14.1**	**15.7**										
Denham Court	MW	7.6	16.4	14.7	12.8	11.9	13.9	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
	MVAr	9.9	7.6	7.0	7.7	7.7	8.2	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
10% POE	**MVA**	**12.4**	**18.1**	**16.3**	**14.9**	**14.1**	**16.1**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**
	PF	0.610	0.906	0.902	0.855	0.840	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
	MW	7.6	16.4	14.7	12.8	11.9	13.9	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
	MVAr	9.9	7.6	7.0	7.7	7.7	8.2	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
50% POE	**MVA**	**12.4**	**18.1**	**16.3**	**14.9**	**14.1**	**16.1**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**	**15.7**
	PF	0.610	0.906	0.902	0.855	0.840	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
Actual	**MVA**	**42.7**	**36.2**	**37.4**	**40.3**	**35.3**	**31.8**										
Liverpool	MW	40.9	34.9	36.0	39.2	34.3	31.1	30.6	30.1	29.9	29.4	29.2	29.2	29.4	29.5	29.8	30.0
132kV	MVAr	12.4	9.8	10.0	9.6	8.2	6.6	8.0	7.9	7.8	7.7	7.6	7.6	7.7	7.7	7.8	7.9
10% POE	**MVA**	**42.7**	**36.2**	**37.4**	**40.3**	**35.3**	**31.8**	**31.6**	**31.1**	**30.9**	**30.4**	**30.2**	**30.2**	**30.4**	**30.5**	**30.8**	**31.0**
	PF	0.957	0.962	0.964	0.971	0.972	0.978	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
	MW	40.9	34.9	36.0	39.2	34.3	31.1	30.6	30.1	29.9	29.4	29.2	29.2	29.4	29.5	29.8	30.0
	MVAr	12.4	9.8	10.0	9.6	8.2	6.6	8.0	7.9	7.8	7.7	7.6	7.6	7.7	7.7	7.8	7.9
50% POE	**MVA**	**42.7**	**36.2**	**37.4**	**40.3**	**35.3**	**31.8**	**31.6**	**31.1**	**30.9**	**30.4**	**30.2**	**30.2**	**30.4**	**30.5**	**30.8**	**31.0**
	PF	0.957	0.962	0.964	0.971	0.972	0.978	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
Actual	**MVA**	**179.6**	**157.7**	**191.9**	**174.8**	**151.9**	**169.8**										
Liverpool TS	MW	162.3	165.5	172.6	172.8	169.8	174.1	176.6	204.1	205.9	214.9	216.4	219.0	222.2	225.1	228.5	231.8
	MVAr	24.7	24.5	43.8	13.4	34.4	31.4	31.9	36.9	37.2	38.8	39.1	39.5	40.1	40.7	41.3	41.9
10% POE	**MVA**	**164.2**	**167.3**	**178.1**	**173.3**	**173.3**	**176.9**	**179.4**	**207.4**	**209.3**	**218.3**	**219.9**	**222.5**	**225.8**	**228.8**	**232.2**	**235.6**
	PF	0.989	0.989	0.969	0.997	0.980	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
	MW	149.3	151.5	155.7	153.7	153.0	157.5	166.4	193.9	195.7	204.7	206.3	208.8	212.1	215.0	218.4	221.7
	MVAr	22.7	22.4	39.5	11.9	31.0	28.5	30.0	35.0	35.3	37.0	37.3	37.7	38.3	38.8	39.4	40.0
50% POE	**MVA**	**151.0**	**153.2**	**160.6**	**154.2**	**156.2**	**160.1**	**169.1**	**197.0**	**198.9**	**208.0**	**209.6**	**212.2**	**215.5**	**218.5**	**222.0**	**225.3**
	PF	0.989	0.989	0.969	0.997	0.980	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
	MVA	**194.0**	**179.4**	**174.7**	**198.2**	**194.4**	**186.0**										
West	MW	202.9	198.0	211.2	197.1	209.0	219.8	247.3	261.9	281.5	283.9	294.1	306.0	317.5	327.2	336.0	345.0
Liverpool	MVAr	1.6	0.7	15.1	7.0	5.0	0.1	8.5	9.0	9.6	9.7	10.1	10.5	10.9	11.2	11.5	11.8
10% POE	**MVA**	**202.9**	**198.0**	**211.7**	**197.3**	**209.1**	**219.8**	**247.4**	**262.0**	**281.6**	**284.0**	**294.2**	**306.2**	**317.6**	**327.4**	**336.2**	**345.2**
	PF	1.000	1.000	0.997	0.999	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	179.8	175.2	189.5	176.3	188.6	198.9	228.4	243.0	262.6	265.1	275.3	287.3	298.7	308.6	317.5	326.6
	MVAr	1.4	0.6	13.5	6.3	4.5	0.1	7.8	8.3	9.0	9.1	9.4	9.8	10.2	10.5	10.9	11.2
50% POE	**MVA**	**179.8**	**175.2**	**190.0**	**176.4**	**188.6**	**198.9**	**228.5**	**243.1**	**262.8**	**265.2**	**275.5**	**287.5**	**298.9**	**308.8**	**317.7**	**326.8**
	PF	1.000	1.000	0.997	0.999	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Actual	**MVA**	**428.8**	**391.4**	**420.2**	**428.2**	**395.7**	**403.3**										
Undiversified	MW	413.7	414.7	434.5	421.9	425.1	438.8	467.9	509.5	530.8	541.6	553.2	567.7	582.5	595.4	607.8	620.3
	MVAr	48.5	42.7	75.9	37.8	55.4	46.4	56.3	61.7	62.6	64.2	64.8	65.6	66.6	67.5	68.5	69.5
10% POE	**MVA**	**422.2**	**419.6**	**443.4**	**425.9**	**431.8**	**444.5**	**474.1**	**516.1**	**537.5**	**548.4**	**560.0**	**574.5**	**589.4**	**602.4**	**614.9**	**627.5**
	PF	0.980	0.988	0.980	0.991	0.984	0.987	0.987	0.987	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.989
	MW	377.6	378.0	395.9	381.9	387.8	401.4	438.8	480.4	501.7	512.6	524.3	538.8	553.6	566.6	579.2	591.8
	MVAr	46.3	40.5	70.0	35.5	51.5	43.4	53.8	59.2	60.1	61.7	62.3	63.2	64.2	65.1	66.1	67.0
50% POE	**MVA**	**386.0**	**382.7**	**404.3**	**385.8**	**394.2**	**406.9**	**444.8**	**486.9**	**508.3**	**519.3**	**531.0**	**545.5**	**560.4**	**573.4**	**586.1**	**598.8**
	PF	0.978	0.988	0.979	0.990	0.984	0.986	0.986	0.987	0.987	0.987	0.987	0.988	0.988	0.988	0.988	0.988
Actual	**MVA**	**491.7**	**441.8**	**459.5**	**451.3**	**422.0**	**323.5**										
Diversified	MW	425.3	417.6	445.2	430.6	449.5	389.7	452.7	493.0	513.6	524.0	535.2	549.3	563.6	576.1	588.1	600.2
(Meter)	MVAr	48.1	0.0	120.6	59.1	111.8	67.9	81.4	88.7	92.4	94.3	96.3	98.8	101.4	103.6	105.8	108.0
10% POE	**MVA**	**428.0**	**417.6**	**461.2**	**434.6**	**463.2**	**395.6**	**460.0**	**500.9**	**521.8**	**532.4**	**543.8**	**558.1**	**572.7**	**585.3**	**597.5**	**609.9**
	PF	0.994	1.000	0.965	0.991	0.970	0.985	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984
	MW	375.0	368.7	393.0	380.1	400.8	340.9	424.6	464.9	485.5	496.0	507.3	521.3	535.7	548.2	560.4	572.6
	MVAr	42.4	0.0	106.5	52.2	99.6	59.4	76.4	83.6	87.3	89.2	91.3	93.8	96.4	98.6	100.8	103.0
50% POE	**MVA**	**377.4**	**368.7**	**407.1**	**383.7**	**413.0**	**346.1**	**431.4**	**472.3**	**493.3**	**504.0**	**515.4**	**529.7**	**544.3**	**557.1**	**569.4**	**581.8**
	PF	0.994	1.000	0.965	0.991	0.970	0.985	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984	0.984

6.7 Macarthur 66kV Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	MVA	**173.2**	**161.0**	**169.0**	**147.2**	**144.5**	**152.4**										
Macarthur	MW	141.2	167.5	164.5	160.3	160.9	176.4	160.0	172.0	175.3	178.9	183.7	190.2	199.1	210.3	218.8	225.7
66kV	MVAr	36.9	9.9	37.1	13.1	25.7	17.1	26.3	28.2	28.8	29.4	30.1	31.2	32.7	34.5	35.9	37.0
10% POE	**MVA**	**145.9**	**167.8**	**168.6**	**160.8**	**163.0**	**177.2**	**162.2**	**174.3**	**177.7**	**181.3**	**186.2**	**192.7**	**201.8**	**213.1**	**221.7**	**228.7**
	PF	0.968	0.998	0.976	0.997	0.988	0.995	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
	MW	124.7	147.0	143.4	143.1	144.2	160.7	148.2	160.2	163.5	167.1	171.9	178.4	187.4	198.6	207.3	214.4
	MVAr	32.6	8.7	32.3	11.7	23.0	15.6	24.3	26.3	26.8	27.4	28.2	29.3	30.7	32.6	34.0	35.2
50% POE	**MVA**	**128.9**	**147.2**	**147.0**	**143.6**	**146.0**	**161.4**	**150.2**	**162.4**	**165.7**	**169.4**	**174.2**	**180.8**	**189.9**	**201.2**	**210.0**	**217.2**
	PF	0.968	0.998	0.976	0.997	0.988	0.995	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987

6.8 Macarthur 132kV Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**17.9**	**35.7**	**45.7**	**70.1**	**83.6**	**87.5**										
Macarthur	MW	17.6	35.0	45.1	68.9	84.0	89.5	112.4	135.4	153.6	173.6	202.3	226.9	254.4	282.6	308.2	333.7
132kV	MVAr	3.1	7.0	6.5	11.9	13.6	11.7	32.3	39.3	44.7	50.8	59.6	67.1	75.5	84.2	92.0	99.8
10% POE	**MVA**	**17.9**	**35.7**	**45.7**	**70.1**	**85.4**	**90.5**	**117.4**	**141.5**	**160.5**	**181.4**	**211.6**	**237.3**	**266.1**	**295.7**	**322.5**	**349.3**
	PF	0.984	0.980	0.987	0.984	0.984	0.988	0.958	0.957	0.957	0.957	0.956	0.956	0.956	0.956	0.956	0.955
	MW	17.6	35.0	45.1	68.9	82.7	88.1	111.1	134.1	152.3	172.3	201.0	225.6	253.1	281.3	306.9	332.5
	MVAr	3.1	7.0	6.5	11.9	13.2	11.3	31.8	38.9	44.3	50.3	59.2	66.7	75.1	83.8	91.5	99.4
50% POE	**MVA**	**17.9**	**35.7**	**45.7**	**70.1**	**84.0**	**89.2**	**116.0**	**140.1**	**159.1**	**180.0**	**210.2**	**235.9**	**264.8**	**294.3**	**321.1**	**348.0**
	PF	0.984	0.980	0.987	0.984	0.984	0.989	0.958	0.957	0.957	0.957	0.956	0.956	0.956	0.956	0.956	0.955
Actual	**MVA**	**182.7**	**144.5**	**200.7**	**222.2**	**188.1**	**180.6**										
Nepean#	MW	158.8	135.9	184.1	202.9	177.8	181.0	198.1	202.8	203.9	205.4	211.1	215.4	222.8	226.5	228.0	229.5
	MVAr	33.9	44.7	49.2	40.5	19.6	22.9	45.0	46.1	46.4	46.7	48.0	49.0	50.7	51.6	51.9	52.3
10% POE	**MVA**	**162.8**	**143.0**	**191.9**	**207.7**	**178.9**	**182.5**	**203.1**	**207.9**	**209.2**	**210.7**	**216.5**	**220.9**	**228.5**	**232.3**	**233.8**	**235.4**
	PF	0.975	0.950	0.960	0.977	0.994	0.991	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
	MW	147.6	124.7	170.0	186.1	163.7	166.5	183.2	188.0	189.2	190.7	196.5	200.8	208.2	212.3	213.9	215.5
	MVAr	32.1	41.0	44.5	36.4	18.0	21.3	41.6	42.7	43.0	43.3	44.6	45.6	47.3	48.3	48.6	49.0
50% POE	**MVA**	**151.4**	**131.2**	**177.0**	**190.4**	**164.7**	**167.9**	**187.9**	**192.8**	**194.1**	**195.6**	**201.5**	**205.9**	**213.5**	**217.7**	**219.3**	**221.0**
	PF	0.974	0.950	0.960	0.977	0.994	0.991	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
	MVA	**200.6**	**180.2**	**246.4**	**292.3**	**271.7**	**268.1**										
Undiversified	MW	176.4	170.9	229.3	271.9	261.8	270.4	310.5	338.2	357.5	379.0	413.4	442.2	477.2	509.0	536.1	563.3
	MVAr	37.0	51.6	55.7	52.4	33.2	34.6	77.3	85.4	91.1	97.5	107.7	116.1	126.3	135.8	143.9	152.0
10% POE	**MVA**	**180.7**	**178.7**	**237.6**	**277.8**	**264.3**	**273.1**	**320.5**	**349.4**	**369.6**	**392.1**	**428.1**	**458.2**	**494.6**	**527.9**	**556.3**	**584.7**
	PF	0.976	0.956	0.965	0.979	0.991	0.990	0.969	0.968	0.967	0.967	0.966	0.965	0.965	0.964	0.964	0.963
	MW	165.2	159.7	215.1	255.0	246.4	254.6	294.3	322.1	341.5	363.0	397.5	426.4	461.3	493.6	520.8	547.9
	MVAr	35.2	48.0	51.0	48.3	31.2	32.6	73.4	81.6	87.3	93.6	103.8	112.3	122.5	132.1	140.2	148.4
50% POE	**MVA**	**169.3**	**167.0**	**222.7**	**260.5**	**248.7**	**257.1**	**303.9**	**332.9**	**353.2**	**375.6**	**411.7**	**441.8**	**478.3**	**512.0**	**540.5**	**568.9**
	PF	0.975	0.956	0.966	0.979	0.991	0.990	0.969	0.968	0.967	0.966	0.966	0.965	0.964	0.964	0.964	0.963
	MVA	**233.5**	**208.2**	**154.1**	**172.1**	**156.8**	**183.5**										
Diversified	MW	190.2	192.1	177.9	185.5	182.9	203.5	225.2	245.3	259.3	274.9	299.9	320.8	346.1	369.2	388.9	408.6
	MVAr	17.2	35.8	38.6	21.5	29.6	45.1	43.6	47.5	50.3	53.3	58.1	62.2	67.1	71.6	75.4	79.2
10% POE	**MVA**	**191.0**	**195.4**	**182.0**	**186.7**	**185.2**	**208.4**	**229.4**	**249.9**	**264.2**	**280.0**	**305.5**	**326.8**	**352.6**	**376.1**	**396.1**	**416.2**
	PF	0.996	0.983	0.977	0.993	0.987	0.976	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982
	MW	177.8	180.3	165.4	166.2	164.7	184.7	213.5	233.7	247.7	263.3	288.3	309.3	334.6	358.0	377.7	397.5
	MVAr	16.1	33.6	35.9	19.3	26.7	40.9	41.4	45.3	48.0	51.0	55.9	59.9	64.9	69.4	73.2	77.0
50% POE	**MVA**	**178.6**	**183.4**	**169.2**	**167.3**	**166.9**	**189.2**	**217.5**	**238.0**	**252.3**	**268.2**	**293.7**	**315.0**	**340.8**	**364.7**	**384.8**	**404.9**
	PF	0.996	0.983	0.977	0.993	0.987	0.976	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982
Nepean	MW							-43.0	-43.0	-43.0	-43.0	-43.0	-43.0	-43.0	-43.0	-43.0	-43.0
	MVAr							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Generation	**MVA**							**-43.0**	**-43.0**	**-43.0**	**-43.0**	**-43.0**	**-43.0**	**-43.0**	**-43.0**	**-43.0**	**-43.0**
	PF							0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: # Nepean Values are calculated from the summation of the transformer output from the 33kV, 66kV busbar and Generation

6.9 Marulan Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**71.9**	**69.3**	**74.1**	**78.3**	**72.4**	**72.0**										
Fairfax Lane	MW	71.8	69.3	73.6	78.3	72.4	72.0	88.9	92.9	96.0	98.2	100.3	102.5	104.7	106.9	109.1	111.0
	MVAr	3.2	0.2	8.3	0.5	2.0	3.1	4.8	5.0	5.1	5.3	5.4	5.5	5.6	5.7	5.9	6.0
10% POE	**MVA**	**71.9**	**69.3**	**74.0**	**78.3**	**72.4**	**72.0**	**89.0**	**93.0**	**96.2**	**98.4**	**100.4**	**102.7**	**104.9**	**107.0**	**109.2**	**111.2**
	PF	0.999	1.000	0.994	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
	MW	71.8	69.3	73.6	78.3	72.4	72.0	83.4	87.5	90.7	92.9	94.9	97.2	99.4	101.5	103.7	105.7
	MVAr	3.2	0.2	8.3	0.5	2.0	3.1	4.5	4.7	4.9	5.0	5.1	5.2	5.3	5.4	5.6	5.7
50% POE	**MVA**	**71.9**	**69.3**	**74.0**	**78.3**	**72.4**	**72.0**	**83.6**	**87.7**	**90.8**	**93.0**	**95.1**	**97.3**	**99.5**	**101.7**	**103.9**	**105.8**
	PF	0.999	1.000	0.994	1.000	1.000	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
Actual	**MVA**	**79.0**	**74.4**	**74.8**	**83.8**	**74.5**	**73.8**										
Diversified	MW	73.8	70.5	74.8	80.1	74.2	73.8	88.9	92.9	96.0	98.2	100.3	102.5	104.7	106.9	109.1	111.0
	MVAr	28.2	23.9	25.4	24.6	6.3	0.0	24.7	25.8	26.7	27.3	27.9	28.5	29.1	29.7	30.3	30.9
10% POE	**MVA**	**79.0**	**74.4**	**79.0**	**83.8**	**74.5**	**73.8**	**92.3**	**96.4**	**99.7**	**102.0**	**104.1**	**106.4**	**108.7**	**110.9**	**113.2**	**115.3**
	PF	0.934	0.947	0.947	0.956	0.996	1.000	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963
	MW	73.8	70.5	74.8	80.1	74.2	73.8	83.4	87.5	90.7	92.9	94.9	97.2	99.4	101.5	103.7	105.7
	MVAr	28.2	23.9	25.4	24.6	6.3	0.0	23.2	24.3	25.2	25.8	26.4	27.0	27.6	28.2	28.9	29.4
50% POE	**MVA**	**79.0**	**74.4**	**79.0**	**83.8**	**74.5**	**73.8**	**86.6**	**90.9**	**94.1**	**96.4**	**98.5**	**100.9**	**103.2**	**105.4**	**107.7**	**109.7**
	PF	0.934	0.947	0.947	0.956	0.996	1.000	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963	0.963

Note: The combination of having only one Transmission Substation connected to a Bulk Supply Point in an environment of transmission losses, results in a higher load at the Bulk Supply Point than at the Sub-transmission Substation.

6.10 Mount Piper Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**28.4**	**32.1**	**32.8**	**30.0**	**31.4**	**28.3**										
Mount Piper	MW	26.7	30.6	31.2	28.4	29.9	27.1	41.3	41.3	43.6	43.6	43.6	43.6	43.7	43.8	43.9	44.0
	MVAr	9.7	9.9	10.2	9.8	9.8	8.1	13.7	13.7	14.5	14.5	14.5	14.5	14.5	14.5	14.6	14.6
10% POE	**MVA**	**28.4**	**32.1**	**32.8**	**30.0**	**31.4**	**28.3**	**43.5**	**43.5**	**45.9**	**45.9**	**45.9**	**46.0**	**46.1**	**46.1**	**46.2**	**46.3**
	PF	0.940	0.951	0.951	0.945	0.950	0.958	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949
	MW	26.7	30.6	31.2	28.4	29.9	27.1	41.3	41.3	43.6	43.6	43.6	43.6	43.7	43.8	43.9	44.0
	MVAr	9.7	9.9	10.2	9.8	9.8	8.1	13.7	13.7	14.5	14.5	14.5	14.5	14.5	14.5	14.6	14.6
50% POE	**MVA**	**28.4**	**32.1**	**32.8**	**30.0**	**31.4**	**28.3**	**43.5**	**43.5**	**45.9**	**45.9**	**45.9**	**46.0**	**46.1**	**46.1**	**46.2**	**46.3**
	PF	0.940	0.951	0.951	0.945	0.950	0.958	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949	0.949

6.11 Nepean 132kV Sub-transmission Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**52.9**	**38.1**	**41.0**	**43.7**	**40.0**	**37.3**										
Nepean 33kV	MW	50.3	36.2	41.0	41.0	39.7	36.6	38.5	38.8	38.8	38.4	38.3	38.5	38.8	39.1	39.5	39.9
Diversified	MVAr	16.5	11.9	1.5	0.8	4.4	7.3	8.1	8.2	8.1	8.1	8.1	8.1	8.2	8.2	8.3	8.4
10% POE	**MVA**	**52.9**	**38.1**	**41.0**	**41.0**	**40.0**	**37.3**	**39.4**	**39.7**	**39.6**	**39.2**	**39.2**	**39.3**	**39.6**	**39.9**	**40.4**	**40.8**
	PF	0.950	0.950	0.999	1.000	0.994	0.981	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
	MW	50.3	36.2	41.0	41.0	39.7	36.6	38.3	38.6	38.5	38.1	38.1	38.2	38.5	38.8	39.3	39.7
	MVAr	16.5	11.9	1.5	0.8	4.4	7.3	8.0	8.1	8.1	8.0	8.0	8.0	8.1	8.2	8.3	8.3
50% POE	**MVA**	**52.9**	**38.1**	**41.0**	**41.0**	**40.0**	**37.3**	**39.1**	**39.4**	**39.4**	**39.0**	**38.9**	**39.1**	**39.4**	**39.7**	**40.1**	**40.5**
	PF	0.950	0.950	0.999	1.000	0.994	0.981	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979	0.979
Actual	**MVA**	**129.8**	**106.4**	**159.7**	**178.5**	**148.1**	**143.3**										
Nepean 66kV	MW	108.5	99.7	143.2	161.9	138.1	144.4	159.5	163.9	165.2	167.0	172.7	176.9	184.0	187.4	188.5	189.6
Diversified#	MVAr	17.4	32.8	47.7	39.7	15.2	15.6	36.9	37.9	38.2	38.6	40.0	40.9	42.6	43.3	43.6	43.9
10% POE	**MVA**	**109.9**	**104.9**	**150.9**	**166.7**	**138.9**	**145.2**	**163.7**	**168.3**	**169.5**	**171.4**	**177.3**	**181.6**	**188.8**	**192.3**	**193.5**	**194.6**
	PF	0.987	0.950	0.949	0.971	0.994	0.994	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974
	MW	97.3	88.5	129.0	145.1	124.0	129.9	144.9	149.5	150.7	152.6	158.4	162.5	169.6	173.4	174.6	175.8
	MVAr	15.6	29.1	43.0	35.6	13.6	14.0	33.5	34.6	34.9	35.3	36.6	37.6	39.2	40.1	40.4	40.7
50% POE	**MVA**	**98.5**	**93.1**	**136.0**	**149.4**	**124.7**	**130.6**	**148.7**	**153.4**	**154.7**	**156.6**	**162.6**	**166.8**	**174.1**	**178.0**	**179.2**	**180.4**
	PF	0.987	0.950	0.949	0.971	0.994	0.994	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974	0.974
Actual	**MVA**	**182.7**	**144.5**	**200.7**	**222.2**	**188.1**	**180.6**										
Nepean 33 +	MW	158.8	135.9	184.1	202.9	177.8	181.0	198.1	202.8	203.9	205.4	211.1	215.4	222.8	226.5	228.0	229.5
Undiversified	MVAr	33.9	44.7	49.2	40.5	19.6	22.9	45.0	46.1	46.4	46.7	48.0	49.0	50.7	51.6	51.9	52.3
10% POE	**MVA**	**162.8**	**143.0**	**191.9**	**207.7**	**178.9**	**182.5**	**203.1**	**207.9**	**209.2**	**210.7**	**216.5**	**220.9**	**228.5**	**232.3**	**233.8**	**235.4**
	PF	0.975	0.950	0.960	0.977	0.994	0.991	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
	MW	147.6	124.7	170.0	186.1	163.7	166.5	183.2	188.0	189.2	190.7	196.5	200.8	208.2	212.3	213.9	215.5
	MVAr	32.1	41.0	44.5	36.4	18.0	21.3	41.6	42.7	43.0	43.3	44.6	45.6	47.3	48.3	48.6	49.0
50% POE	**MVA**	**151.4**	**131.2**	**177.0**	**190.4**	**164.7**	**167.9**	**187.9**	**192.8**	**194.1**	**195.6**	**201.5**	**205.9**	**213.5**	**217.7**	**219.3**	**221.0**
	PF	0.974	0.950	0.960	0.977	0.994	0.991	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975

Note: # Refers to the metering values plus the generation output

6.12 Regentville Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	148.9	142.6	146.3	149.5	136.5	124.0										
Penrith	MW	135.0	143.8	154.5	150.8	154.4	158.4	162.1	166.3	168.7	167.8	167.6	168.1	169.2	170.2	171.6	173.1
	MVAr	43.2	48.7	39.2	34.9	37.2	38.9	39.8	40.9	41.4	41.2	41.2	41.3	41.6	41.8	42.2	42.5
10% POE	MVA	141.7	151.8	159.4	154.7	158.8	163.1	166.9	171.3	173.7	172.8	172.6	173.1	174.2	175.2	176.7	178.2
	PF	0.952	0.947	0.969	0.974	0.972	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
	MW	123.6	132.6	144.6	136.5	140.0	144.0	149.4	153.6	156.1	155.2	155.1	155.6	156.7	157.6	159.2	160.7
	MVAr	39.5	44.9	36.7	31.6	33.7	35.4	36.7	37.7	38.3	38.1	38.1	38.2	38.5	38.7	39.1	39.5
50% POE	MVA	129.8	140.0	149.2	140.1	144.0	148.2	153.8	158.2	160.7	159.9	159.7	160.2	161.3	162.3	163.9	165.5
	PF	0.952	0.947	0.969	0.974	0.972	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
Actual	MVA	114.4	109.2	113.8	108.7	100.4	95.7										
Regentville	MW	109.5	109.0	119.2	108.6	107.1	110.0	122.6	132.2	140.5	140.7	147.8	155.6	162.2	168.9	175.1	181.8
132kV	MVAr	30.1	29.2	31.3	18.6	14.5	11.8	24.2	26.4	28.4	28.3	30.2	32.2	34.0	35.8	37.5	39.3
10% POE	MVA	113.7	113.0	123.5	110.4	108.7	111.0	125.5	135.3	143.8	144.1	151.4	159.5	166.3	173.3	179.7	186.6
	PF	0.963	0.965	0.965	0.984	0.985	0.991	0.977	0.977	0.977	0.977	0.976	0.976	0.975	0.975	0.975	0.974
	MW	99.3	98.7	110.1	97.6	96.3	99.0	111.7	121.2	129.5	129.8	136.9	144.7	151.3	158.0	164.3	170.9
	MVAr	27.3	26.5	28.9	16.7	12.8	10.5	22.2	24.3	26.3	26.3	28.1	30.2	31.9	33.7	35.4	37.3
50% POE	MVA	103.1	102.3	114.0	99.2	97.7	99.9	114.3	124.1	132.6	132.9	140.3	148.3	155.2	162.1	168.6	175.5
	PF	0.963	0.965	0.965	0.984	0.986	0.991	0.977	0.977	0.976	0.977	0.976	0.976	0.975	0.975	0.974	0.974
Actual	MVA	61.1	55.0	54.7	58.9	44.8	38.8										
Warrimoo	MW	50.9	51.5	54.3	54.0	57.1	56.2	53.2	53.3	54.1	53.7	53.8	54.1	54.5	55.0	55.7	56.4
	MVAr	17.1	15.6	11.7	11.6	10.1	7.6	12.7	12.7	12.9	12.8	12.8	12.9	13.0	13.1	13.3	13.5
10% POE	MVA	53.7	53.8	55.5	55.2	58.0	56.7	54.7	54.8	55.6	55.2	55.3	55.6	56.1	56.6	57.3	58.0
	PF	0.948	0.957	0.978	0.978	0.985	0.991	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
	MW	44.2	44.8	46.4	45.4	48.7	48.1	45.6	45.7	46.5	46.1	46.2	46.5	47.0	47.4	48.1	48.8
	MVAr	14.8	13.5	10.0	9.7	8.6	6.5	10.9	10.9	11.1	11.0	11.0	11.1	11.2	11.3	11.5	11.6
50% POE	MVA	46.6	46.8	47.4	46.5	49.4	48.6	46.9	47.0	47.8	47.4	47.5	47.8	48.3	48.8	49.5	50.2
	PF	0.948	0.957	0.978	0.978	0.985	0.991	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
Actual	MVA	324.4	306.7	314.7	317.0	281.8	258.5										
Undiversified	MW	295.3	304.2	327.9	313.4	318.6	324.6	337.9	351.8	363.2	362.2	369.2	377.8	385.9	394.1	402.5	411.3
	MVAr	90.3	93.4	82.3	65.1	61.8	58.2	76.7	79.9	82.7	82.3	84.2	86.4	88.5	90.7	92.9	95.3
10% POE	MVA	309.1	318.5	338.3	320.3	325.5	330.8	347.1	361.4	373.2	372.0	379.3	388.2	396.6	405.0	413.7	422.8
	PF	0.956	0.955	0.969	0.978	0.979	0.981	0.974	0.974	0.973	0.974	0.973	0.973	0.973	0.973	0.973	0.973
	MW	267.0	276.1	301.1	279.5	285.0	291.1	306.7	320.6	332.2	331.1	338.2	346.8	354.9	363.1	371.6	380.5
	MVAr	81.7	84.9	75.7	58.0	55.2	52.3	69.8	73.0	75.7	75.4	77.2	79.5	81.6	83.8	86.0	88.4
50% POE	MVA	279.5	289.1	310.7	285.7	291.2	296.7	315.0	329.3	341.2	340.1	347.5	356.3	364.8	373.2	382.0	391.2
	PF	0.956	0.955	0.969	0.978	0.979	0.981	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
Actual	MVA	353.0	307.4	316.0	327.8	302.2	250.0										
Diversified*	MW	306.8	309.3	329.2	329.3	340.3	345.1	337.9	351.8	363.2	362.2	369.2	377.8	385.9	394.1	402.5	411.3
(Meter)	MVAr	80.8	81.5	86.7	86.8	89.7	23.1	80.4	83.7	86.4	86.1	87.8	89.8	91.8	93.7	95.7	97.8
10% POE	MVA	317.3	319.8	340.4	340.5	351.9	344.3	347.4	361.6	373.4	372.3	379.5	388.3	396.7	405.1	413.7	422.7
	PF	0.967	0.967	0.967	0.967	0.967	1.002	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973
	MW	280.9	283.7	296.4	293.0	304.2	309.9	306.7	320.6	332.2	331.1	338.2	346.8	354.9	363.1	371.6	380.5
	MVAr	74.0	74.7	78.1	77.2	80.1	20.7	72.9	76.2	79.0	78.7	80.4	82.5	84.4	86.3	88.4	90.5
50% POE	MVA	290.5	293.3	306.5	303.0	314.6	309.2	315.2	329.5	341.4	340.3	347.6	356.4	364.8	373.2	381.9	391.1
	PF	0.967	0.967	0.967	0.967	0.967	1.002	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973	0.973

Note: * Regentville large diversified values are due to contributions from Mt Druitt

6.13 Sydney North Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	38.2	36.1	40.7	43.6	40.9	35.2										
Sydney North	MW	38.1	36.5	38.5	40.3	41.2	41.8	44.5	45.1	45.4	45.0	44.9	44.9	45.0	45.1	45.4	45.6
	MVAr	3.8	3.7	13.4	25.3	24.7	4.2	16.3	16.5	16.6	16.5	16.4	16.4	16.5	16.5	16.6	16.7
10% POE	MVA	38.3	36.7	40.8	47.6	48.0	42.0	47.3	48.0	48.3	47.9	47.8	47.8	47.9	48.1	48.3	48.6
	PF	0.995	0.995	0.945	0.847	0.858	0.995	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939
	MW	34.2	33.2	34.9	35.7	36.6	37.1	39.5	40.1	40.5	40.1	40.1	40.1	40.2	40.3	40.6	40.8
	MVAr	3.4	3.3	12.1	22.4	21.9	3.7	14.5	14.7	14.8	14.7	14.7	14.7	14.7	14.8	14.8	14.9
50% POE	MVA	34.3	33.3	36.9	42.1	42.7	37.3	42.1	42.8	43.1	42.7	42.7	42.7	42.8	42.9	43.2	43.5
	PF	0.995	0.995	0.945	0.847	0.858	0.995	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939	0.939

6.14 Sydney West Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	141.4	164.3	156.1	131.1	122.2	113.2										
Baulkham Hills	MW	137.9	146.7	141.3	135.0	140.0	139.6	136.7	113.9	117.3	117.3	117.4	117.8	118.6	119.4	120.7	122.0
	MVAr	29.4	32.7	30.0	26.0	30.6	40.1	30.9	25.8	26.5	26.5	26.5	26.6	26.8	27.0	27.3	27.6
10% POE	MVA	141.0	150.3	144.4	137.5	143.3	145.2	140.1	116.8	120.2	120.3	120.3	120.8	121.6	122.4	123.7	125.1
	PF	0.978	0.976	0.978	0.982	0.977	0.961	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
	MW	119.2	128.7	119.6	115.5	121.4	121.2	124.8	102.0	105.4	105.5	105.5	106.0	106.8	107.6	108.9	110.2
	MVAr	25.4	28.7	25.4	22.2	26.5	34.8	28.2	23.1	23.8	23.8	23.9	24.0	24.2	24.3	24.6	24.9
50% POE	MVA	121.9	131.8	122.3	117.6	124.3	126.1	128.0	104.6	108.1	108.1	108.2	108.7	109.5	110.4	111.7	113.0
	PF	0.978	0.976	0.978	0.982	0.977	0.961	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
Actual	MVA	279.6	233.7	213.5	221.6	238.2	239.0										
Blacktown	MW	270.8	259.8	276.2	242.3	254.7	255.9	271.7	290.6	301.4	301.7	304.1	304.4	305.8	307.1	309.3	311.5
	MVAr	38.9	11.5	50.9	28.4	9.1	37.4	33.7	36.0	37.4	37.4	37.7	37.7	37.9	38.1	38.4	38.6
10% POE	MVA	273.5	260.1	280.8	243.9	254.8	258.6	273.7	292.8	303.7	304.0	306.5	306.7	308.1	309.5	311.7	313.9
	PF	0.990	0.999	0.983	0.993	0.999	0.989	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
	MW	247.3	238.3	253.1	220.1	233.0	234.1	250.7	269.5	280.2	280.5	283.0	283.4	284.8	286.1	288.3	290.4
	MVAr	35.5	10.6	46.6	25.8	8.3	34.2	31.1	33.4	34.7	34.8	35.1	35.1	35.3	35.5	35.7	36.0
50% POE	MVA	249.8	238.5	257.3	221.6	233.1	236.6	252.7	271.5	282.3	282.6	285.1	285.5	286.9	288.3	290.5	292.7
	PF	0.990	0.999	0.983	0.993	0.999	0.989	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Actual	MVA	231.8	205.2	235.2	259.8	224.4	220.7										
Carlingford	MW	224.5	185.7	207.1	230.4	220.0	223.9	227.1	231.5	234.7	235.6	238.0	241.3	245.5	249.5	254.1	258.2
	MVAr	17.3	0.0	51.3	19.8	0.1	13.2	25.6	26.1	26.4	26.5	26.8	27.2	27.7	28.1	28.6	29.1
10% POE	MVA	225.2	185.7	213.3	231.3	220.0	224.3	228.6	233.0	236.1	237.1	239.5	242.8	247.1	251.1	255.7	259.8
	PF	0.997	1.000	0.971	0.996	1.000	0.998	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
	MW	196.9	166.9	188.3	200.2	197.0	201.5	203.8	208.2	211.5	212.4	214.9	218.2	222.6	226.7	231.3	235.5
	MVAr	15.1	0.0	46.7	17.2	0.1	11.9	23.0	23.5	23.8	23.9	24.2	24.6	25.1	25.5	26.1	26.5
50% POE	MVA	197.4	166.9	194.0	200.9	197.0	201.8	205.1	209.6	212.9	213.8	216.3	219.6	224.0	228.2	232.8	237.0
	PF	0.997	1.000	0.971	0.996	1.000	0.998	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994	0.994
Actual	MVA	150.7	149.0	154.6	156.3	129.9	141.3										
Mount Druitt	MW	156.4	134.5	137.3	148.5	145.3	154.7	175.2	180.3	186.6	176.9	178.2	179.1	180.6	181.8	183.4	184.6
	MVAr	5.8	8.7	16.3	13.4	4.8	6.6	12.5	12.9	13.3	12.6	12.7	12.8	12.9	13.0	13.1	13.2
10% POE	MVA	156.5	134.8	138.3	149.1	145.4	154.8	175.7	180.8	187.1	177.4	178.7	179.5	181.1	182.3	183.8	185.1
	PF	0.999	0.998	0.993	0.996	0.999	0.999	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
	MW	144.0	123.7	125.1	132.3	130.4	139.7	159.5	164.4	170.4	161.1	162.4	163.2	164.7	166.0	167.5	168.8
	MVAr	5.4	8.0	14.8	11.9	4.3	6.0	11.4	11.7	12.2	11.5	11.6	11.7	11.8	11.9	12.0	12.1
50% POE	MVA	144.1	124.0	126.0	132.8	130.4	139.8	159.9	164.8	170.9	161.5	162.9	163.6	165.2	166.4	167.9	169.2
	PF	0.999	0.998	0.993	0.996	0.999	0.999	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997
Actual	MVA	475.7	454.7	473.8	469.1	453.4	452.7										
Sydney West 132KV	MW	445.9	441.7	476.2	457.6	464.8	491.6	676.6	843.9	991.4	1163.7	1312.5	1394.2	1429.3	1439.7	1458.3	1464.8
	MVAr	120.5	103.0	89.8	82.0	98.3	52.5	153.3	195.6	247.5	302.0	349.2	374.3	385.4	388.2	394.1	396.0
10% POE	MVA	465.6	457.8	490.6	467.4	480.8	497.0	699.1	872.5	1028.6	1209.4	1365.8	1451.5	1488.3	1499.1	1518.7	1525.4
	PF	0.958	0.965	0.971	0.979	0.967	0.989	0.968	0.967	0.964	0.962	0.961	0.961	0.960	0.960	0.960	0.960
	MW	418.2	415.3	446.4	428.6	438.2	465.2	650.2	817.5	965.2	1137.5	1286.6	1368.4	1403.4	1413.8	1432.5	1438.9
	MVAr	114.5	98.7	86.1	78.0	93.1	49.9	148.5	190.8	242.7	297.2	344.4	369.6	380.7	383.5	389.3	391.2
50% POE	MVA	437.0	430.8	460.5	438.1	453.4	470.2	672.0	845.5	1001.7	1182.6	1339.3	1425.0	1461.8	1472.6	1492.2	1498.9
	PF	0.957	0.964	0.969	0.978	0.967	0.989	0.967	0.967	0.964	0.962	0.961	0.960	0.960	0.960	0.960	0.960

Note: # Refers to the transformer metering plus the generation output

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Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	1279	1207	1233	1238	1168	1167										
Undiversified	MW	1235	1168	1238.1	1213.8	1224.8	1266	1487	1660	1831	1995	2150	2237	2280	2298	2326	2341
	MVAr	212	156	238.3	169.5	143.0	150	256	296	351	405	453	479	491	494	501	504
10% POE	MVA	1262	1189	1267.5	1229.2	1244.4	1280	1517	1696	1876	2048	2211	2301	2346	2364	2394	2409
	PF	0.979	0.983	0.977	0.988	0.984	0.989	0.980	0.979	0.976	0.974	0.973	0.972	0.972	0.972	0.972	0.972
	MW	1125	1073	1132.4	1096.7	1120.0	1162	1389	1562	1733	1897	2053	2139	2182	2200	2228	2244
	MVAr	196	146	219.7	155.1	132.4	137	242	282	337	391	439	465	477	481	488	491
50% POE	MVA	1150	1092	1160.0	1111.0	1138.2	1175	1418	1596	1776	1949	2112	2202	2247	2266	2295	2311
	PF	0.978	0.982	0.976	0.987	0.984	0.989	0.980	0.978	0.976	0.973	0.972	0.971	0.971	0.971	0.971	0.971
Actual	MVA	1236	1181	1301	1288	1110	1177										
Diversified#	MW	1225	1199	1308	1200	1233	1261	1461	1630	1798	1959	2112	2196	2239	2256	2284	2299
(Meter)	MVAr	140	134	457	154	91	245	214	239	263	287	309	321	328	330	334	336
10% POE	MVA	1233	1206	1385	1210	1237	1285	1476	1648	1817	1980	2134	2220	2263	2280	2308	2323
	PF	0.994	0.994	0.944	0.992	0.997	0.982	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	1104	1081	1163	1069	1110	1138	1364	1533	1702	1863	2016	2101	2143	2161	2188	2203
	MVAr	126	121	406	138	82	221	200	224	249	273	295	307	314	316	320	322
50% POE	MVA	1111	1087	1232	1078	1113	1160	1379	1550	1720	1883	2037	2123	2166	2184	2212	2227
	PF	0.994	0.994	0.944	0.992	0.997	0.982	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989

Note: #Refers to the transformer metering values plus the generation output

6.15 Vineyard Bulk Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	MVA	181.0	168.9	172.6	179.1	173.5	146.1										
Hawkesbury	MW	171.4	170.3	179.2	176.9	185.5	184.8	185.2	189.4	198.7	199.8	202.5	205.6	207.4	209.0	211.0	212.9
	MVAr	37.7	24.4	18.1	31.6	38.9	47.6	47.7	48.8	51.2	51.5	52.2	53.0	53.4	53.9	54.4	54.9
10% POE	MVA	175.5	172.1	180.1	179.7	189.5	190.8	191.3	195.6	205.2	206.3	209.1	212.3	214.2	215.8	217.9	219.9
	PF	0.977	0.990	0.995	0.984	0.979	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
	MW	156.5	155.1	160.8	158.3	167.4	166.5	169.8	173.9	183.3	184.4	187.0	190.2	192.1	193.7	195.7	197.6
	MVAr	34.4	22.3	16.2	28.3	35.1	42.9	43.8	44.8	47.2	47.5	48.2	49.0	49.5	49.9	50.4	50.9
50% POE	MVA	160.2	156.7	161.6	160.8	171.0	172.0	175.3	179.6	189.3	190.4	193.1	196.4	198.3	200.0	202.1	204.1
	PF	0.977	0.990	0.995	0.984	0.979	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
Actual	MVA	323.5	305.1	304.1	360.5	323.0	319.2										
Vineyard 132kV	MW	303.2	308.5	337.9	352.7	350.6	356.2	367.0	408.2	460.2	512.5	541.3	572.8	605.0	630.6	657.1	682.7
	MVAr	75.2	67.5	56.2	60.2	49.7	49.3	61.9	72.3	86.4	100.2	107.2	115.3	124.2	131.6	139.2	146.7
10% POE	MVA	312.9	316.7	343.4	357.1	355.6	358.5	373.6	416.5	470.6	525.0	554.8	587.5	621.2	648.0	675.8	702.6
	PF	0.969	0.974	0.984	0.988	0.986	0.994	0.982	0.980	0.978	0.976	0.976	0.975	0.974	0.973	0.972	0.972
	MW	268.7	274.4	300.7	324.5	324.3	329.8	340.6	381.9	433.8	486.3	515.1	546.6	578.9	604.6	631.1	656.7
	MVAr	66.6	60.1	49.9	55.8	46.6	46.1	58.3	68.7	82.8	96.6	103.6	111.7	120.6	128.0	135.7	143.2
50% POE	MVA	273.7	281.7	305.6	328.6	329.0	332.0	346.9	389.9	444.1	498.6	528.4	561.1	594.8	621.7	649.5	676.4
	PF	0.982	0.974	0.984	0.987	0.986	0.993	0.982	0.979	0.977	0.975	0.975	0.974	0.973	0.972	0.972	0.971
Actual	MVA	504.5	474.0	476.7	539.7	496.5	465.2										
Undiversified	MW	474.7	478.8	517.0	529.6	536.1	541.0	552.2	597.6	658.9	712.3	743.8	778.4	812.4	839.6	868.2	895.6
	MVAr	112.9	92.0	74.3	91.8	88.6	96.9	109.6	121.1	137.6	151.7	159.4	168.3	177.6	185.4	193.6	201.6
10% POE	MVA	488.4	488.7	523.5	536.8	545.1	549.3	564.8	612.1	675.8	731.3	763.9	799.9	835.4	863.8	893.7	922.5
	PF	0.972	0.980	0.988	0.987	0.983	0.985	0.978	0.976	0.975	0.974	0.974	0.973	0.973	0.972	0.971	0.971
	MW	425.2	429.5	461.5	482.7	491.7	496.3	510.3	555.8	617.1	670.7	702.2	736.8	771.0	798.3	826.9	854.4
	MVAr	100.9	82.3	66.1	84.0	81.6	89.0	102.1	113.5	130.0	144.1	151.8	160.8	170.1	177.9	186.1	194.1
50% POE	MVA	434.0	438.4	467.3	489.4	500.0	504.0	522.2	569.5	633.3	689.0	721.5	757.5	793.2	821.7	851.7	880.5
	PF	0.980	0.980	0.988	0.986	0.983	0.985	0.977	0.976	0.974	0.973	0.973	0.973	0.972	0.971	0.971	0.970
Actual	MVA	500.8	427.2	482.6	510.6	471.9	446.1										
Diversified (Meter)	MW	474.9	470.7	532.3	498.0	515.9	531.9	525.0	568.1	626.4	677.2	707.1	740.0	772.4	798.2	825.4	851.5
	MVAr	81.5	29.0	30.7	21.2	7.5	37.1	44.5	48.1	53.0	57.3	59.9	62.7	65.4	67.6	69.9	72.1
10% POE	MVA	481.8	471.6	533.2	498.4	515.9	533.2	526.9	570.2	628.6	679.6	709.6	742.7	775.1	801.1	828.3	854.5
	PF	0.986	0.998	0.998	0.999	1.000	0.998	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
	MW	425.7	422.0	474.1	443.1	462.3	477.5	485.2	528.4	586.7	637.6	667.5	700.5	733.0	758.9	786.1	812.3
	MVAr	73.1	26.0	27.3	18.8	6.7	33.3	41.1	44.7	49.7	54.0	56.5	59.3	62.1	64.3	66.6	68.8
50% POE	MVA	432.0	422.8	474.9	443.5	462.4	478.6	486.9	530.3	588.8	639.9	669.9	703.0	735.6	761.6	788.9	815.2
	PF	0.986	0.998	0.998	0.999	1.000	0.998	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996

6.16 Wallerawang 66kV Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**36.3**	**20.5**	**33.2**	**35.3**	**34.1**	**27.4**										
Wallerawang 66kV	MW	19.2	19.2	31.9	31.9	32.9	26.6	23.0	23.9	24.0	23.7	23.8	24.0	24.2	24.5	24.9	25.3
	MVAr	7.3	7.3	9.1	10.3	8.9	6.4	5.5	5.7	5.8	5.7	5.7	5.8	5.8	5.9	6.0	6.1
10% POE	**MVA**	**20.5**	**20.5**	**33.2**	**33.5**	**34.1**	**27.4**	**23.7**	**24.5**	**24.7**	**24.4**	**24.5**	**24.6**	**24.9**	**25.2**	**25.6**	**26.0**
	PF	0.935	0.935	0.961	0.951	0.965	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972
	MW	19.2	19.2	31.9	31.9	32.9	26.6	23.0	23.9	24.0	23.7	23.8	24.0	24.2	24.5	24.9	25.3
	MVAr	7.3	7.3	9.1	10.3	8.9	6.4	5.5	5.7	5.8	5.7	5.7	5.8	5.8	5.9	6.0	6.1
50% POE	**MVA**	**20.5**	**20.5**	**33.2**	**33.5**	**34.1**	**27.4**	**23.7**	**24.5**	**24.7**	**24.4**	**24.5**	**24.6**	**24.9**	**25.2**	**25.6**	**26.0**
	PF	0.935	0.935	0.961	0.951	0.965	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972

6.17 Wallerawang 132kV Supply Point

Location		Actual						Forecast									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Actual	**MVA**	**23.3**	**18.6**	**14.8**	**13.8**	**12.7**	**13.7**										
Katoomba North	MW	22.5	18.4	14.8	13.7	12.6	13.6	16.5	16.5	16.7	16.4	16.4	16.6	16.8	17.1	17.4	17.8
	MVAr	6.0	2.8	0.0	2.2	1.1	1.3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.7
10% POE	**MVA**	**23.3**	**18.6**	**14.8**	**13.8**	**12.7**	**13.7**	**16.7**	**16.7**	**16.9**	**16.6**	**16.6**	**16.8**	**17.0**	**17.2**	**17.6**	**18.0**
	PF	0.966	0.989	1.000	0.988	0.996	0.996	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
	MW	22.5	18.4	14.8	13.7	12.6	13.6	16.5	16.5	16.7	16.4	16.4	16.6	16.8	17.1	17.4	17.8
	MVAr	6.0	2.8	0.0	2.2	1.1	1.3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.7
50% POE	**MVA**	**23.3**	**18.6**	**14.8**	**13.8**	**12.7**	**13.7**	**16.7**	**16.7**	**16.9**	**16.6**	**16.6**	**16.8**	**17.0**	**17.2**	**17.6**	**18.0**
	PF	0.966	0.989	1.000	0.988	0.996	0.996	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Actual	**MVA**	**27.3**	**30.1**	**22.0**	**27.8**	**24.4**	**15.3**										
Lawson	MW	26.9	29.6	21.9	27.6	21.8	15.3	16.3	16.2	16.3	16.2	16.2	16.3	16.5	16.7	16.9	17.2
	MVAr	4.7	5.2	2.6	3.3	10.9	0.9	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.8	3.9	3.9
10% POE	**MVA**	**27.3**	**30.1**	**22.0**	**27.8**	**24.4**	**15.3**	**16.7**	**16.6**	**16.7**	**16.6**	**16.6**	**16.8**	**16.9**	**17.1**	**17.4**	**17.6**
	PF	0.985	0.985	0.993	0.993	0.895	0.998	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
	MW	26.9	29.6	21.9	27.6	21.8	15.3	16.3	16.2	16.3	16.2	16.2	16.3	16.5	16.7	16.9	17.2
	MVAr	4.7	5.2	2.6	3.3	10.9	0.9	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.8	3.9	3.9
50% POE	**MVA**	**27.3**	**30.1**	**22.0**	**27.8**	**24.4**	**15.3**	**16.7**	**16.6**	**16.7**	**16.6**	**16.6**	**16.8**	**16.9**	**17.1**	**17.4**	**17.6**
	PF	0.985	0.985	0.993	0.993	0.895	0.998	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975	0.975
Actual	**MVA**	**50.6**	**48.6**	**36.8**	**41.7**	**37.1**	**29.0**										
Undiversified	MW	49.4	48.0	36.7	41.3	34.5	28.9	32.8	32.7	33.0	32.5	32.7	32.9	33.3	33.7	34.3	35.0
	MVAr	10.8	8.0	2.6	5.5	12.0	2.2	6.2	6.2	6.2	6.1	6.2	6.2	6.3	6.4	6.5	6.6
10% POE	**MVA**	**50.6**	**48.6**	**36.8**	**41.7**	**37.1**	**29.0**	**33.4**	**33.3**	**33.6**	**33.1**	**33.3**	**33.5**	**33.9**	**34.4**	**35.0**	**35.6**
	PF	0.976	0.986	0.996	0.991	0.930	0.997	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982
	MW	49.4	48.0	36.7	41.3	34.5	28.9	32.8	32.7	33.0	32.5	32.7	32.9	33.3	33.7	34.3	35.0
	MVAr	10.8	8.0	2.6	5.5	12.0	2.2	6.2	6.2	6.2	6.1	6.2	6.2	6.3	6.4	6.5	6.6
50% POE	**MVA**	**50.6**	**48.6**	**36.8**	**41.7**	**37.1**	**29.0**	**33.4**	**33.3**	**33.6**	**33.1**	**33.3**	**33.5**	**33.9**	**34.4**	**35.0**	**35.6**
	PF	0.976	0.986	0.996	0.991	0.930	0.997	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982	0.982
Actual	**MVA**	**51.0**	**47.4**	**90.8**	**66.6**	**50.1**	**61.0**										
Diversified# (Meter)	MW	49.9	46.4	88.4	66.3	50.1	60.5	32.6	32.5	32.8	32.4	32.5	32.7	33.1	33.6	34.2	34.8
	MVAr	10.4	9.7	20.6	6.2	1.0	7.6	5.4	5.4	5.4	5.4	5.4	5.4	5.5	5.6	5.7	5.8
10% POE	**MVA**	**51.0**	**47.4**	**90.8**	**66.6**	**50.1**	**61.0**	**33.0**	**33.0**	**33.3**	**32.8**	**32.9**	**33.2**	**33.6**	**34.0**	**34.6**	**35.2**
	PF	0.979	0.979	0.974	0.996	1.000	0.992	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987
	MW	49.9	46.4	88.4	66.3	50.1	60.5	32.6	32.5	32.8	32.4	32.5	32.7	33.1	33.6	34.2	34.8
	MVAr	10.4	9.7	20.6	6.2	1.0	7.6	5.4	5.4	5.4	5.4	5.4	5.4	5.5	5.6	5.7	5.8
50% POE	**MVA**	51.0	47.4	90.8	66.6	50.1	61.0	33.0	33.0	33.3	32.8	32.9	33.2	33.6	34.0	34.6	35.2
	PF	0.979	0.979	0.974	0.996	1.000	0.992	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987	0.987

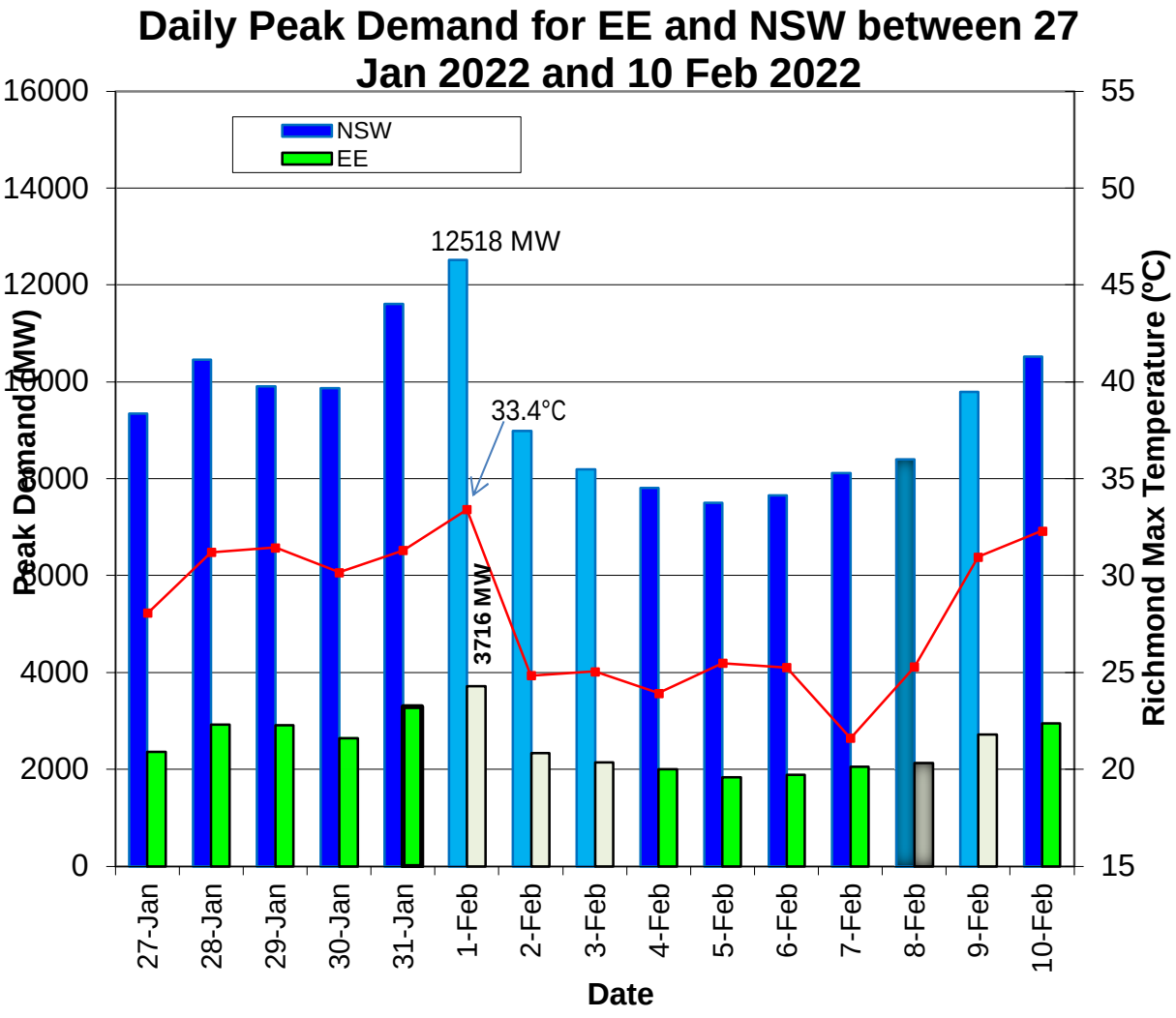
Note: # Wallerawang large diversified values are due to contributions from Warrimoo and/or Mt Piper

7 APPENDIX 1 – REVIEW OF 2021/22 SUMMER

Endeavour Energy (EE) Network System total demand[5] for the 2022 summer peaked at 3,716 megawatts (MW) at 3:30 pm on 1st February 2022 (Tuesday) while the 3:30 pm temperature at Richmond was 33.2ºC on that day. The hottest recorded temperature for the 2022 summer was on 18 Dec 2021 at 3:00 pm and EE total demand peaked at 3,367 MW on that day.

Figure A.1 shows the time series of the daily maximium temperatures at Richmond and the peak demands on the EE network and NSW during the 2022 summer peak demand period. EE peak demand and maximum NSW daily peak demand for the 2022 summer occurred on the different days.

Figure A.1. EE and NSW Peak Demands and Temperatures at Richmond during the 2022 Summer Peak Period.



Note: Non-workday peak demands are in lighter colours.

Sources: Endeavour Energy Historian.
NSW demand from the AEMO web site.

[5] Including Tallawarra generation.

In general, the EE and NSW state peak demands in summer follow the variations of daily temperature. However, the day of hottest temperature does not always result in maximum demand on the same day as in 2022 summer. While temperature has a highly significant influence on the peak demand, a number of other factors can make an impact including: day of the week (weekend/weekday), time of day, public and school holidays, wind (speed, direction and timing), persistent hot or cold spells, user behaviours and economic conditions.

Table A.1 provides a summary of the top five peak demand days over the 2022 summer. Table A.2 summarises the weekday maximum temperatures over the past 6 summers.

Table A.1. Top 5 EE Demand Peaks and Daily Maximum Temperatures at Richmond for 2022 Summer

Date	Peak Demand (MW)	Time of Peak Demand (LST)	Daily Max Richmond Temperature (ºC)
01-Feb-22 (Tue)	3,716	15:30	33.4
17-Feb-22 (Thu)	3,401	16:30	35.2
18-Dec-21 (Sat)	3,367	18:00	35.6
17-Jan-22 (Mon)	3,354	15:30	31.3
31-Jan-22 (Mon)	3,298	17:30	31.3

Source: Endeavour Energy Historian and TM1.

Table A.2. Historical Summer Weekday Maximum Temperatures at Richmond for the Past 6 Years.

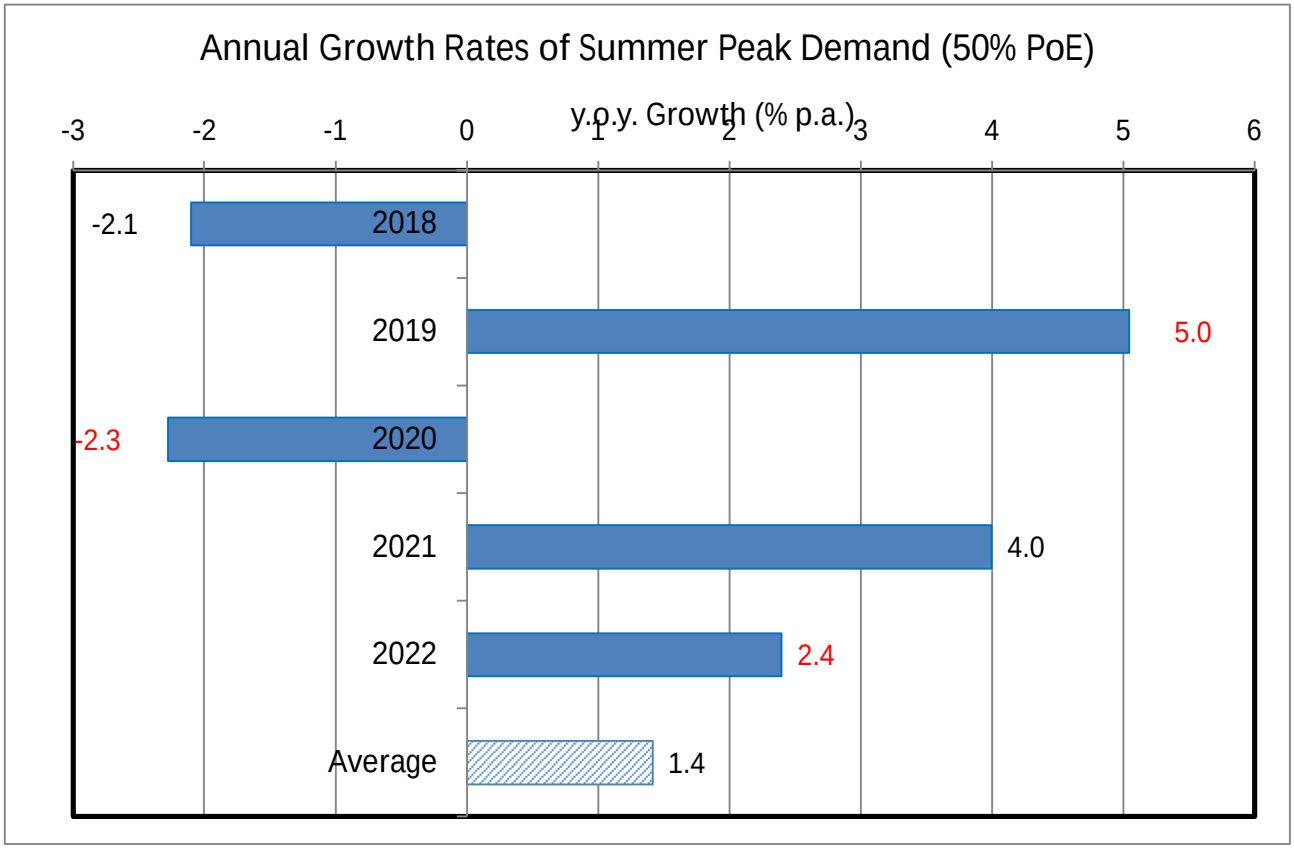
Summer	2017	2018	2019	2020	2021	2022
Max Weekday Temp (ºC)	44.1	42.2	41.1	41.7	37.0	35.2
Date	13-Jan-17	19-Dec-17	17-Jan-19	23-Jan-20	14-Jan-21	17-Feb-22
Day of the Week	Friday	Tuesday	Thursday	Thursday	Thursday	Thursday

Source: Endeavour Energy Network Load History (NLH) Database and Historian.

The annual growth rates of temperature corrected peak demand[6] for the past five summers are plotted in Figure A.3. Over the past five summers, the temperature corrected peak demand showed an increase of about 1.4% p.a.

Figure A.3. Annual Growth Rate of 50% PoE Temperature Corrected Maximum Demand (TCMD) for the past five summers.

[6] Annual peak demands that have been corrected to a set of standard weather conditions enable a valid comparison of annual changes in demand.


Annual Growth Rates of Summer Peak Demand (50% PoE)
y.o.y. Growth (% p.a.)
-3
-2
-1
0
1
2
3
4
5
6
-2.1
2018
2019
5.0
-2.3
2020
2021
4.0
2022
2.4
Average
1.4

8 APPENDIX 2 – POST MODELLING ADJUSTMENTS – PEAK CONTRIBUTIONS

The following table lists the peak contributions from PVs (demand reductions), EVs (demand additions) and ESS (demand reductions), made to each zone substation under the AEMO step change scenario. These values are peak contributions occurring at various times of the day without reference to zone substation peak demand times.These values are based on work by NIEIR.

ZS PMA Peak (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
ABBOTSBURY	ESS	-0.1	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3
	EV	0.0	0.0	0.0	0.2	0.4	0.8	1.4	2.0	2.7	3.6
	PV	-1.3	-2.4	-3.4	-4.4	-5.2	-6.1	-6.9	-7.7	-8.5	-9.4
ABBOTSBURY Total		**-1.4**	**-2.7**	**-3.8**	**-4.8**	**-5.5**	**-6.1**	**-6.4**	**-6.8**	**-7.0**	**-7.1**
ALBION PARK	ESS	-0.2	-0.3	-0.5	-0.6	-0.8	-0.9	-1.1	-1.3	-1.4	-1.6
	EV	0.0	0.0	0.1	0.2	0.4	0.9	1.6	2.2	2.9	3.9
	PV	-1.9	-3.5	-4.9	-6.3	-7.3	-8.4	-9.3	-10.3	-11.2	-12.2
ALBION PARK Total		**-2.1**	**-3.8**	**-5.4**	**-6.7**	**-7.7**	**-8.4**	**-8.9**	**-9.4**	**-9.7**	**-9.9**
AMBARVALE	ESS	-0.1	-0.3	-0.4	-0.5	-0.6	-0.8	-0.9	-1.0	-1.2	-1.3
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.1	1.6	2.2	2.9
	PV	-1.3	-2.4	-3.4	-4.3	-5.2	-6.0	-6.8	-7.6	-8.4	-9.2
AMBARVALE Total		**-1.4**	**-2.6**	**-3.7**	**-4.7**	**-5.5**	**-6.1**	**-6.6**	**-7.0**	**-7.4**	**-7.7**
ANZAC VILLAGE	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-0.9
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.4	1.9	2.5
	PV	-1.1	-2.0	-2.9	-3.7	-4.4	-5.1	-5.8	-6.5	-7.2	-7.9
ANZAC VILLAGE Total		**-1.2**	**-2.2**	**-3.1**	**-3.9**	**-4.6**	**-5.1**	**-5.4**	**-5.8**	**-6.1**	**-6.3**
APPIN	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.9	1.1
	PV	-0.6	-1.1	-1.5	-2.0	-2.3	-2.7	-3.1	-3.4	-3.8	-4.1
APPIN Total		**-0.6**	**-1.1**	**-1.6**	**-2.0**	**-2.3**	**-2.6**	**-2.8**	**-3.0**	**-3.1**	**-3.2**
ARNDELL PARK	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.7
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.7	1.0	1.3
	PV	-0.7	-1.3	-1.9	-2.5	-3.0	-3.4	-3.9	-4.4	-4.8	-5.3
ARNDELL PARK Total		**-0.8**	**-1.5**	**-2.1**	**-2.7**	**-3.2**	**-3.6**	**-3.9**	**-4.3**	**-4.6**	**-4.8**
BAULKHAM HILLS 11KV	ESS	-0.1	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3
	EV	0.0	0.0	0.1	0.3	0.6	1.0	1.5	2.1	2.7	3.6
	PV	-1.3	-2.4	-3.4	-4.4	-5.2	-6.1	-6.9	-7.7	-8.6	-9.5
BAULKHAM HILLS 11KV Total		**-1.4**	**-2.6**	**-3.7**	**-4.6**	**-5.3**	**-5.9**	**-6.3**	**-6.7**	**-7.0**	**-7.2**
BELLA VISTA	ESS	-0.1	-0.2	-0.3	-0.4	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.1	0.3	0.5	0.9	1.4	2.0	2.6	3.4
	PV	-2.2	-4.1	-5.7	-7.4	-8.8	-10.3	-11.6	-13.0	-14.4	-15.9
BELLA VISTA Total		**-2.3**	**-4.2**	**-6.0**	**-7.6**	**-8.9**	**-10.0**	**-11.0**	**-12.0**	**-12.9**	**-13.6**
BERRIMA JUNCTION	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BERRIMA JUNCTION Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BERRY	ESS	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5
	EV	0.0	0.0	0.1	0.1	0.3	0.4	0.7	0.9	1.2	1.5
	PV	-0.9	-1.6	-2.3	-2.9	-3.5	-4.0	-4.5	-5.0	-5.6	-6.1
BERRY Total		**-0.9**	**-1.7**	**-2.4**	**-3.0**	**-3.5**	**-3.9**	**-4.2**	**-4.6**	**-4.8**	**-5.0**
BLACKHEATH	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.7	1.0	1.3
	PV	-0.4	-0.7	-0.9	-1.2	-1.4	-1.6	-1.8	-2.0	-2.2	-2.4
BLACKHEATH Total		**-0.4**	**-0.8**	**-1.1**	**-1.3**	**-1.5**	**-1.6**	**-1.7**	**-1.7**	**-1.7**	**-1.6**
BLACKMANS FLAT	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.6	0.8	1.1
	PV	-0.6	-1.1	-1.5	-2.0	-2.4	-2.8	-3.2	-3.6	-4.0	-4.4
BLACKMANS FLAT Total		**-0.6**	**-1.1**	**-1.6**	**-2.0**	**-2.4**	**-2.7**	**-2.9**	**-3.2**	**-3.4**	**-3.5**
BLAXLAND	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.1	1.5	2.0	2.6
	PV	-0.7	-1.2	-1.7	-2.1	-2.4	-2.7	-3.0	-3.3	-3.6	-3.9
BLAXLAND Total		**-0.8**	**-1.4**	**-1.9**	**-2.3**	**-2.6**	**-2.7**	**-2.7**	**-2.7**	**-2.6**	**-2.3**
BOLONG	ESS	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4
	PV	-0.2	-0.4	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.4	-1.6
BOLONG Total		**-0.2**	**-0.4**	**-0.6**	**-0.8**	**-0.9**	**-1.0**	**-1.1**	**-1.1**	**-1.2**	**-1.3**
BOMADERRY	ESS	-0.1	-0.2	-0.3	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.1	0.2	0.3	0.6	1.0	1.4	1.9	2.5
	PV	-1.4	-2.6	-3.7	-4.7	-5.5	-6.4	-7.2	-8.0	-8.8	-9.6
BOMADERRY Total		**-1.5**	**-2.8**	**-3.9**	**-5.0**	**-5.8**	**-6.4**	**-7.0**	**-7.5**	**-7.9**	**-8.2**

ZS PMA peak (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
BULLI	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.8	-0.9
	EV	0.0	0.0	0.1	0.2	0.4	0.9	1.5	2.1	2.8	3.7
	PV	-1.5	-2.8	-4.0	-5.2	-6.2	-7.2	-8.2	-9.2	-10.3	-11.3
BULLI Total		**-1.6**	**-3.0**	**-4.2**	**-5.4**	**-6.2**	**-6.9**	**-7.4**	**-7.9**	**-8.2**	**-8.5**
BYLONG	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
	PV	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2
BYLONG Total		**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.1**
CABRAMATTA	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.7
	EV	0.0	0.0	0.0	0.1	0.2	0.5	0.8	1.2	1.6	2.1
	PV	-0.8	-1.4	-2.1	-2.7	-3.2	-3.7	-4.3	-4.8	-5.3	-5.9
CABRAMATTA Total		**-0.8**	**-1.6**	**-2.3**	**-2.9**	**-3.4**	**-3.7**	**-4.0**	**-4.2**	**-4.4**	**-4.5**
CAMBRIDGE PARK	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.9	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.0	0.1	0.4	0.8	1.3	1.9	2.5	3.3
	PV	-1.6	-3.0	-4.2	-5.3	-6.3	-7.3	-8.3	-9.2	-10.2	-11.1
CAMBRIDGE PARK Total		**-1.7**	**-3.2**	**-4.5**	**-5.7**	**-6.6**	**-7.3**	**-7.8**	**-8.3**	**-8.8**	**-9.0**
CAMPBELLTOWN	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.1	1.5	2.0	2.7
	PV	-1.5	-2.9	-4.1	-5.3	-6.4	-7.5	-8.6	-9.7	-10.9	-12.1
CAMPBELLTOWN Total		**-1.6**	**-3.1**	**-4.4**	**-5.6**	**-6.7**	**-7.5**	**-8.3**	**-9.1**	**-9.8**	**-10.4**
CANLEY VALE	ESS	-0.2	-0.4	-0.6	-0.8	-1.0	-1.1	-1.3	-1.6	-1.7	-1.9
	EV	0.0	0.0	0.1	0.2	0.6	1.1	2.0	2.8	3.7	4.9
	PV	-1.3	-2.5	-3.5	-4.5	-5.4	-6.2	-7.0	-7.8	-8.6	-9.5
CANLEY VALE Total		**-1.5**	**-2.8**	**-4.0**	**-5.0**	**-5.8**	**-6.2**	**-6.4**	**-6.6**	**-6.7**	**-6.5**
CARRAMAR	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-0.9
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.2	1.7	2.3	3.1
	PV	-0.7	-1.3	-1.9	-2.4	-2.9	-3.4	-3.8	-4.3	-4.7	-5.2
CARRAMAR Total		**-0.8**	**-1.5**	**-2.1**	**-2.7**	**-3.0**	**-3.2**	**-3.3**	**-3.3**	**-3.2**	**-3.0**
CASTLE HILL	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.7
	EV	0.0	0.1	0.2	0.4	0.8	1.4	2.0	2.8	3.6	4.8
	PV	-2.2	-4.2	-6.1	-7.9	-9.5	-11.2	-12.8	-14.4	-16.0	-17.7
CASTLE HILL Total		**-2.3**	**-4.3**	**-6.1**	**-7.7**	**-9.1**	**-10.3**	**-11.3**	**-12.2**	**-13.0**	**-13.7**
CASULA	ESS	-0.1	-0.3	-0.4	-0.6	-0.7	-0.8	-1.0	-1.1	-1.3	-1.4
	EV	0.0	0.0	0.0	0.2	0.4	0.9	1.6	2.3	3.0	4.0
	PV	-1.8	-3.4	-4.8	-6.2	-7.4	-8.6	-9.8	-10.9	-12.1	-13.3
CASULA Total		**-1.9**	**-3.7**	**-5.2**	**-6.6**	**-7.7**	**-8.6**	**-9.2**	**-9.8**	**-10.3**	**-10.7**
CATTAI	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.8	1.1	1.4
	PV	-0.9	-1.8	-2.5	-3.3	-3.9	-4.6	-5.2	-5.8	-6.4	-7.1
CATTAI Total		**-1.0**	**-1.8**	**-2.6**	**-3.3**	**-3.9**	**-4.5**	**-4.9**	**-5.3**	**-5.7**	**-6.1**
CAWDOR	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8
	EV	0.0	0.0	0.0	0.1	0.3	0.5	0.9	1.3	1.7	2.2
	PV	-1.6	-3.0	-4.3	-5.6	-6.9	-8.1	-9.3	-10.6	-11.9	-13.3
CAWDOR Total		**-1.6**	**-3.1**	**-4.5**	**-5.9**	**-7.0**	**-8.1**	**-9.0**	**-10.0**	**-11.0**	**-12.0**
CHERITON AVENUE	ESS	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9
	EV	0.0	0.0	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.6
	PV	-1.7	-3.2	-4.5	-5.9	-7.1	-8.4	-9.6	-10.8	-12.1	-13.5
CHERITON AVENUE Total		**-1.7**	**-3.3**	**-4.7**	**-6.0**	**-7.1**	**-8.2**	**-9.1**	**-10.1**	**-10.9**	**-11.8**
CHIPPING NORTON	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.4	-0.4	-0.5	-0.5	-0.6
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.8	1.0	1.3
	PV	-0.7	-1.3	-1.8	-2.3	-2.7	-3.1	-3.6	-4.0	-4.4	-4.9
CHIPPING NORTON Total		**-0.7**	**-1.4**	**-1.9**	**-2.4**	**-2.9**	**-3.2**	**-3.5**	**-3.7**	**-4.0**	**-4.2**
CLAREMONT MEADOWS	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.2	1.7	2.3	3.0
	PV	-2.0	-3.8	-5.4	-7.1	-8.5	-10.0	-11.5	-12.9	-14.5	-16.0
CLAREMONT MEADOWS Total		**-2.1**	**-4.0**	**-5.8**	**-7.4**	**-8.8**	**-10.0**	**-11.1**	**-12.2**	**-13.2**	**-14.2**
CORRIMAL	ESS	-0.1	-0.3	-0.4	-0.6	-0.7	-0.8	-1.0	-1.2	-1.3	-1.4
	EV	0.0	0.0	0.1	0.2	0.4	0.8	1.3	1.8	2.4	3.2
	PV	-1.1	-2.1	-3.0	-3.8	-4.5	-5.2	-5.9	-6.6	-7.3	-7.9
CORRIMAL Total		**-1.3**	**-2.4**	**-3.3**	**-4.2**	**-4.9**	**-5.3**	**-5.6**	**-5.9**	**-6.1**	**-6.2**
DUNDAS	ESS	-0.2	-0.4	-0.7	-0.9	-1.1	-1.3	-1.5	-1.8	-2.0	-2.2
	EV	0.0	0.0	0.2	0.4	0.8	1.5	2.4	3.2	4.3	5.7
	PV	-1.7	-3.3	-4.7	-6.1	-7.3	-8.5	-9.7	-10.9	-12.1	-13.4
DUNDAS Total		**-1.9**	**-3.7**	**-5.2**	**-6.5**	**-7.6**	**-8.3**	**-8.9**	**-9.4**	**-9.8**	**-9.9**
EAST RICHMOND	ESS	-0.1	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.7
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.4	1.8
	PV	-0.6	-1.1	-1.6	-2.0	-2.4	-2.8	-3.1	-3.5	-3.8	-4.2
EAST RICHMOND Total		**-0.7**	**-1.3**	**-1.8**	**-2.2**	**-2.6**	**-2.8**	**-2.9**	**-3.0**	**-3.1**	**-3.0**

ZS PMA peak (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
EASTERN CREEK	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2
	PV	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2
EASTERN CREEK Total		**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**
EDMONDSON PARK	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.2	1.6
	PV	-0.8	-1.5	-2.2	-2.8	-3.4	-4.0	-4.5	-5.1	-5.6	-6.2
EDMONDSON PARK Total		**-0.9**	**-1.6**	**-2.3**	**-2.9**	**-3.4**	**-3.8**	**-4.1**	**-4.5**	**-4.7**	**-4.9**
EMU PLAINS	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.1	0.2	0.3	0.6	1.0	1.4	1.9	2.4
	PV	-0.7	-1.4	-1.9	-2.4	-2.8	-3.2	-3.6	-4.0	-4.3	-4.7
EMU PLAINS Total		**-0.8**	**-1.5**	**-2.1**	**-2.6**	**-3.0**	**-3.2**	**-3.3**	**-3.4**	**-3.4**	**-3.3**
FAIRFIELD	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.0	0.1	0.2	0.5	0.8	1.2	1.6	2.1
	PV	-0.5	-0.8	-1.2	-1.5	-1.8	-2.0	-2.2	-2.5	-2.7	-3.0
FAIRFIELD Total		**-0.6**	**-1.0**	**-1.5**	**-1.8**	**-2.0**	**-2.1**	**-2.1**	**-2.1**	**-2.1**	**-1.9**
FIGTREE	ESS	-0.1	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3
	EV	0.0	0.0	0.1	0.2	0.5	0.9	1.5	2.1	2.9	3.8
	PV	-1.4	-2.7	-3.8	-4.8	-5.7	-6.6	-7.4	-8.3	-9.1	-9.9
FIGTREE Total		**-1.6**	**-2.9**	**-4.1**	**-5.2**	**-5.9**	**-6.5**	**-6.8**	**-7.2**	**-7.4**	**-7.4**
GERRINGONG	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.7
	PV	-0.3	-0.6	-0.8	-1.0	-1.2	-1.4	-1.5	-1.7	-1.8	-2.0
GERRINGONG Total		**-0.4**	**-0.7**	**-0.9**	**-1.1**	**-1.3**	**-1.4**	**-1.5**	**-1.6**	**-1.7**	**-1.7**
GLENMORE PARK	ESS	-0.1	-0.3	-0.4	-0.5	-0.7	-0.8	-1.0	-1.1	-1.2	-1.3
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.4	1.8	2.4
	PV	-1.5	-2.8	-3.9	-5.0	-6.0	-6.8	-7.7	-8.5	-9.4	-10.3
GLENMORE PARK Total		**-1.7**	**-3.1**	**-4.3**	**-5.5**	**-6.4**	**-7.1**	**-7.7**	**-8.3**	**-8.8**	**-9.2**
GLENORIE	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.5
	PV	-0.4	-0.7	-1.1	-1.4	-1.6	-1.9	-2.2	-2.4	-2.7	-3.0
GLENORIE Total		**-0.4**	**-0.8**	**-1.1**	**-1.4**	**-1.6**	**-1.9**	**-2.1**	**-2.3**	**-2.5**	**-2.7**
GLOSSODIA	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.5
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	0.9	1.3	1.7
	PV	-1.0	-2.0	-2.8	-3.6	-4.3	-5.0	-5.6	-6.3	-6.9	-7.6
GLOSSODIA Total		**-1.1**	**-2.1**	**-2.9**	**-3.7**	**-4.4**	**-4.9**	**-5.4**	**-5.8**	**-6.2**	**-6.5**
GRANVILLE	ESS	-0.1	-0.3	-0.4	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.4
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.1	1.5	2.0	2.6
	PV	-0.8	-1.6	-2.3	-2.9	-3.5	-4.1	-4.7	-5.3	-5.9	-6.6
GRANVILLE Total		**-1.0**	**-1.8**	**-2.6**	**-3.3**	**-3.9**	**-4.3**	**-4.6**	**-5.0**	**-5.2**	**-5.4**
GREYSTANES	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8	-0.9
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.2	1.7	2.2	2.9
	PV	-0.6	-1.1	-1.5	-2.0	-2.4	-2.7	-3.1	-3.4	-3.8	-4.2
GREYSTANES Total		**-0.7**	**-1.3**	**-1.8**	**-2.2**	**-2.5**	**-2.6**	**-2.5**	**-2.5**	**-2.4**	**-2.2**
HARTLEY VALE	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
	PV	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
HARTLEY VALE Total		**0.0**	**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**
HAZELBROOK	ESS	-0.1	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.7
	EV	0.0	0.0	0.1	0.2	0.3	0.5	0.8	1.1	1.5	2.0
	PV	-0.5	-0.9	-1.2	-1.5	-1.7	-2.0	-2.2	-2.4	-2.6	-2.8
HAZELBROOK Total		**-0.5**	**-1.0**	**-1.3**	**-1.6**	**-1.8**	**-1.9**	**-1.9**	**-1.9**	**-1.8**	**-1.6**
HELENSBURGH	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.6	0.8	1.1
	PV	-0.4	-0.7	-1.0	-1.3	-1.6	-1.8	-2.0	-2.2	-2.5	-2.7
HELENSBURGH Total		**-0.4**	**-0.8**	**-1.1**	**-1.4**	**-1.6**	**-1.8**	**-1.9**	**-2.0**	**-2.0**	**-2.0**
HINCHINBROOK	ESS	-0.2	-0.4	-0.6	-0.7	-0.9	-1.1	-1.3	-1.5	-1.6	-1.8
	EV	0.0	0.0	0.1	0.2	0.5	1.0	1.8	2.5	3.3	4.4
	PV	-2.1	-3.9	-5.4	-7.0	-8.3	-9.6	-10.8	-12.1	-13.4	-14.7
HINCHINBROOK Total		**-2.2**	**-4.2**	**-5.9**	**-7.5**	**-8.7**	**-9.7**	**-10.3**	**-11.1**	**-11.7**	**-12.1**
HOLROYD	ESS	-0.3	-0.5	-0.7	-1.0	-1.2	-1.5	-1.7	-2.0	-2.2	-2.4
	EV	0.0	0.1	0.2	0.5	1.1	2.0	3.2	4.5	6.0	7.9
	PV	-2.2	-4.1	-5.9	-7.6	-9.2	-10.8	-12.3	-13.8	-15.4	-17.0
HOLROYD Total		**-2.4**	**-4.6**	**-6.5**	**-8.1**	**-9.4**	**-10.3**	**-10.8**	**-11.3**	**-11.6**	**-11.5**
HOMEPRIDE	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.9	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.3	1.8	2.4	3.2
	PV	-0.9	-1.7	-2.4	-3.1	-3.8	-4.5	-5.1	-5.8	-6.4	-7.1
HOMEPRIDE Total		**-1.0**	**-1.9**	**-2.8**	**-3.5**	**-4.1**	**-4.5**	**-4.7**	**-5.0**	**-5.1**	**-5.2**

ZS PMA peak (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
HORSLEY PARK	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5
	PV	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.7	-0.8	-0.8
HORSLEY PARK Total		**-0.2**	**-0.3**	**-0.4**	**-0.5**	**-0.6**	**-0.6**	**-0.6**	**-0.6**	**-0.5**	**-0.5**
HUNTINGWOOD	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5
	PV	-0.2	-0.5	-0.6	-0.8	-1.0	-1.1	-1.3	-1.4	-1.6	-1.8
HUNTINGWOOD Total		**-0.3**	**-0.5**	**-0.7**	**-0.8**	**-1.0**	**-1.1**	**-1.2**	**-1.2**	**-1.3**	**-1.3**
HUSKISSON	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.3	1.8	2.4	3.1
	PV	-1.7	-3.1	-4.4	-5.6	-6.6	-7.7	-8.6	-9.6	-10.6	-11.6
HUSKISSON Total		**-1.8**	**-3.3**	**-4.7**	**-5.9**	**-6.9**	**-7.6**	**-8.2**	**-8.8**	**-9.3**	**-9.6**
ILFORD HALL	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2
	PV	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
ILFORD HALL Total		**-0.1**	**-0.2**	**-0.3**	**-0.4**	**-0.4**	**-0.5**	**-0.5**	**-0.6**	**-0.6**	**-0.7**
INNER HARBOUR	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INNER HARBOUR Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
JAMBEROO	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5
	PV	-0.3	-0.6	-0.9	-1.1	-1.3	-1.5	-1.7	-1.9	-2.1	-2.3
JAMBEROO Total		**-0.3**	**-0.6**	**-0.9**	**-1.1**	**-1.3**	**-1.5**	**-1.6**	**-1.8**	**-1.9**	**-2.0**
JASPER RD	ESS	-0.2	-0.3	-0.5	-0.6	-0.8	-1.0	-1.1	-1.3	-1.4	-1.6
	EV	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.1	1.5	2.0
	PV	-1.0	-1.9	-2.6	-3.4	-4.1	-4.7	-5.3	-5.9	-6.6	-7.2
JASPER RD Total		**-1.2**	**-2.2**	**-3.0**	**-3.8**	**-4.5**	**-5.1**	**-5.6**	**-6.1**	**-6.5**	**-6.9**
JORDAN SPRINGS	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.1	1.4	1.9
	PV	-0.9	-1.7	-2.4	-3.0	-3.6	-4.2	-4.7	-5.2	-5.7	-6.3
JORDAN SPRINGS Total		**-1.0**	**-1.9**	**-2.6**	**-3.3**	**-3.8**	**-4.2**	**-4.5**	**-4.8**	**-5.1**	**-5.2**
KANDOS	ESS	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3
	EV	0.0	0.0	0.0	0.1	0.3	0.5	0.9	1.2	1.6	2.1
	PV	-1.1	-2.0	-2.9	-3.8	-4.6	-5.3	-6.0	-6.8	-7.5	-8.3
KANDOS Total		**-1.1**	**-2.1**	**-3.0**	**-3.8**	**-4.4**	**-5.0**	**-5.4**	**-5.8**	**-6.2**	**-6.5**
KANGAROO VALLEY	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5
	PV	-0.2	-0.4	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.4	-1.6
KANGAROO VALLEY Total		**-0.2**	**-0.4**	**-0.6**	**-0.8**	**-0.9**	**-1.0**	**-1.0**	**-1.1**	**-1.1**	**-1.2**
KATOOMBA	ESS	-0.1	-0.2	-0.3	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.1	0.2	0.3	0.6	0.9	1.3	1.7	2.2
	PV	-0.6	-1.2	-1.6	-2.1	-2.4	-2.8	-3.1	-3.4	-3.8	-4.1
KATOOMBA Total		**-0.7**	**-1.4**	**-1.9**	**-2.4**	**-2.7**	**-2.9**	**-3.0**	**-3.1**	**-3.1**	**-3.0**
KELLYVILLE	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.6	-0.7
	EV	0.0	0.0	0.1	0.1	0.2	0.4	0.6	0.8	1.0	1.3
	PV	-0.9	-1.8	-2.5	-3.2	-3.9	-4.5	-5.1	-5.7	-6.3	-7.0
KELLYVILLE Total		**-1.0**	**-1.9**	**-2.6**	**-3.4**	**-4.0**	**-4.5**	**-5.0**	**-5.5**	**-6.0**	**-6.4**
KEMBLA GRANGE	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.6	0.8	1.0
	PV	-0.5	-0.9	-1.3	-1.7	-2.0	-2.3	-2.6	-2.9	-3.2	-3.6
KEMBLA GRANGE Total		**-0.5**	**-1.0**	**-1.4**	**-1.7**	**-2.0**	**-2.3**	**-2.4**	**-2.6**	**-2.8**	**-2.9**
KEMPS CREEK	ESS	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.7	0.9
	PV	-0.4	-0.8	-1.2	-1.5	-1.8	-2.1	-2.4	-2.7	-3.0	-3.3
KEMPS CREEK Total		**-0.5**	**-0.9**	**-1.3**	**-1.6**	**-1.9**	**-2.1**	**-2.3**	**-2.4**	**-2.6**	**-2.7**
KENNY STREET	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	PV	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
KENNY STREET Total		**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**
KENTHURST	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6
	EV	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.2	1.6	2.1
	PV	-1.9	-3.7	-5.2	-6.8	-8.2	-9.6	-10.9	-12.3	-13.7	-15.1
KENTHURST Total		**-2.0**	**-3.8**	**-5.3**	**-6.8**	**-8.1**	**-9.3**	**-10.4**	**-11.5**	**-12.6**	**-13.6**
KENTLYN	ESS	-0.2	-0.4	-0.6	-0.7	-0.9	-1.1	-1.3	-1.5	-1.7	-1.8
	EV	0.0	0.0	0.0	0.2	0.4	0.9	1.6	2.3	3.0	4.0
	PV	-2.1	-3.9	-5.5	-7.0	-8.4	-9.7	-10.9	-12.2	-13.4	-14.7
KENTLYN Total		**-2.3**	**-4.3**	**-6.0**	**-7.6**	**-8.9**	**-9.9**	**-10.6**	**-11.4**	**-12.0**	**-12.5**

ZS PMA peak (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
KIAMA	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.2	0.4	0.6	0.8	1.0	1.2	1.6	2.1
	PV	-1.2	-2.2	-3.1	-3.9	-4.7	-5.4	-6.1	-6.8	-7.5	-8.3
KIAMA Total		**-1.3**	**-2.3**	**-3.2**	**-4.0**	**-4.6**	**-5.3**	**-5.9**	**-6.4**	**-6.9**	**-7.2**
KINGSWOOD	ESS	-0.2	-0.3	-0.5	-0.7	-0.9	-1.0	-1.2	-1.4	-1.6	-1.7
	EV	0.0	0.0	0.0	0.2	0.5	1.0	1.8	2.5	3.4	4.5
	PV	-2.4	-4.6	-6.5	-8.4	-10.1	-11.8	-13.4	-15.0	-16.7	-18.4
KINGSWOOD Total		**-2.6**	**-4.9**	**-7.0**	**-8.9**	**-10.5**	**-11.8**	**-12.8**	**-13.9**	**-14.9**	**-15.6**
KURRAJONG	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6
	EV	0.0	0.0	0.0	0.1	0.2	0.5	0.8	1.2	1.6	2.1
	PV	-1.2	-2.2	-3.1	-4.0	-4.8	-5.6	-6.3	-7.0	-7.8	-8.5
KURRAJONG Total		**-1.2**	**-2.3**	**-3.3**	**-4.1**	**-4.8**	**-5.4**	**-5.9**	**-6.3**	**-6.7**	**-7.0**
LEABONS LANE	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.3	1.8	2.4
	PV	-1.1	-2.1	-3.0	-3.9	-4.7	-5.5	-6.2	-7.0	-7.8	-8.6
LEABONS LANE Total		**-1.2**	**-2.3**	**-3.3**	**-4.2**	**-4.9**	**-5.5**	**-6.0**	**-6.5**	**-6.9**	**-7.3**
LENNOX	ESS	-0.2	-0.3	-0.5	-0.6	-0.7	-0.9	-1.1	-1.2	-1.4	-1.5
	EV	0.0	0.0	0.1	0.3	0.6	1.0	1.5	2.0	2.7	3.5
	PV	-0.6	-1.1	-1.5	-2.0	-2.4	-2.7	-3.1	-3.5	-3.9	-4.3
LENNOX Total		**-0.7**	**-1.3**	**-1.9**	**-2.3**	**-2.5**	**-2.7**	**-2.7**	**-2.7**	**-2.6**	**-2.3**
LITHGOW	ESS	-0.1	-0.2	-0.3	-0.4	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.1	1.6	2.1	2.7
	PV	-1.3	-2.4	-3.4	-4.4	-5.2	-6.1	-6.8	-7.6	-8.4	-9.1
LITHGOW Total		**-1.4**	**-2.6**	**-3.7**	**-4.7**	**-5.4**	**-6.0**	**-6.5**	**-7.0**	**-7.3**	**-7.5**
LIVERPOOL 11KV	ESS	-0.2	-0.3	-0.5	-0.7	-0.9	-1.0	-1.2	-1.4	-1.5	-1.7
	EV	0.0	0.0	0.0	0.2	0.5	1.0	1.7	2.4	3.2	4.3
	PV	-0.8	-1.4	-2.0	-2.5	-3.0	-3.4	-3.8	-4.2	-4.6	-5.1
LIVERPOOL 11KV Total		**-0.9**	**-1.8**	**-2.5**	**-3.0**	**-3.4**	**-3.5**	**-3.3**	**-3.2**	**-3.0**	**-2.5**
LUDDENHAM	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.7	0.9	1.2
	PV	-0.9	-1.7	-2.5	-3.2	-3.9	-4.7	-5.4	-6.1	-6.9	-7.7
LUDDENHAM Total		**-0.9**	**-1.7**	**-2.5**	**-3.2**	**-3.9**	**-4.5**	**-5.0**	**-5.5**	**-6.1**	**-6.6**
MACQUARIE FIELDS	ESS	-0.2	-0.3	-0.5	-0.6	-0.8	-1.0	-1.1	-1.3	-1.4	-1.6
	EV	0.0	0.0	0.0	0.2	0.5	1.0	1.8	2.6	3.5	4.6
	PV	-2.4	-4.5	-6.3	-8.0	-9.6	-11.0	-12.5	-13.9	-15.3	-16.8
MACQUARIE FIELDS Total		**-2.6**	**-4.8**	**-6.7**	**-8.5**	**-9.9**	**-11.0**	**-11.7**	**-12.6**	**-13.3**	**-13.7**
MALDON	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.3	1.8	2.3	3.1
	PV	-2.5	-4.6	-6.5	-8.4	-10.1	-11.8	-13.4	-15.0	-16.7	-18.4
MALDON Total		**-2.5**	**-4.7**	**-6.7**	**-8.5**	**-10.0**	**-11.4**	**-12.6**	**-13.8**	**-15.0**	**-16.0**
MAMRE	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.9	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.2	1.6	2.2	2.9
	PV	-1.6	-3.0	-4.2	-5.3	-6.4	-7.3	-8.3	-9.2	-10.2	-11.2
MAMRE Total		**-1.7**	**-3.2**	**-4.5**	**-5.7**	**-6.6**	**-7.4**	**-8.0**	**-8.6**	**-9.1**	**-9.5**
MARAYONG	ESS	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.3	1.8	2.3
	PV	-1.4	-2.7	-3.8	-4.9	-5.8	-6.8	-7.7	-8.6	-9.6	-10.6
MARAYONG Total		**-1.5**	**-2.8**	**-4.0**	**-5.1**	**-6.0**	**-6.7**	**-7.4**	**-8.0**	**-8.6**	**-9.1**
MARSDEN PARK	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6	-0.6
	EV	0.0	0.0	0.0	0.1	0.2	0.5	0.8	1.1	1.5	1.9
	PV	-0.8	-1.4	-1.9	-2.4	-2.8	-3.2	-3.5	-3.9	-4.2	-4.6
MARSDEN PARK Total		**-0.8**	**-1.5**	**-2.1**	**-2.5**	**-2.9**	**-3.1**	**-3.2**	**-3.3**	**-3.4**	**-3.3**
MEADOW FLAT	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1
	EV	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2
	PV	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.6	-0.7	-0.8	-0.8
MEADOW FLAT Total		**-0.1**	**-0.2**	**-0.3**	**-0.4**	**-0.5**	**-0.5**	**-0.6**	**-0.6**	**-0.7**	**-0.7**
MINTO	ESS	-0.2	-0.4	-0.7	-0.9	-1.1	-1.3	-1.6	-1.8	-2.0	-2.2
	EV	0.0	0.0	0.0	0.1	0.4	0.9	1.5	2.2	2.9	3.9
	PV	-2.2	-4.1	-5.7	-7.2	-8.6	-9.8	-11.0	-12.2	-13.4	-14.6
MINTO Total		**-2.4**	**-4.5**	**-6.3**	**-8.0**	**-9.3**	**-10.3**	**-11.1**	**-11.9**	**-12.5**	**-12.9**
MITTAGONG	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.1	0.2	0.3	0.5	0.8	1.1	1.5	1.9
	PV	-1.2	-2.2	-3.2	-4.1	-4.8	-5.6	-6.3	-7.1	-7.8	-8.6
MITTAGONG Total		**-1.3**	**-2.4**	**-3.4**	**-4.3**	**-5.0**	**-5.7**	**-6.3**	**-6.8**	**-7.3**	**-7.7**
MOOREBANK	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.8	1.1	1.4
	PV	-0.8	-1.6	-2.3	-3.0	-3.6	-4.2	-4.8	-5.4	-6.0	-6.6
MOOREBANK Total		**-0.9**	**-1.7**	**-2.4**	**-3.1**	**-3.7**	**-4.2**	**-4.6**	**-5.0**	**-5.4**	**-5.7**

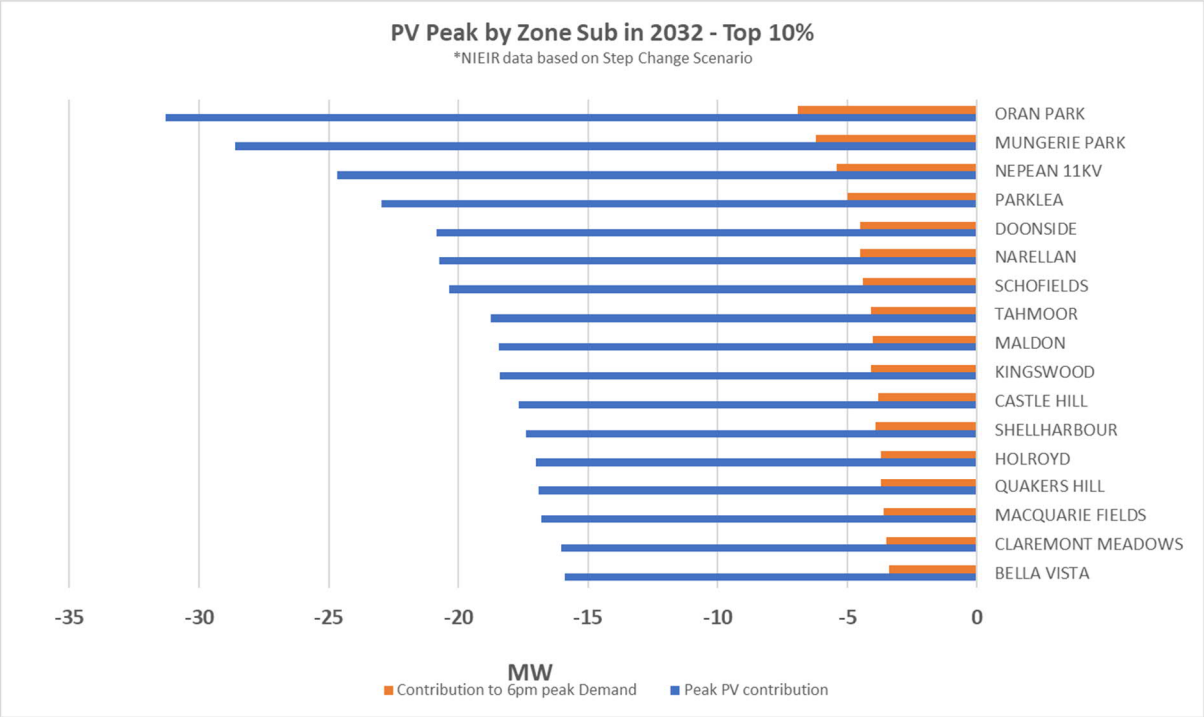
ZS PMA peak (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
MOSS VALE	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-0.9
	EV	0.0	0.0	0.2	0.3	0.6	0.9	1.2	1.6	2.2	2.8
	PV	-1.3	-2.5	-3.5	-4.5	-5.4	-6.2	-7.0	-7.8	-8.7	-9.5
MOSS VALE Total		**-1.4**	**-2.6**	**-3.6**	**-4.5**	**-5.3**	**-5.9**	**-6.5**	**-7.0**	**-7.4**	**-7.6**
MOUNT OUSLEY	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.9	-0.9	-1.0
	EV	0.0	0.0	0.0	0.1	0.3	0.5	0.9	1.2	1.7	2.2
	PV	-0.9	-1.7	-2.4	-3.1	-3.7	-4.3	-4.8	-5.4	-5.9	-6.5
MOUNT OUSLEY Total		**-1.0**	**-1.9**	**-2.7**	**-3.4**	**-3.9**	**-4.4**	**-4.7**	**-5.0**	**-5.2**	**-5.3**
MUNGERIE PARK	ESS	-0.3	-0.6	-0.8	-1.1	-1.4	-1.7	-1.9	-2.2	-2.5	-2.7
	EV	0.0	0.1	0.2	0.6	1.1	1.9	3.0	4.1	5.4	7.1
	PV	-4.1	-7.6	-10.7	-13.7	-16.3	-18.8	-21.2	-23.6	-26.1	-28.6
MUNGERIE PARK Total		**-4.3**	**-8.1**	**-11.3**	**-14.2**	**-16.6**	**-18.5**	**-20.2**	**-21.8**	**-23.2**	**-24.3**
NARELLAN	ESS	-0.2	-0.4	-0.6	-0.8	-1.0	-1.2	-1.4	-1.7	-1.8	-2.0
	EV	0.0	0.0	0.1	0.2	0.4	0.8	1.4	1.9	2.5	3.3
	PV	-2.6	-4.9	-7.0	-9.0	-10.9	-12.7	-14.6	-16.5	-18.5	-20.7
NARELLAN Total		**-2.8**	**-5.3**	**-7.5**	**-9.7**	**-11.5**	**-13.1**	**-14.7**	**-16.3**	**-17.9**	**-19.4**
NEPEAN 11KV	ESS	-0.1	-0.3	-0.4	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.4
	EV	0.0	0.0	0.1	0.2	0.4	0.8	1.4	1.9	2.6	3.4
	PV	-2.9	-5.6	-8.0	-10.4	-12.6	-14.9	-17.1	-19.5	-22.0	-24.7
NEPEAN 11KV Total		**-3.0**	**-5.8**	**-8.4**	**-10.8**	**-12.9**	**-14.9**	**-16.7**	**-18.7**	**-20.7**	**-22.7**
NEWTON	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.6	0.8	1.1
	PV	-0.7	-1.4	-1.9	-2.4	-2.9	-3.3	-3.7	-4.2	-4.6	-5.0
NEWTON Total		**-0.8**	**-1.5**	**-2.1**	**-2.7**	**-3.2**	**-3.6**	**-3.9**	**-4.2**	**-4.5**	**-4.8**
NORTH EASTERN CREEK	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PV	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2
NORTH EASTERN CREEK Total		**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**
NORTH LEPPINGTON	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.6	0.8	1.0
	PV	-0.5	-1.0	-1.5	-1.9	-2.4	-2.8	-3.2	-3.6	-4.0	-4.5
NORTH LEPPINGTON Total		**-0.6**	**-1.1**	**-1.5**	**-2.0**	**-2.3**	**-2.6**	**-2.9**	**-3.2**	**-3.5**	**-3.7**
NORTH PARRAMATTA	ESS	-0.2	-0.4	-0.6	-0.8	-1.0	-1.1	-1.3	-1.6	-1.7	-1.9
	EV	0.0	0.1	0.2	0.5	0.8	1.4	2.1	2.8	3.7	4.9
	PV	-0.8	-1.5	-2.1	-2.7	-3.3	-3.8	-4.4	-4.9	-5.5	-6.1
NORTH PARRAMATTA Total		**-0.9**	**-1.8**	**-2.5**	**-3.0**	**-3.4**	**-3.6**	**-3.6**	**-3.7**	**-3.5**	**-3.1**
NORTH RICHMOND	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.2	1.5
	PV	-1.0	-1.9	-2.7	-3.4	-4.1	-4.8	-5.4	-6.1	-6.7	-7.4
NORTH RICHMOND Total		**-1.0**	**-2.0**	**-2.8**	**-3.6**	**-4.2**	**-4.7**	**-5.1**	**-5.6**	**-6.0**	**-6.3**
NORTH ROCKS	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.8
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.3	1.8	2.3
	PV	-0.7	-1.3	-1.8	-2.3	-2.8	-3.3	-3.7	-4.2	-4.7	-5.2
NORTH ROCKS Total		**-0.7**	**-1.4**	**-2.0**	**-2.4**	**-2.8**	**-3.1**	**-3.3**	**-3.5**	**-3.6**	**-3.6**
NORTH WARRAGAMBA	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4	-0.4
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.4	1.8
	PV	-1.3	-2.5	-3.6	-4.7	-5.6	-6.6	-7.5	-8.4	-9.4	-10.4
NORTH WARRAGAMBA Total		**-1.4**	**-2.6**	**-3.7**	**-4.8**	**-5.7**	**-6.4**	**-7.1**	**-7.8**	**-8.4**	**-9.0**
NORTH WOLLONGONG	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-0.9
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.7	0.9	1.2
	PV	-0.7	-1.3	-1.8	-2.2	-2.6	-3.0	-3.4	-3.8	-4.1	-4.5
NORTH WOLLONGONG Total		**-0.8**	**-1.5**	**-2.1**	**-2.6**	**-3.0**	**-3.3**	**-3.6**	**-3.8**	**-4.1**	**-4.2**
NORTHMEAD	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.1	0.3	0.5	0.8	1.3	1.7	2.3	3.0
	PV	-0.8	-1.6	-2.2	-2.9	-3.5	-4.0	-4.6	-5.2	-5.8	-6.4
NORTHMEAD Total		**-0.9**	**-1.7**	**-2.4**	**-3.0**	**-3.5**	**-3.8**	**-4.1**	**-4.3**	**-4.4**	**-4.4**
NOWRA	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.1	1.6	2.1	2.8
	PV	-1.6	-3.0	-4.2	-5.4	-6.5	-7.6	-8.6	-9.6	-10.6	-11.6
NOWRA Total		**-1.7**	**-3.2**	**-4.5**	**-5.8**	**-6.8**	**-7.6**	**-8.3**	**-9.0**	**-9.5**	**-10.0**
OAKDALE	ESS	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.7
	PV	-0.4	-0.8	-1.1	-1.4	-1.7	-2.0	-2.3	-2.6	-2.9	-3.2
OAKDALE Total		**-0.4**	**-0.8**	**-1.1**	**-1.5**	**-1.7**	**-2.0**	**-2.1**	**-2.3**	**-2.5**	**-2.7**
ORAN PARK	ESS	-0.2	-0.3	-0.5	-0.6	-0.7	-0.9	-1.1	-1.2	-1.3	-1.5
	EV	0.0	0.0	0.1	0.3	0.6	1.1	1.8	2.5	3.3	4.4
	PV	-3.4	-6.6	-9.6	-12.6	-15.5	-18.4	-21.3	-24.4	-27.7	-31.3
ORAN PARK Total		**-3.6**	**-6.9**	**-9.9**	**-12.9**	**-15.6**	**-18.2**	**-20.6**	**-23.2**	**-25.8**	**-28.4**

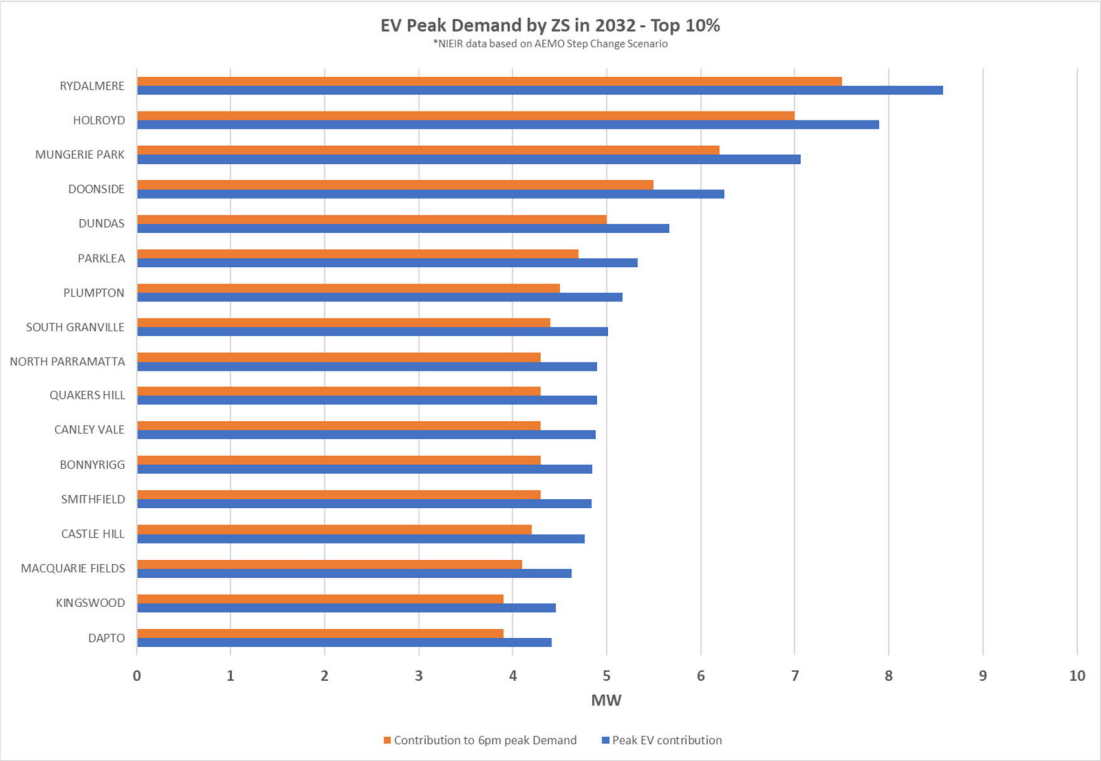
ZS PMA peak (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
PARKLEA	ESS	-0.2	-0.5	-0.7	-1.0	-1.2	-1.5	-1.7	-2.0	-2.2	-2.4
	EV	0.0	0.0	0.1	0.3	0.7	1.4	2.2	3.0	4.0	5.3
	PV	-3.4	-6.4	-8.9	-11.4	-13.4	-15.4	-17.2	-19.1	-21.0	-23.0
PARKLEA Total		**-3.7**	**-6.9**	**-9.5**	**-12.0**	**-13.9**	**-15.5**	**-16.7**	**-18.1**	**-19.2**	**-20.0**
PENRITH 11KV	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.7
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.3	1.7
	PV	-1.0	-2.0	-2.9	-3.7	-4.4	-5.1	-5.7	-6.3	-7.0	-7.6
PENRITH 11KV Total		**-1.1**	**-2.1**	**-3.1**	**-3.9**	**-4.6**	**-5.1**	**-5.5**	**-6.0**	**-6.3**	**-6.6**
PLUMPTON	ESS	-0.2	-0.4	-0.6	-0.8	-1.0	-1.2	-1.4	-1.6	-1.8	-2.0
	EV	0.0	0.0	0.1	0.3	0.7	1.3	2.1	2.9	3.9	5.2
	PV	-1.8	-3.4	-4.8	-6.2	-7.4	-8.6	-9.7	-10.9	-12.1	-13.3
PLUMPTON Total		**-2.0**	**-3.8**	**-5.3**	**-6.7**	**-7.7**	**-8.5**	**-9.0**	**-9.6**	**-9.9**	**-10.1**
PORT CENTRAL	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4	-0.4
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.2
	PV	-0.5	-1.0	-1.4	-1.7	-2.1	-2.4	-2.8	-3.1	-3.4	-3.8
PORT CENTRAL Total		**-0.5**	**-1.0**	**-1.4**	**-1.8**	**-2.1**	**-2.4**	**-2.5**	**-2.7**	**-2.9**	**-2.9**
PORT KEMBLA	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.2	1.7	2.2	3.0
	PV	-1.2	-2.2	-3.2	-4.1	-5.0	-5.8	-6.6	-7.3	-8.1	-8.9
PORT KEMBLA Total		**-1.3**	**-2.4**	**-3.5**	**-4.4**	**-5.1**	**-5.7**	**-6.1**	**-6.5**	**-6.8**	**-6.9**
PORTLAND	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5
	PV	-0.3	-0.6	-0.8	-1.0	-1.2	-1.4	-1.6	-1.8	-1.9	-2.1
PORTLAND Total		**-0.3**	**-0.6**	**-0.9**	**-1.1**	**-1.3**	**-1.4**	**-1.5**	**-1.6**	**-1.7**	**-1.8**
PRESTONS	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.9	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.2	1.7	2.3	3.1
	PV	-1.7	-3.2	-4.5	-5.8	-6.9	-8.0	-9.1	-10.2	-11.4	-12.6
PRESTONS Total		**-1.8**	**-3.4**	**-4.8**	**-6.1**	**-7.2**	**-8.1**	**-8.8**	**-9.5**	**-10.2**	**-10.7**
PROSPECT	ESS	-0.1	-0.2	-0.3	-0.4	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.1	0.2	0.3	0.6	0.9	1.3	1.7	2.3
	PV	-0.5	-1.0	-1.4	-1.7	-2.1	-2.4	-2.7	-3.0	-3.3	-3.6
PROSPECT Total		**-0.6**	**-1.2**	**-1.6**	**-2.0**	**-2.3**	**-2.5**	**-2.5**	**-2.6**	**-2.5**	**-2.4**
QUAKERS HILL	ESS	-0.2	-0.4	-0.6	-0.8	-1.0	-1.1	-1.3	-1.6	-1.7	-1.9
	EV	0.0	0.0	0.1	0.3	0.6	1.2	2.0	2.8	3.7	4.9
	PV	-2.3	-4.3	-6.1	-7.9	-9.4	-10.9	-12.4	-13.9	-15.4	-16.9
QUAKERS HILL Total		**-2.5**	**-4.7**	**-6.6**	**-8.4**	**-9.7**	**-10.9**	**-11.7**	**-12.6**	**-13.4**	**-13.9**
QUARRIES	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.8	1.0	1.4
	PV	-0.4	-0.8	-1.1	-1.5	-1.7	-2.0	-2.3	-2.6	-2.8	-3.1
QUARRIES Total		**-0.5**	**-0.9**	**-1.2**	**-1.6**	**-1.8**	**-2.0**	**-2.1**	**-2.2**	**-2.2**	**-2.2**
RINGWOOD	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4
	EV	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.6	0.8	1.0
	PV	-0.5	-1.0	-1.4	-1.7	-2.1	-2.4	-2.7	-3.0	-3.3	-3.6
RINGWOOD Total		**-0.6**	**-1.0**	**-1.4**	**-1.8**	**-2.1**	**-2.3**	**-2.6**	**-2.8**	**-2.9**	**-3.0**
RIVERSTONE	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.6	-0.7
	EV	0.0	0.0	0.1	0.2	0.3	0.6	0.9	1.3	1.7	2.3
	PV	-1.1	-2.1	-2.8	-3.6	-4.3	-4.9	-5.5	-6.1	-6.6	-7.2
RIVERSTONE Total		**-1.2**	**-2.2**	**-3.0**	**-3.7**	**-4.3**	**-4.7**	**-5.0**	**-5.3**	**-5.6**	**-5.7**
ROBERTSON	ESS	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3
	EV	0.0	0.0	0.1	0.1	0.2	0.4	0.5	0.7	0.9	1.2
	PV	-0.5	-1.0	-1.5	-1.9	-2.3	-2.7	-3.0	-3.4	-3.8	-4.2
ROBERTSON Total		**-0.6**	**-1.1**	**-1.5**	**-1.9**	**-2.2**	**-2.5**	**-2.7**	**-2.9**	**-3.1**	**-3.3**
ROOTY HILL	ESS	-0.1	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3
	EV	0.0	0.0	0.1	0.2	0.5	0.9	1.5	2.1	2.8	3.8
	PV	-2.1	-3.9	-5.6	-7.1	-8.5	-9.9	-11.2	-12.5	-13.9	-15.3
ROOTY HILL Total		**-2.2**	**-4.2**	**-5.9**	**-7.5**	**-8.7**	**-9.8**	**-10.6**	**-11.5**	**-12.2**	**-12.8**
ROSEHILL	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.6	0.7	1.0
	PV	-0.2	-0.4	-0.6	-0.8	-1.0	-1.2	-1.4	-1.5	-1.7	-1.9
ROSEHILL Total		**-0.3**	**-0.5**	**-0.7**	**-0.9**	**-1.0**	**-1.1**	**-1.2**	**-1.3**	**-1.3**	**-1.3**
RUSSELL VALE	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.9	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.0	0.2	0.4	0.7	1.2	1.7	2.3	3.1
	PV	-1.2	-2.2	-3.1	-4.0	-4.8	-5.5	-6.2	-7.0	-7.7	-8.4
RUSSELL VALE Total		**-1.3**	**-2.4**	**-3.4**	**-4.3**	**-5.0**	**-5.5**	**-5.9**	**-6.2**	**-6.5**	**-6.6**
RYDALMERE	ESS	-0.2	-0.3	-0.5	-0.7	-0.9	-1.0	-1.2	-1.4	-1.5	-1.7
	EV	0.0	0.2	0.5	1.1	1.9	2.8	3.8	5.0	6.6	8.6
	PV	-1.3	-2.4	-3.5	-4.5	-5.4	-6.3	-7.2	-8.1	-9.0	-9.9
RYDALMERE Total		**-1.4**	**-2.6**	**-3.5**	**-4.0**	**-4.3**	**-4.5**	**-4.5**	**-4.4**	**-3.9**	**-3.0**

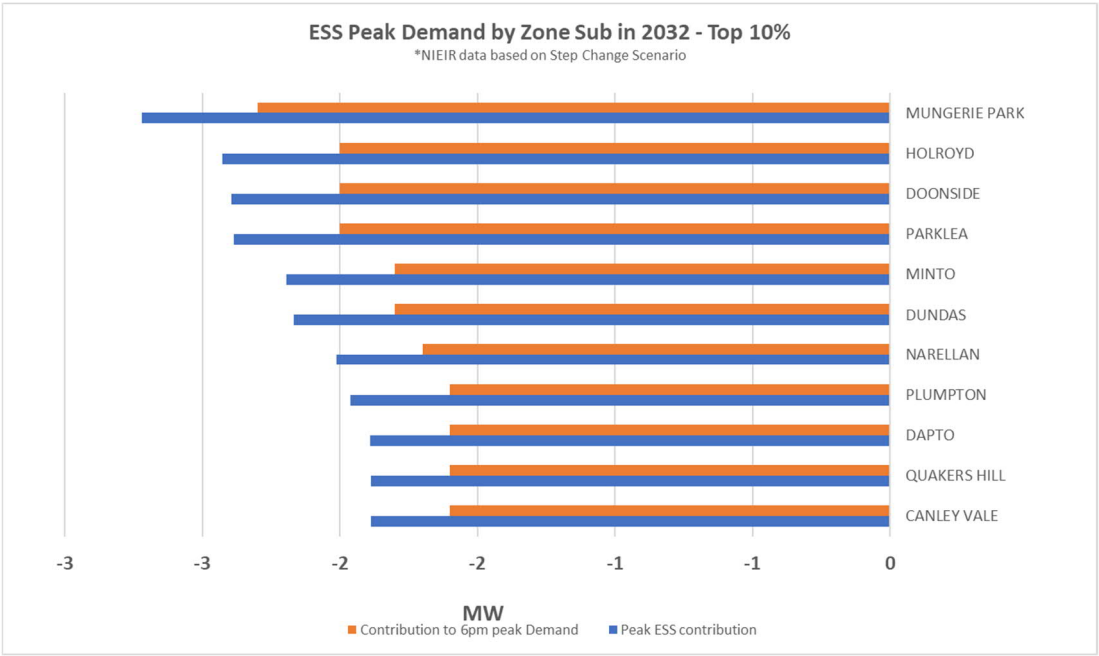
ZS PMA peak (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
SCHOFIELDS	ESS	-0.2	-0.3	-0.5	-0.6	-0.8	-0.9	-1.1	-1.2	-1.4	-1.5
	EV	0.0	0.0	0.1	0.2	0.5	1.0	1.6	2.2	2.9	3.8
	PV	-2.8	-5.2	-7.4	-9.5	-11.3	-13.1	-14.9	-16.7	-18.5	-20.4
SCHOFIELDS Total		**-2.9**	**-5.5**	**-7.7**	**-9.8**	**-11.6**	**-13.1**	**-14.4**	**-15.8**	**-17.0**	**-18.1**
SEVEN HILLS	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6	-0.6
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.3	1.7
	PV	-0.5	-0.9	-1.2	-1.6	-1.8	-2.1	-2.3	-2.6	-2.8	-3.1
SEVEN HILLS Total		**-0.5**	**-1.0**	**-1.4**	**-1.7**	**-1.9**	**-2.0**	**-2.1**	**-2.1**	**-2.1**	**-2.0**
SHELLHARBOUR	ESS	-0.2	-0.3	-0.5	-0.7	-0.8	-1.0	-1.2	-1.4	-1.5	-1.7
	EV	0.0	0.0	0.1	0.2	0.5	1.0	1.7	2.4	3.1	4.2
	PV	-2.4	-4.5	-6.3	-8.1	-9.7	-11.3	-12.8	-14.3	-15.8	-17.4
SHELLHARBOUR Total		**-2.5**	**-4.8**	**-6.8**	**-8.6**	**-10.1**	**-11.3**	**-12.3**	**-13.3**	**-14.2**	**-14.9**
SHERWOOD	ESS	-0.2	-0.3	-0.5	-0.6	-0.8	-1.0	-1.1	-1.3	-1.4	-1.6
	EV	0.0	0.0	0.1	0.2	0.5	1.0	1.7	2.3	3.1	4.1
	PV	-0.9	-1.7	-2.4	-3.1	-3.7	-4.3	-4.9	-5.4	-6.0	-6.6
SHERWOOD Total		**-1.1**	**-2.0**	**-2.8**	**-3.5**	**-4.0**	**-4.3**	**-4.3**	**-4.4**	**-4.3**	**-4.1**
SMITHFIELD	ESS	-0.2	-0.3	-0.5	-0.7	-0.9	-1.0	-1.2	-1.4	-1.5	-1.7
	EV	0.0	0.0	0.1	0.2	0.5	1.1	1.9	2.7	3.7	4.8
	PV	-1.3	-2.4	-3.3	-4.2	-5.0	-5.8	-6.5	-7.2	-7.9	-8.6
SMITHFIELD Total		**-1.4**	**-2.7**	**-3.8**	**-4.7**	**-5.3**	**-5.7**	**-5.7**	**-5.8**	**-5.7**	**-5.4**
SOUTH GRANVILLE	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.1	0.4	0.7	1.3	2.1	2.9	3.8	5.0
	PV	-0.8	-1.5	-2.2	-2.8	-3.4	-4.0	-4.6	-5.1	-5.7	-6.3
SOUTH GRANVILLE Total		**-0.9**	**-1.7**	**-2.4**	**-2.9**	**-3.2**	**-3.3**	**-3.2**	**-3.1**	**-2.8**	**-2.3**
SOUTH LEPPINGTON	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.4	1.9	2.5
	PV	-1.8	-3.4	-4.8	-6.2	-7.4	-8.6	-9.8	-11.0	-12.2	-13.5
SOUTH LEPPINGTON Total		**-1.9**	**-3.5**	**-5.0**	**-6.4**	**-7.5**	**-8.5**	**-9.4**	**-10.2**	**-11.0**	**-11.8**
SOUTH MARSDEN PARK	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.7	0.9	1.2
	PV	-1.0	-1.9	-2.8	-3.6	-4.4	-5.2	-6.0	-6.8	-7.7	-8.6
SOUTH MARSDEN PARK Total		**-1.0**	**-2.0**	**-2.8**	**-3.7**	**-4.4**	**-5.1**	**-5.7**	**-6.3**	**-7.0**	**-7.6**
SOUTH NOWRA	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.7
	PV	-0.3	-0.6	-0.9	-1.1	-1.3	-1.5	-1.7	-1.9	-2.1	-2.3
SOUTH NOWRA Total		**-0.4**	**-0.7**	**-0.9**	**-1.2**	**-1.4**	**-1.5**	**-1.6**	**-1.7**	**-1.8**	**-1.9**
SOUTH WINDSOR	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.9	-1.0	-1.0
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.1	1.5	2.1	2.7
	PV	-1.8	-3.4	-4.8	-6.1	-7.3	-8.4	-9.5	-10.7	-11.8	-12.9
SOUTH WINDSOR Total		**-1.9**	**-3.6**	**-5.0**	**-6.4**	**-7.5**	**-8.5**	**-9.2**	**-10.0**	**-10.7**	**-11.3**
SOUTH WOLLONGONG	ESS	-0.1	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6	-0.7
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.6	0.8
	PV	-0.4	-0.7	-1.0	-1.2	-1.5	-1.7	-1.9	-2.1	-2.4	-2.6
SOUTH WOLLONGONG Total		**-0.4**	**-0.8**	**-1.2**	**-1.5**	**-1.7**	**-1.9**	**-2.1**	**-2.2**	**-2.4**	**-2.4**
SPRINGWOOD	ESS	-0.1	-0.3	-0.4	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.1	0.2	0.5	0.8	1.3	1.7	2.3	3.0
	PV	-0.8	-1.5	-2.1	-2.6	-3.1	-3.5	-3.9	-4.3	-4.7	-5.1
SPRINGWOOD Total		**-0.9**	**-1.7**	**-2.4**	**-2.9**	**-3.3**	**-3.5**	**-3.5**	**-3.6**	**-3.5**	**-3.3**
ST MARYS	ESS	-0.1	-0.3	-0.4	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.4
	EV	0.0	0.0	0.1	0.2	0.4	0.9	1.5	2.1	2.8	3.7
	PV	-1.8	-3.3	-4.7	-6.1	-7.4	-8.6	-9.8	-11.0	-12.2	-13.4
ST MARYS Total		**-1.9**	**-3.6**	**-5.1**	**-6.5**	**-7.7**	**-8.6**	**-9.3**	**-10.0**	**-10.7**	**-11.2**
SUSSEX INLET	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.4	1.8
	PV	-0.7	-1.3	-1.9	-2.5	-2.9	-3.4	-3.9	-4.4	-4.8	-5.3
SUSSEX INLET Total		**-0.8**	**-1.4**	**-2.0**	**-2.6**	**-3.0**	**-3.3**	**-3.5**	**-3.7**	**-3.9**	**-4.0**
TAHMOOR	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8	-0.9
	EV	0.0	0.0	0.1	0.2	0.4	0.8	1.4	1.9	2.6	3.4
	PV	-2.4	-4.5	-6.5	-8.4	-10.2	-11.9	-13.6	-15.3	-17.0	-18.8
TAHMOOR Total		**-2.5**	**-4.7**	**-6.7**	**-8.6**	**-10.2**	**-11.6**	**-12.8**	**-14.1**	**-15.2**	**-16.3**
THE OAKS	ESS	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.6	0.8
	PV	-0.6	-1.2	-1.8	-2.3	-2.8	-3.3	-3.8	-4.3	-4.9	-5.5
THE OAKS Total		**-0.7**	**-1.3**	**-1.8**	**-2.4**	**-2.9**	**-3.3**	**-3.7**	**-4.1**	**-4.5**	**-4.9**
TOMERONG	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.8
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.6	0.8	1.0
	PV	-0.5	-1.0	-1.3	-1.7	-2.0	-2.2	-2.5	-2.7	-3.0	-3.3
TOMERONG Total		**-0.6**	**-1.1**	**-1.5**	**-1.9**	**-2.2**	**-2.5**	**-2.6**	**-2.8**	**-2.9**	**-3.0**

ZS PMA peak (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
ULLADULLA	ESS	-0.2	-0.4	-0.5	-0.7	-0.9	-1.1	-1.3	-1.5	-1.6	-1.8
	EV	0.0	0.0	0.1	0.2	0.5	1.0	1.7	2.4	3.2	4.2
	PV	-1.7	-3.2	-4.5	-5.7	-6.8	-7.9	-8.8	-9.8	-10.8	-11.8
ULLADULLA Total		**-1.9**	**-3.5**	**-5.0**	**-6.2**	**-7.2**	**-7.9**	**-8.4**	**-8.9**	**-9.3**	**-9.4**
UNANDERRA	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.8	1.0	1.4
	PV	-0.4	-0.8	-1.1	-1.4	-1.6	-1.9	-2.1	-2.4	-2.6	-2.8
UNANDERRA Total		**-0.4**	**-0.8**	**-1.2**	**-1.5**	**-1.7**	**-1.8**	**-1.8**	**-1.9**	**-1.9**	**-1.8**
WARILLA	ESS	-0.2	-0.3	-0.5	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.5
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.3	1.9	2.5	3.3
	PV	-1.8	-3.3	-4.6	-5.9	-7.0	-8.1	-9.2	-10.3	-11.4	-12.5
WARILLA Total		**-1.9**	**-3.6**	**-5.1**	**-6.4**	**-7.5**	**-8.3**	**-9.0**	**-9.6**	**-10.2**	**-10.6**
WENTWORTH FALLS	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.7	1.0	1.3
	PV	-0.4	-0.8	-1.2	-1.5	-1.7	-2.0	-2.2	-2.5	-2.7	-3.0
WENTWORTH FALLS Total		**-0.5**	**-0.9**	**-1.3**	**-1.6**	**-1.8**	**-2.0**	**-2.1**	**-2.2**	**-2.2**	**-2.2**
WERRINGTON	ESS	-0.1	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3
	EV	0.0	0.0	0.1	0.2	0.4	0.8	1.4	2.0	2.6	3.5
	PV	-1.6	-3.1	-4.4	-5.7	-6.8	-7.8	-8.7	-9.6	-10.6	-11.5
WERRINGTON Total		**-1.8**	**-3.3**	**-4.7**	**-6.0**	**-7.1**	**-7.8**	**-8.3**	**-8.8**	**-9.1**	**-9.3**
WEST CASTLE HILL	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
	EV	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.1	1.5	2.0
	PV	-1.2	-2.3	-3.3	-4.2	-5.1	-5.9	-6.7	-7.5	-8.4	-9.3
WEST CASTLE HILL Total		**-1.3**	**-2.4**	**-3.4**	**-4.3**	**-5.1**	**-5.8**	**-6.4**	**-7.1**	**-7.6**	**-8.1**
WEST LIVERPOOL 11KV	ESS	-0.1	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3
	EV	0.0	0.0	0.0	0.2	0.4	0.8	1.4	1.9	2.6	3.4
	PV	-1.6	-3.0	-4.3	-5.5	-6.6	-7.7	-8.8	-9.9	-11.0	-12.1
WEST LIVERPOOL 11KV Total		**-1.7**	**-3.2**	**-4.6**	**-5.9**	**-6.9**	**-7.7**	**-8.3**	**-9.0**	**-9.6**	**-10.0**
WEST PARRAMATTA	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.1
	PV	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
WEST PARRAMATTA Total		**-0.1**	**-0.3**	**-0.4**	**-0.5**	**-0.5**	**-0.5**	**-0.4**	**-0.4**	**-0.3**	**-0.2**
WEST PENNANT HILLS	ESS	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9
	EV	0.0	0.0	0.1	0.3	0.5	0.7	1.0	1.4	1.8	2.4
	PV	-1.1	-2.1	-3.0	-3.9	-4.7	-5.4	-6.1	-6.9	-7.6	-8.4
WEST PENNANT HILLS Total		**-1.2**	**-2.3**	**-3.2**	**-4.0**	**-4.7**	**-5.2**	**-5.7**	**-6.2**	**-6.6**	**-6.9**
WEST WETHERILL PARK 11KV	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PV	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
WEST WETHERILL PARK 11KV Total		**-0.1**	**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**
WEST WOLLONGONG	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-0.9
	EV	0.0	0.0	0.0	0.1	0.2	0.5	0.8	1.2	1.6	2.1
	PV	-0.7	-1.4	-1.9	-2.5	-3.0	-3.5	-3.9	-4.4	-4.8	-5.3
WEST WOLLONGONG Total		**-0.8**	**-1.5**	**-2.2**	**-2.8**	**-3.2**	**-3.5**	**-3.8**	**-4.0**	**-4.1**	**-4.2**
WESTMEAD	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.6	0.8
	PV	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5	-0.6
WESTMEAD Total		-0.1	-0.3	-0.4	-0.5	-0.5	-0.6	-0.6	-0.6	-0.5	-0.5
WETHERILL PARK	**ESS**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**
	EV	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2
	PV	-0.1	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6	-0.7	-0.7	-0.8
WETHERILL PARK Total		**-0.2**	**-0.3**	**-0.4**	**-0.5**	**-0.5**	**-0.6**	**-0.6**	**-0.7**	**-0.7**	**-0.7**
WHALAN	ESS	-0.1	-0.3	-0.4	-0.5	-0.6	-0.8	-0.9	-1.0	-1.2	-1.3
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.8	1.1	1.4
	PV	-0.8	-1.5	-2.1	-2.7	-3.2	-3.7	-4.2	-4.7	-5.2	-5.7
WHALAN Total		**-0.9**	**-1.8**	**-2.5**	**-3.2**	**-3.7**	**-4.2**	**-4.5**	**-4.9**	**-5.2**	**-5.5**
WILTON	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.4
	PV	-0.3	-0.6	-0.8	-1.0	-1.2	-1.4	-1.5	-1.7	-1.9	-2.1
WILTON Total		**-0.3**	**-0.6**	**-0.8**	**-1.1**	**-1.2**	**-1.4**	**-1.5**	**-1.6**	**-1.7**	**-1.8**
WINDSOR	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.3	1.8
	PV	-0.9	-1.7	-2.4	-3.1	-3.6	-4.1	-4.5	-5.0	-5.5	-5.9
WINDSOR Total		**-1.0**	**-1.8**	**-2.6**	**-3.2**	**-3.6**	**-4.0**	**-4.2**	**-4.5**	**-4.6**	**-4.7**
WISEMANS	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.6	0.8	1.0
	PV	-0.3	-0.6	-0.8	-1.1	-1.3	-1.5	-1.6	-1.8	-2.0	-2.2
WISEMANS Total		**-0.3**	**-0.6**	**-0.9**	**-1.1**	**-1.2**	**-1.3**	**-1.3**	**-1.4**	**-1.4**	**-1.3**

ZS PMA peak (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
WOMBARRA	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.7	0.9	1.2
	PV	-0.4	-0.8	-1.2	-1.5	-1.8	-2.1	-2.3	-2.6	-2.9	-3.1
WOMBARRA Total		**-0.5**	**-0.9**	**-1.3**	**-1.6**	**-1.9**	**-2.0**	**-2.1**	**-2.3**	**-2.3**	**-2.3**
WOODPARK	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.6	0.8	1.0
	PV	-0.1	-0.3	-0.4	-0.5	-0.6	-0.6	-0.7	-0.8	-0.9	-1.0
WOODPARK Total		**-0.1**	**-0.3**	**-0.4**	**-0.4**	**-0.4**	**-0.4**	**-0.3**	**-0.2**	**-0.1**	**0.1**
YATTE YATTAH	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3
	EV	0.0	0.0	0.1	0.1	0.3	0.4	0.7	0.9	1.2	1.6
	PV	-0.4	-0.8	-1.2	-1.5	-1.8	-2.1	-2.4	-2.7	-3.0	-3.3
YATTE YATTAH Total		**-0.5**	**-0.9**	**-1.2**	**-1.5**	**-1.7**	**-1.9**	**-2.0**	**-2.1**	**-2.1**	**-2.1**
YENNORA	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
	EV	0.0	0.0	0.1	0.2	0.5	0.9	1.6	2.3	3.1	4.0
	PV	-0.9	-1.6	-2.3	-2.9	-3.5	-4.0	-4.6	-5.1	-5.6	-6.2
YENNORA Total		**-0.9**	**-1.8**	**-2.5**	**-3.1**	**-3.4**	**-3.6**	**-3.5**	**-3.5**	**-3.3**	**-2.9**
GRAND TOTAL		**-189.7**	**-357.8**	**-504.5**	**-636.9**	**-742.2**	**-826.4**	**-889.6**	**-956.8**	**-1009.0**	**-1045.3**




EV Peak Demand by ZS in 2032 - Top 10%
*NIEIR data based on AEMO Step Change Scenario
RYDALMERE
HOLROYD
MUNGERIE PARK
DOONSIDE
DUNDAS
PARKLEA
PLUMPTON
SOUTH GRANVILLE
NORTH PARRAMATTA
QUAKERS HILL
CANLEY VALE
BONNYRIGG
SMITHFIELD
CASTLE HILL
MACQUARIE FIELDS
KINGSWOOD
DAPTO
0 1 2 3 4 5 6 7 8 9 10
MW
Contribution to 6pm peak Demand
Peak EV contribution


ESS Peak Demand by Zone Sub in 2032 - Top 10%
*NIEIR data based on Step Change Scenario
MUNGERIE PARK
HOLROYD
DOONSIDE
PARKLEA
MINTO
DUNDAS
NARELLAN
PLUMPTON
DAPTO
QUAKERS HILL
CANLEY VALE
-3 -3 -2 -2 -1 -1 0
MW
Contribution to 6pm peak Demand
Peak ESS contribution

9 APPENDIX 3 – POST MODELLING ADJUSTMENTS 6PM CONTRIBUTIONS

The following table lists the 6pm contributions from PVs (demand reductions), EVs (demand additions) and ESS (demand reductions), made to each zone substation under the AEMO step change scenario. These values are 6pm contributions as a proxy for when most zone substations are expected to peak. These values are based on work by NIEIR.

ZS PMA impact (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
ABBOTSBURY	PV	-0.3	-0.5	-0.7	-1.0	-1.1	-1.3	-1.5	-1.7	-1.9	-2.0
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.3	1.8	2.4	3.2
	ESS	-0.1	-0.2	-0.3	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
ABBOTSBURY Total		**-0.4**	**-0.7**	**-1.0**	**-1.3**	**-1.4**	**-1.3**	**-1.0**	**-0.8**	**-0.5**	**0.0**
ALBION PARK	PV	-0.4	-0.8	-1.1	-1.4	-1.6	-1.9	-2.1	-2.3	-2.5	-2.7
	EV	0.0	0.0	0.0	0.2	0.4	0.8	1.4	1.9	2.6	3.4
	ESS	-0.1	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3
ALBION PARK Total		**-0.6**	**-1.0**	**-1.5**	**-1.8**	**-1.9**	**-1.9**	**-1.7**	**-1.5**	**-1.1**	**-0.6**
AMBARVALE	PV	-0.3	-0.5	-0.7	-1.0	-1.1	-1.3	-1.5	-1.7	-1.9	-2.0
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.4	1.9	2.5
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1
AMBARVALE Total		**-0.4**	**-0.7**	**-1.0**	**-1.3**	**-1.4**	**-1.4**	**-1.3**	**-1.1**	**-0.9**	**-0.6**
ANZAC VILLAGE	PV	-0.2	-0.4	-0.6	-0.8	-1.0	-1.1	-1.3	-1.4	-1.6	-1.7
	EV	0.0	0.0	0.0	0.1	0.2	0.5	0.9	1.2	1.7	2.2
	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
ANZAC VILLAGE Total		**-0.3**	**-0.6**	**-0.8**	**-1.0**	**-1.1**	**-1.1**	**-0.9**	**-0.8**	**-0.6**	**-0.3**
APPIN	PV	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8	-0.9
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.8	1.0
	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
APPIN Total		**-0.1**	**-0.3**	**-0.4**	**-0.5**	**-0.5**	**-0.5**	**-0.4**	**-0.4**	**-0.3**	**-0.1**
ARNDELL PARK	PV	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.2
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.6	0.8	1.1
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6
ARNDELL PARK Total		**-0.2**	**-0.4**	**-0.6**	**-0.7**	**-0.8**	**-0.8**	**-0.8**	**-0.8**	**-0.8**	**-0.7**
BAULKHAM HILLS 11KV	PV	-0.3	-0.5	-0.7	-0.9	-1.1	-1.3	-1.5	-1.7	-1.9	-2.0
	EV	0.0	0.0	0.1	0.3	0.5	0.8	1.3	1.8	2.4	3.2
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.0	-1.1
BAULKHAM HILLS 11KV Total		**-0.4**	**-0.7**	**-1.0**	**-1.1**	**-1.2**	**-1.1**	**-0.9**	**-0.8**	**-0.5**	**0.0**
BELLA VISTA	PV	-0.5	-0.9	-1.2	-1.6	-1.9	-2.2	-2.5	-2.8	-3.1	-3.4
	EV	0.0	0.0	0.1	0.2	0.5	0.8	1.2	1.7	2.3	3.0
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8	-0.9
BELLA VISTA Total		**-0.6**	**-1.0**	**-1.4**	**-1.7**	**-1.9**	**-2.0**	**-1.9**	**-1.9**	**-1.7**	**-1.4**
BERRIMA JUNCTION	PV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.1	0.1	0.2	0.4	0.6	0.8	1.0	1.3
	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BERRIMA JUNCTION Total		**0.0**	**0.0**	**0.1**	**0.1**	**0.2**	**0.4**	**0.6**	**0.8**	**1.0**	**1.3**
BERRY	PV	-0.2	-0.4	-0.5	-0.7	-0.8	-0.9	-1.0	-1.1	-1.2	-1.4
	EV	0.0	0.0	0.1	0.1	0.2	0.4	0.6	0.8	1.0	1.3
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4
BERRY Total		**-0.2**	**-0.4**	**-0.6**	**-0.7**	**-0.7**	**-0.8**	**-0.7**	**-0.7**	**-0.6**	**-0.4**
BLACKHEATH	PV	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4	-0.5	-0.5
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.2
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5
BLACKHEATH Total		**-0.1**	**-0.2**	**-0.3**	**-0.4**	**-0.4**	**-0.4**	**-0.3**	**-0.2**	**-0.1**	**0.1**
BLACKMANS FLAT	PV	-0.1	-0.2	-0.3	-0.5	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.7	0.9
	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2
BLACKMANS FLAT Total		**-0.1**	**-0.3**	**-0.4**	**-0.5**	**-0.5**	**-0.5**	**-0.5**	**-0.4**	**-0.3**	**-0.2**
BLAXLAND	PV	-0.1	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.7	-0.8	-0.9
	EV	0.0	0.0	0.1	0.2	0.4	0.6	1.0	1.3	1.8	2.3
	ESS	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9
BLAXLAND Total		**-0.2**	**-0.4**	**-0.6**	**-0.6**	**-0.6**	**-0.5**	**-0.3**	**-0.1**	**0.2**	**0.6**
BOLONG	PV	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4
	EV	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4
	ESS	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
BOLONG Total		**-0.1**	**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.1**	**-0.1**
BOMADERRY	PV	-0.3	-0.6	-0.8	-1.0	-1.2	-1.4	-1.6	-1.8	-2.0	-2.1
	EV	0.0	0.0	0.0	0.1	0.3	0.5	0.9	1.2	1.7	2.2
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-0.9
BOMADERRY Total		**-0.4**	**-0.8**	**-1.1**	**-1.3**	**-1.4**	**-1.5**	**-1.4**	**-1.3**	**-1.2**	**-0.9**

ZS PMA impact (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
BONNYRIGG	PV	-0.3	-0.6	-0.9	-1.1	-1.3	-1.5	-1.7	-1.9	-2.1	-2.3
	EV	0.0	0.0	0.1	0.2	0.5	1.0	1.7	2.4	3.2	4.3
	ESS	-0.1	-0.3	-0.4	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.4
BONNYRIGG Total		**-0.5**	**-0.9**	**-1.2**	**-1.5**	**-1.6**	**-1.4**	**-1.0**	**-0.7**	**-0.2**	**0.5**
BOSSLEY PARK	PV	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.5	2.0	2.6
	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
BOSSLEY PARK Total		**-0.3**	**-0.5**	**-0.7**	**-0.8**	**-0.9**	**-0.8**	**-0.5**	**-0.3**	**0.1**	**0.6**
BOW BOWING	PV	-0.1	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.8	-0.9	-0.9
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.7	1.0	1.3
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5
BOW BOWING Total		**-0.2**	**-0.3**	**-0.5**	**-0.6**	**-0.6**	**-0.6**	**-0.5**	**-0.4**	**-0.3**	**-0.1**
BOWRAL	PV	-0.3	-0.6	-0.9	-1.2	-1.4	-1.6	-1.9	-2.1	-2.3	-2.5
	EV	0.0	0.0	0.1	0.3	0.6	0.9	1.2	1.6	2.2	2.8
	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8
BOWRAL Total		**-0.4**	**-0.8**	**-1.0**	**-1.2**	**-1.3**	**-1.3**	**-1.2**	**-1.1**	**-0.9**	**-0.5**
BRINGELLY	PV	-0.2	-0.4	-0.5	-0.7	-0.8	-1.0	-1.2	-1.3	-1.5	-1.7
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.8	1.0	1.4
	ESS	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3
BRINGELLY Total		**-0.2**	**-0.4**	**-0.6**	**-0.7**	**-0.8**	**-0.8**	**-0.8**	**-0.8**	**-0.7**	**-0.6**
BULLI	PV	-0.3	-0.6	-0.9	-1.1	-1.4	-1.6	-1.8	-2.0	-2.3	-2.5
	EV	0.0	0.0	0.0	0.2	0.4	0.8	1.3	1.8	2.5	3.3
	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.8
BULLI Total		**-0.4**	**-0.8**	**-1.1**	**-1.3**	**-1.4**	**-1.3**	**-1.0**	**-0.8**	**-0.5**	**0.0**
BYLONG	PV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BYLONG Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CABRAMATTA	PV	-0.2	-0.3	-0.4	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1	-1.3
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.4	1.8
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6
CABRAMATTA Total		**-0.2**	**-0.4**	**-0.6**	**-0.8**	**-0.8**	**-0.8**	**-0.6**	**-0.5**	**-0.3**	**0.0**
CAMBRIDGE PARK	PV	-0.3	-0.7	-0.9	-1.2	-1.4	-1.6	-1.8	-2.0	-2.2	-2.5
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.2	1.6	2.2	2.9
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
CAMBRIDGE PARK Total		**-0.5**	**-0.8**	**-1.2**	**-1.5**	**-1.6**	**-1.6**	**-1.4**	**-1.2**	**-1.0**	**-0.5**
CAMPBELLTOWN	PV	-0.3	-0.6	-0.9	-1.2	-1.4	-1.7	-1.9	-2.2	-2.4	-2.7
	EV	0.0	0.0	0.0	0.1	0.3	0.5	1.0	1.3	1.8	2.4
	ESS	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9
CAMPBELLTOWN Total		**-0.4**	**-0.8**	**-1.1**	**-1.4**	**-1.6**	**-1.7**	**-1.6**	**-1.5**	**-1.4**	**-1.2**
CANLEY VALE	PV	-0.3	-0.5	-0.8	-1.0	-1.2	-1.3	-1.5	-1.7	-1.9	-2.1
	EV	0.0	0.0	0.1	0.2	0.5	1.0	1.7	2.4	3.2	4.3
	ESS	-0.2	-0.3	-0.5	-0.6	-0.8	-1.0	-1.1	-1.3	-1.4	-1.6
CANLEY VALE Total		**-0.4**	**-0.8**	**-1.2**	**-1.4**	**-1.5**	**-1.3**	**-0.9**	**-0.6**	**-0.1**	**0.7**
CARRAMAR	PV	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.1	1.5	2.1	2.7
	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
CARRAMAR Total		**-0.2**	**-0.4**	**-0.6**	**-0.7**	**-0.7**	**-0.6**	**-0.3**	**0.0**	**0.3**	**0.8**
CASTLE HILL	PV	-0.5	-0.9	-1.3	-1.7	-2.1	-2.4	-2.8	-3.1	-3.5	-3.8
	EV	0.0	0.0	0.2	0.4	0.7	1.2	1.8	2.4	3.2	4.2
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6
CASTLE HILL Total		**-0.5**	**-1.0**	**-1.3**	**-1.6**	**-1.7**	**-1.6**	**-1.4**	**-1.2**	**-0.8**	**-0.2**
CASULA	PV	-0.4	-0.7	-1.0	-1.3	-1.6	-1.9	-2.1	-2.4	-2.6	-2.9
	EV	0.0	0.0	0.0	0.1	0.4	0.8	1.4	2.0	2.7	3.5
	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-1.0	-1.1	-1.2
CASULA Total		**-0.5**	**-1.0**	**-1.4**	**-1.7**	**-1.8**	**-1.8**	**-1.5**	**-1.4**	**-1.0**	**-0.5**
CATTAI	PV	-0.2	-0.4	-0.6	-0.7	-0.9	-1.0	-1.1	-1.3	-1.4	-1.5
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.3
	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3
CATTAI Total		**-0.2**	**-0.4**	**-0.6**	**-0.8**	**-0.9**	**-0.9**	**-0.9**	**-0.8**	**-0.8**	**-0.6**
CAWDOR	PV	-0.3	-0.6	-0.9	-1.2	-1.5	-1.8	-2.0	-2.3	-2.6	-2.9
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.8	1.1	1.5	2.0
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.6	-0.7
CAWDOR Total		**-0.4**	**-0.8**	**-1.1**	**-1.4**	**-1.6**	**-1.7**	**-1.7**	**-1.8**	**-1.7**	**-1.6**
CHERITON AVENUE	PV	-0.4	-0.7	-1.0	-1.3	-1.5	-1.8	-2.1	-2.3	-2.6	-2.9
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.3	1.7	2.3
	ESS	-0.1	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.7
CHERITON AVENUE Total		**-0.4**	**-0.8**	**-1.1**	**-1.4**	**-1.5**	**-1.6**	**-1.6**	**-1.6**	**-1.6**	**-1.4**
CHIPPING NORTON	PV	-0.1	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.7	0.9	1.2
	ESS	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.4	-0.4	-0.4	-0.5
CHIPPING NORTON Total		**-0.2**	**-0.4**	**-0.5**	**-0.6**	**-0.7**	**-0.7**	**-0.7**	**-0.6**	**-0.5**	**-0.4**

ZS PMA impact (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
CLAREMONT MEADOWS	PV	-0.4	-0.8	-1.2	-1.5	-1.8	-2.2	-2.5	-2.8	-3.1	-3.5
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.1	1.5	2.0	2.7
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
CLAREMONT MEADOWS Total		**-0.5**	**-1.0**	**-1.4**	**-1.8**	**-2.0**	**-2.1**	**-2.1**	**-2.1**	**-2.0**	**-1.8**
CORRIMAL	PV	-0.2	-0.5	-0.7	-0.8	-1.0	-1.2	-1.3	-1.5	-1.6	-1.8
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.1	1.6	2.1	2.8
	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-1.0	-1.1	-1.2
CORRIMAL Total		**-0.4**	**-0.7**	**-1.0**	**-1.2**	**-1.3**	**-1.2**	**-1.0**	**-0.9**	**-0.6**	**-0.1**
CRANEBROOK	PV	-0.3	-0.5	-0.8	-1.0	-1.2	-1.4	-1.6	-1.7	-1.9	-2.1
	EV	0.0	0.0	0.0	0.1	0.2	0.5	0.9	1.2	1.6	2.2
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6	-0.6
CRANEBROOK Total		**-0.3**	**-0.7**	**-0.9**	**-1.2**	**-1.3**	**-1.3**	**-1.1**	**-1.0**	**-0.9**	**-0.6**
CULBURRA	PV	-0.2	-0.4	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.4	-1.6
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.2	1.6
	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
CULBURRA Total		**-0.3**	**-0.6**	**-0.8**	**-1.0**	**-1.1**	**-1.1**	**-1.1**	**-1.1**	**-1.0**	**-0.8**
DAPTO	PV	-0.5	-0.9	-1.2	-1.5	-1.8	-2.1	-2.3	-2.6	-2.8	-3.1
	EV	0.0	0.0	0.1	0.2	0.4	0.9	1.6	2.2	2.9	3.9
	ESS	-0.2	-0.3	-0.5	-0.6	-0.8	-1.0	-1.1	-1.3	-1.4	-1.6
DAPTO Total		**-0.6**	**-1.2**	**-1.6**	**-2.0**	**-2.2**	**-2.1**	**-1.9**	**-1.7**	**-1.3**	**-0.8**
DARKES FOREST	PV	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2
	EV	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DARKES FOREST Total		**0.0**	**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**0.0**	**0.0**	**0.1**	**0.1**
DOONSIDE	PV	-0.6	-1.1	-1.6	-2.1	-2.5	-2.9	-3.3	-3.7	-4.1	-4.5
	EV	0.0	0.0	0.1	0.3	0.7	1.3	2.2	3.1	4.2	5.5
	ESS	-0.2	-0.4	-0.6	-0.8	-1.0	-1.2	-1.4	-1.7	-1.8	-2.0
DOONSIDE Total		**-0.8**	**-1.5**	**-2.1**	**-2.6**	**-2.8**	**-2.8**	**-2.5**	**-2.2**	**-1.7**	**-1.0**
DUNDAS	PV	-0.4	-0.7	-1.0	-1.3	-1.6	-1.8	-2.1	-2.4	-2.6	-2.9
	EV	0.0	0.0	0.1	0.4	0.7	1.3	2.0	2.8	3.8	5.0
	ESS	-0.2	-0.4	-0.6	-0.7	-0.9	-1.1	-1.3	-1.5	-1.7	-1.8
DUNDAS Total		**-0.6**	**-1.0**	**-1.4**	**-1.7**	**-1.8**	**-1.7**	**-1.3**	**-1.0**	**-0.5**	**0.3**
EAST RICHMOND	PV	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8	-0.9
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.2	1.6
	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.4	-0.4	-0.5	-0.5	-0.6
EAST RICHMOND Total		**-0.2**	**-0.4**	**-0.5**	**-0.6**	**-0.6**	**-0.6**	**-0.5**	**-0.3**	**-0.2**	**0.1**
EASTERN CREEK	PV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2
	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EASTERN CREEK Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**
EDMONDSON PARK	PV	-0.2	-0.3	-0.5	-0.6	-0.7	-0.9	-1.0	-1.1	-1.2	-1.3
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.6	0.8	1.1	1.4
	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3
EDMONDSON PARK Total		**-0.2**	**-0.4**	**-0.6**	**-0.7**	**-0.7**	**-0.7**	**-0.6**	**-0.6**	**-0.4**	**-0.2**
EMU PLAINS	PV	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.0
	EV	0.0	0.0	0.1	0.1	0.3	0.5	0.9	1.2	1.6	2.2
	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
EMU PLAINS Total		**-0.2**	**-0.4**	**-0.6**	**-0.7**	**-0.7**	**-0.7**	**-0.5**	**-0.3**	**-0.1**	**0.3**
FAIRFIELD	PV	-0.1	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5	-0.6	-0.6
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.4	1.8
	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8
FAIRFIELD Total		**-0.2**	**-0.3**	**-0.5**	**-0.6**	**-0.6**	**-0.5**	**-0.4**	**-0.2**	**0.0**	**0.4**
FIGTREE	PV	-0.3	-0.6	-0.8	-1.1	-1.3	-1.5	-1.7	-1.9	-2.0	-2.2
	EV	0.0	0.0	0.1	0.2	0.4	0.8	1.3	1.9	2.5	3.3
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.0	-1.1
FIGTREE Total		**-0.4**	**-0.8**	**-1.1**	**-1.4**	**-1.4**	**-1.4**	**-1.1**	**-0.9**	**-0.5**	**0.0**
GERRINGONG	PV	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4	-0.4	-0.4
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.5	0.6
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4
GERRINGONG Total		**-0.1**	**-0.2**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.2**
GLENMORE PARK	PV	-0.3	-0.6	-0.9	-1.1	-1.3	-1.5	-1.7	-1.9	-2.1	-2.3
	EV	0.0	0.0	0.0	0.1	0.2	0.5	0.9	1.2	1.6	2.2
	ESS	-0.1	-0.2	-0.3	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
GLENMORE PARK Total		**-0.4**	**-0.8**	**-1.2**	**-1.5**	**-1.6**	**-1.7**	**-1.6**	**-1.6**	**-1.5**	**-1.2**
GLENORIE	PV	-0.1	-0.2	-0.2	-0.3	-0.4	-0.4	-0.5	-0.5	-0.6	-0.6
	EV	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.5
	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2
GLENORIE Total		**-0.1**	**-0.2**	**-0.3**	**-0.3**	**-0.3**	**-0.4**	**-0.4**	**-0.4**	**-0.4**	**-0.4**
GLOSSODIA	PV	-0.2	-0.4	-0.6	-0.8	-0.9	-1.1	-1.2	-1.4	-1.5	-1.7
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.8	1.1	1.5
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5
GLOSSODIA Total		**-0.3**	**-0.5**	**-0.7**	**-0.9**	**-1.0**	**-1.0**	**-1.0**	**-0.9**	**-0.8**	**-0.7**

ZS PMA impact (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
GRANVILLE	PV	-0.2	-0.3	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1	-1.3	-1.4
	EV	0.0	0.0	0.1	0.2	0.3	0.6	0.9	1.3	1.7	2.3
	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-1.0	-1.1	-1.2
GRANVILLE Total		**-0.3**	**-0.6**	**-0.8**	**-1.0**	**-1.0**	**-1.0**	**-0.9**	**-0.8**	**-0.6**	**-0.3**
GREYSTANES	PV	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8	-0.9
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.5	1.9	2.6
	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.8
GREYSTANES Total		**-0.2**	**-0.4**	**-0.5**	**-0.6**	**-0.6**	**-0.4**	**-0.2**	**0.1**	**0.4**	**0.9**
HARTLEY VALE	PV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HARTLEY VALE Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
HAZELBROOK	PV	-0.1	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5	-0.6	-0.6
	EV	0.0	0.0	0.1	0.1	0.3	0.5	0.7	1.0	1.3	1.8
	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6
HAZELBROOK Total		**-0.2**	**-0.3**	**-0.4**	**-0.4**	**-0.4**	**-0.3**	**-0.2**	**0.0**	**0.2**	**0.5**
HELENSBURGH	PV	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5	-0.6
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.7	0.9
	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3
HELENSBURGH Total		**-0.1**	**-0.2**	**-0.3**	**-0.4**	**-0.4**	**-0.4**	**-0.3**	**-0.2**	**-0.1**	**0.0**
HINCHINBROOK	PV	-0.4	-0.8	-1.2	-1.5	-1.8	-2.1	-2.4	-2.6	-2.9	-3.2
	EV	0.0	0.0	0.0	0.2	0.4	0.9	1.5	2.2	2.9	3.9
	ESS	-0.2	-0.3	-0.5	-0.6	-0.8	-0.9	-1.1	-1.2	-1.4	-1.5
HINCHINBROOK Total		**-0.6**	**-1.1**	**-1.6**	**-2.0**	**-2.1**	**-2.1**	**-1.9**	**-1.7**	**-1.4**	**-0.8**
HOLROYD	PV	-0.5	-0.9	-1.3	-1.7	-2.0	-2.3	-2.6	-3.0	-3.3	-3.7
	EV	0.0	0.0	0.2	0.4	0.9	1.7	2.8	3.9	5.3	7.0
	ESS	-0.2	-0.4	-0.6	-0.8	-1.0	-1.2	-1.5	-1.7	-1.9	-2.0
HOLROYD Total		**-0.7**	**-1.3**	**-1.8**	**-2.1**	**-2.1**	**-1.8**	**-1.3**	**-0.7**	**0.1**	**1.3**
HOMEPRIDE	PV	-0.2	-0.4	-0.5	-0.7	-0.8	-1.0	-1.1	-1.3	-1.4	-1.5
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.1	1.6	2.1	2.8
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
HOMEPRIDE Total		**-0.3**	**-0.6**	**-0.8**	**-1.0**	**-1.0**	**-1.0**	**-0.7**	**-0.5**	**-0.2**	**0.2**
HORSLEY PARK	PV	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.4
	ESS	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
HORSLEY PARK Total		**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**0.0**	**0.0**	**0.1**
HUNTINGWOOD	PV	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5
	ESS	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
HUNTINGWOOD Total		**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.1**	**-0.1**	**0.0**
HUSKISSON	PV	-0.4	-0.7	-1.0	-1.3	-1.5	-1.7	-1.9	-2.2	-2.4	-2.6
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.1	1.6	2.1	2.8
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
HUSKISSON Total		**-0.5**	**-0.9**	**-1.2**	**-1.5**	**-1.7**	**-1.7**	**-1.5**	**-1.4**	**-1.2**	**-0.8**
ILFORD HALL	PV	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2
	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ILFORD HALL Total		**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**
INNER HARBOUR	PV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INNER HARBOUR Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
JAMBEROO	PV	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4
	ESS	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
JAMBEROO Total		**-0.1**	**-0.2**	**-0.2**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.2**	**-0.2**
JASPER RD	PV	-0.2	-0.4	-0.6	-0.7	-0.9	-1.0	-1.1	-1.3	-1.4	-1.6
	EV	0.0	0.0	0.1	0.2	0.3	0.5	0.7	1.0	1.3	1.7
	ESS	-0.1	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3
JASPER RD Total		**-0.3**	**-0.7**	**-0.9**	**-1.1**	**-1.2**	**-1.3**	**-1.3**	**-1.4**	**-1.3**	**-1.2**
JORDAN SPRINGS	PV	-0.2	-0.4	-0.5	-0.7	-0.8	-0.9	-1.0	-1.1	-1.3	-1.4
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	0.9	1.2	1.6
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.6	-0.7
JORDAN SPRINGS Total		**-0.3**	**-0.5**	**-0.7**	**-0.9**	**-1.0**	**-1.0**	**-0.9**	**-0.8**	**-0.6**	**-0.4**
KANDOS	PV	-0.2	-0.5	-0.7	-0.9	-1.0	-1.2	-1.4	-1.5	-1.7	-1.9
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.4	1.8
	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
KANDOS Total		**-0.3**	**-0.5**	**-0.7**	**-0.9**	**-0.9**	**-0.9**	**-0.8**	**-0.7**	**-0.6**	**-0.3**
KANGAROO VALLEY	PV	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.5
	ESS	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
KANGAROO VALLEY Total		**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.1**	**-0.1**	**-0.1**	**0.0**

ZS PMA impact (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
KATOOMBA	PV	-0.1	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.8	-0.9	-0.9
	EV	0.0	0.0	0.1	0.1	0.3	0.5	0.8	1.1	1.5	2.0
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-0.9
KATOOMBA Total		**-0.2**	**-0.4**	**-0.6**	**-0.7**	**-0.7**	**-0.7**	**-0.6**	**-0.4**	**-0.2**	**0.1**
KELLYVILLE	PV	-0.2	-0.4	-0.5	-0.7	-0.8	-1.0	-1.1	-1.2	-1.4	-1.5
	EV	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.7	0.9	1.1
	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6
KELLYVILLE Total		**-0.3**	**-0.5**	**-0.7**	**-0.8**	**-0.9**	**-1.0**	**-1.0**	**-1.0**	**-1.0**	**-0.9**
KEMBLA GRANGE	PV	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.7	0.9
	ESS	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3
KEMBLA GRANGE Total		**-0.1**	**-0.3**	**-0.4**	**-0.4**	**-0.5**	**-0.5**	**-0.4**	**-0.4**	**-0.3**	**-0.2**
KEMPS CREEK	PV	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.7
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.6	0.8
	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
KEMPS CREEK Total		**-0.1**	**-0.2**	**-0.3**	**-0.4**	**-0.4**	**-0.4**	**-0.4**	**-0.3**	**-0.3**	**-0.2**
KENNY STREET	PV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
KENNY STREET Total		**0.0**	**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**
KENTHURST	PV	-0.4	-0.8	-1.1	-1.5	-1.8	-2.1	-2.4	-2.6	-3.0	-3.3
	EV	0.0	0.0	0.1	0.2	0.3	0.5	0.8	1.1	1.4	1.8
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5
KENTHURST Total		**-0.5**	**-0.9**	**-1.2**	**-1.5**	**-1.7**	**-1.8**	**-1.9**	**-2.0**	**-2.0**	**-1.9**
KENTLYN	PV	-0.5	-0.9	-1.2	-1.6	-1.9	-2.1	-2.4	-2.7	-3.0	-3.3
	EV	0.0	0.0	0.0	0.1	0.4	0.8	1.4	2.0	2.7	3.6
	ESS	-0.2	-0.3	-0.5	-0.6	-0.8	-0.9	-1.1	-1.3	-1.4	-1.5
KENTLYN Total		**-0.6**	**-1.2**	**-1.6**	**-2.0**	**-2.2**	**-2.3**	**-2.1**	**-2.0**	**-1.7**	**-1.2**
KIAMA	PV	-0.3	-0.5	-0.7	-0.9	-1.1	-1.2	-1.4	-1.5	-1.7	-1.9
	EV	0.0	0.0	0.1	0.3	0.5	0.7	0.9	1.1	1.4	1.8
	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9
KIAMA Total		**-0.3**	**-0.6**	**-0.8**	**-0.9**	**-1.0**	**-1.1**	**-1.1**	**-1.2**	**-1.1**	**-0.9**
KINGSWOOD	PV	-0.5	-1.0	-1.4	-1.8	-2.2	-2.6	-2.9	-3.3	-3.7	-4.1
	EV	0.0	0.0	0.0	0.2	0.4	0.9	1.6	2.2	3.0	3.9
	ESS	-0.1	-0.3	-0.4	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.4
KINGSWOOD Total		**-0.7**	**-1.3**	**-1.8**	**-2.3**	**-2.5**	**-2.6**	**-2.4**	**-2.3**	**-2.0**	**-1.5**
KURRAJONG	PV	-0.3	-0.5	-0.7	-0.9	-1.0	-1.2	-1.4	-1.5	-1.7	-1.9
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.4	1.8
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5
KURRAJONG Total		**-0.3**	**-0.6**	**-0.8**	**-1.0**	**-1.1**	**-1.1**	**-1.0**	**-0.9**	**-0.8**	**-0.5**
LEABONS LANE	PV	-0.2	-0.5	-0.6	-0.8	-1.0	-1.2	-1.3	-1.5	-1.7	-1.9
	EV	0.0	0.0	0.0	0.1	0.3	0.5	0.8	1.2	1.6	2.1
	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8
LEABONS LANE Total		**-0.3**	**-0.6**	**-0.9**	**-1.1**	**-1.2**	**-1.2**	**-1.1**	**-1.0**	**-0.9**	**-0.6**
LENNOX	PV	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8	-0.9
	EV	0.0	0.0	0.1	0.3	0.5	0.8	1.3	1.8	2.3	3.1
	ESS	-0.1	-0.3	-0.4	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1	-1.2
LENNOX Total		**-0.2**	**-0.5**	**-0.6**	**-0.7**	**-0.6**	**-0.5**	**-0.3**	**0.0**	**0.4**	**0.9**
LITHGOW	PV	-0.3	-0.6	-0.8	-1.0	-1.2	-1.4	-1.5	-1.7	-1.9	-2.1
	EV	0.0	0.0	0.1	0.1	0.3	0.6	1.0	1.3	1.8	2.4
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8	-0.9
LITHGOW Total		**-0.4**	**-0.7**	**-1.0**	**-1.2**	**-1.3**	**-1.3**	**-1.2**	**-1.1**	**-0.9**	**-0.6**
LIVERPOOL 11KV	PV	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.0	0.2	0.4	0.9	1.5	2.1	2.8	3.8
	ESS	-0.1	-0.3	-0.4	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.4
LIVERPOOL 11KV Total		**-0.3**	**-0.6**	**-0.8**	**-1.0**	**-1.0**	**-0.7**	**-0.3**	**0.0**	**0.5**	**1.3**
LUDDENHAM	PV	-0.2	-0.4	-0.5	-0.7	-0.9	-1.0	-1.2	-1.3	-1.5	-1.7
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.8	1.1
	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
LUDDENHAM Total		**-0.2**	**-0.4**	**-0.6**	**-0.7**	**-0.8**	**-0.9**	**-0.8**	**-0.8**	**-0.8**	**-0.7**
MACQUARIE FIELDS	PV	-0.5	-1.0	-1.4	-1.7	-2.1	-2.4	-2.7	-3.0	-3.3	-3.6
	EV	0.0	0.0	0.0	0.2	0.4	0.9	1.6	2.3	3.1	4.1
	ESS	-0.1	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3
MACQUARIE FIELDS Total		**-0.7**	**-1.2**	**-1.7**	**-2.1**	**-2.3**	**-2.3**	**-2.0**	**-1.8**	**-1.5**	**-0.9**
MALDON	PV	-0.5	-1.0	-1.4	-1.8	-2.2	-2.6	-2.9	-3.3	-3.6	-4.0
	EV	0.0	0.0	0.1	0.2	0.3	0.7	1.1	1.5	2.1	2.7
	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6
MALDON Total		**-0.6**	**-1.1**	**-1.5**	**-1.9**	**-2.1**	**-2.2**	**-2.2**	**-2.2**	**-2.1**	**-1.8**
MAMRE	PV	-0.3	-0.6	-0.9	-1.2	-1.4	-1.6	-1.8	-2.0	-2.2	-2.4
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.4	1.9	2.6
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
MAMRE Total		**-0.4**	**-0.8**	**-1.2**	**-1.4**	**-1.6**	**-1.6**	**-1.5**	**-1.4**	**-1.2**	**-0.8**

ZS PMA impact (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
MARAYONG	PV	-0.3	-0.6	-0.8	-1.0	-1.3	-1.5	-1.7	-1.9	-2.1	-2.3
	EV	0.0	0.0	0.0	0.1	0.3	0.5	0.8	1.2	1.6	2.1
	ESS	-0.1	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.7
MARAYONG Total		**-0.4**	**-0.7**	**-1.0**	**-1.2**	**-1.4**	**-1.4**	**-1.4**	**-1.3**	**-1.2**	**-1.0**
MARSDEN PARK	PV	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.3	1.7
	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5
MARSDEN PARK Total		**-0.2**	**-0.4**	**-0.5**	**-0.6**	**-0.7**	**-0.6**	**-0.5**	**-0.3**	**-0.1**	**0.2**
MEADOW FLAT	PV	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2
	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
MEADOW FLAT Total		**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**
MINTO	PV	-0.5	-0.9	-1.2	-1.6	-1.9	-2.1	-2.4	-2.7	-2.9	-3.2
	EV	0.0	0.0	0.0	0.1	0.4	0.8	1.3	1.9	2.6	3.4
	ESS	-0.2	-0.4	-0.6	-0.7	-0.9	-1.1	-1.3	-1.5	-1.7	-1.8
MINTO Total		**-0.7**	**-1.3**	**-1.8**	**-2.2**	**-2.4**	**-2.5**	**-2.4**	**-2.3**	**-2.0**	**-1.6**
MITTAGONG	PV	-0.3	-0.5	-0.7	-0.9	-1.1	-1.3	-1.5	-1.6	-1.8	-2.0
	EV	0.0	0.0	0.1	0.1	0.3	0.5	0.7	1.0	1.3	1.7
	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9
MITTAGONG Total		**-0.4**	**-0.7**	**-0.9**	**-1.1**	**-1.3**	**-1.3**	**-1.4**	**-1.4**	**-1.3**	**-1.1**
MOOREBANK	PV	-0.2	-0.3	-0.5	-0.6	-0.8	-0.9	-1.0	-1.2	-1.3	-1.4
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.7	1.0	1.3
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4
MOOREBANK Total		**-0.2**	**-0.4**	**-0.6**	**-0.8**	**-0.9**	**-0.9**	**-0.8**	**-0.8**	**-0.7**	**-0.6**
MOSS VALE	PV	-0.3	-0.6	-0.8	-1.0	-1.2	-1.4	-1.6	-1.8	-2.0	-2.2
	EV	0.0	0.0	0.1	0.3	0.5	0.8	1.1	1.4	1.9	2.5
	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
MOSS VALE Total		**-0.4**	**-0.7**	**-0.9**	**-1.1**	**-1.1**	**-1.1**	**-1.1**	**-1.0**	**-0.8**	**-0.5**
MOUNT OUSLEY	PV	-0.2	-0.4	-0.5	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3	-1.4
	EV	0.0	0.0	0.0	0.1	0.2	0.5	0.8	1.1	1.5	1.9
	ESS	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9
MOUNT OUSLEY Total		**-0.3**	**-0.5**	**-0.8**	**-0.9**	**-1.0**	**-1.0**	**-0.9**	**-0.8**	**-0.6**	**-0.4**
MUNGERIE PARK	PV	-0.9	-1.7	-2.3	-3.0	-3.5	-4.1	-4.6	-5.1	-5.6	-6.2
	EV	0.0	0.1	0.2	0.5	1.0	1.7	2.6	3.5	4.7	6.2
	ESS	-0.2	-0.5	-0.7	-0.9	-1.1	-1.4	-1.6	-1.9	-2.1	-2.3
MUNGERIE PARK Total		**-1.1**	**-2.1**	**-2.8**	**-3.4**	**-3.7**	**-3.8**	**-3.6**	**-3.4**	**-3.0**	**-2.2**
NARELLAN	PV	-0.6	-1.1	-1.5	-2.0	-2.4	-2.8	-3.2	-3.6	-4.0	-4.5
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.2	1.7	2.2	2.9
	ESS	-0.2	-0.3	-0.5	-0.7	-0.9	-1.0	-1.2	-1.4	-1.5	-1.7
NARELLAN Total		**-0.7**	**-1.4**	**-2.0**	**-2.5**	**-2.9**	**-3.1**	**-3.2**	**-3.3**	**-3.3**	**-3.2**
NEPEAN 11KV	PV	-0.6	-1.2	-1.7	-2.3	-2.7	-3.2	-3.7	-4.2	-4.8	-5.4
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.2	1.7	2.3	3.0
	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-1.0	-1.1	-1.2
NEPEAN 11KV Total		**-0.7**	**-1.4**	**-2.0**	**-2.6**	**-3.0**	**-3.2**	**-3.3**	**-3.5**	**-3.6**	**-3.5**
NEWTON	PV	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.5	0.7	0.9
	ESS	-0.1	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6	-0.7
NEWTON Total		**-0.2**	**-0.4**	**-0.6**	**-0.8**	**-0.9**	**-0.9**	**-0.9**	**-0.9**	**-0.9**	**-0.8**
NORTH EASTERN CREEK	PV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NORTH EASTERN CREEK Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**-0.1**
NORTH LEPPINGTON	PV	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.7	0.9
	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2
NORTH LEPPINGTON Total		**-0.1**	**-0.3**	**-0.4**	**-0.4**	**-0.5**	**-0.5**	**-0.5**	**-0.4**	**-0.4**	**-0.3**
NORTH PARRAMATTA	PV	-0.2	-0.3	-0.4	-0.6	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3
	EV	0.0	0.0	0.2	0.4	0.7	1.2	1.8	2.4	3.2	4.3
	ESS	-0.2	-0.3	-0.5	-0.6	-0.8	-1.0	-1.1	-1.3	-1.4	-1.6
NORTH PARRAMATTA Total		**-0.3**	**-0.6**	**-0.8**	**-0.8**	**-0.8**	**-0.6**	**-0.3**	**0.1**	**0.6**	**1.4**
NORTH RICHMOND	PV	-0.2	-0.4	-0.6	-0.8	-0.9	-1.0	-1.2	-1.3	-1.5	-1.6
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.8	1.0	1.4
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4
NORTH RICHMOND Total		**-0.3**	**-0.5**	**-0.7**	**-0.9**	**-1.0**	**-1.0**	**-0.9**	**-0.9**	**-0.8**	**-0.6**
NORTH ROCKS	PV	-0.1	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.1	0.2	0.3	0.6	0.9	1.2	1.6	2.0
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6	-0.6
NORTH ROCKS Total		**-0.2**	**-0.4**	**-0.5**	**-0.6**	**-0.6**	**-0.5**	**-0.4**	**-0.3**	**0.0**	**0.3**
NORTH WARRAGAMBA	PV	-0.3	-0.6	-0.8	-1.0	-1.3	-1.5	-1.7	-1.9	-2.1	-2.3
	EV	0.0	0.0	0.0	0.1	0.3	0.5	0.8	1.2	1.6	2.1
	ESS	-0.1	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.7
NORTH WARRAGAMBA Total		**-0.4**	**-0.7**	**-1.0**	**-1.2**	**-1.4**	**-1.4**	**-1.4**	**-1.3**	**-1.2**	**-1.0**

ZS PMA impact (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
NORTH WOLLONGONG	PV	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.6	0.8	1.1
	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
NORTH WOLLONGONG Total		**-0.2**	**-0.4**	**-0.6**	**-0.8**	**-0.9**	**-0.9**	**-0.9**	**-0.9**	**-0.8**	**-0.7**
NORTHMEAD	PV	-0.2	-0.3	-0.5	-0.6	-0.7	-0.9	-1.0	-1.1	-1.2	-1.4
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.1	1.5	2.0	2.6
	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9
NORTHMEAD Total		**-0.3**	**-0.5**	**-0.6**	**-0.7**	**-0.7**	**-0.7**	**-0.5**	**-0.3**	**0.0**	**0.4**
NOWRA	PV	-0.4	-0.7	-0.9	-1.2	-1.5	-1.7	-1.9	-2.2	-2.4	-2.6
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.4	1.9	2.5
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
NOWRA Total		**-0.5**	**-0.9**	**-1.2**	**-1.5**	**-1.7**	**-1.7**	**-1.6**	**-1.6**	**-1.4**	**-1.1**
OAKDALE	PV	-0.1	-0.2	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6	-0.7
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.6
	ESS	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
OAKDALE Total		**-0.1**	**-0.2**	**-0.3**	**-0.3**	**-0.4**	**-0.4**	**-0.3**	**-0.3**	**-0.3**	**-0.2**
ORAN PARK	PV	-0.8	-1.5	-2.1	-2.8	-3.4	-4.1	-4.7	-5.4	-6.1	-6.9
	EV	0.0	0.0	0.1	0.2	0.5	1.0	1.6	2.2	2.9	3.8
	ESS	-0.1	-0.3	-0.4	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1	-1.2
ORAN PARK Total		**-0.9**	**-1.7**	**-2.4**	**-3.0**	**-3.5**	**-3.8**	**-4.0**	**-4.3**	**-4.4**	**-4.3**
PARKLEA	PV	-0.7	-1.4	-1.9	-2.5	-2.9	-3.3	-3.7	-4.1	-4.5	-5.0
	EV	0.0	0.0	0.1	0.3	0.6	1.2	1.9	2.7	3.5	4.7
	ESS	-0.2	-0.4	-0.6	-0.8	-1.0	-1.2	-1.4	-1.7	-1.8	-2.0
PARKLEA Total		**-0.9**	**-1.8**	**-2.4**	**-3.0**	**-3.3**	**-3.4**	**-3.2**	**-3.1**	**-2.8**	**-2.3**
PENRITH 11KV	PV	-0.2	-0.4	-0.6	-0.8	-1.0	-1.1	-1.3	-1.4	-1.5	-1.7
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.9	1.2	1.5
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6
PENRITH 11KV Total		**-0.3**	**-0.6**	**-0.8**	**-1.0**	**-1.1**	**-1.1**	**-1.1**	**-1.1**	**-0.9**	**-0.8**
PLUMPTON	PV	-0.4	-0.7	-1.0	-1.3	-1.6	-1.9	-2.1	-2.4	-2.6	-2.9
	EV	0.0	0.0	0.1	0.3	0.6	1.1	1.9	2.6	3.4	4.5
	ESS	-0.2	-0.3	-0.5	-0.7	-0.8	-1.0	-1.2	-1.4	-1.5	-1.6
PLUMPTON Total		**-0.6**	**-1.0**	**-1.4**	**-1.7**	**-1.8**	**-1.7**	**-1.4**	**-1.1**	**-0.7**	**0.0**
PORT CENTRAL	PV	-0.1	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.8	-0.8
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.6	0.8	1.1
	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3
PORT CENTRAL Total		**-0.1**	**-0.3**	**-0.4**	**-0.4**	**-0.5**	**-0.5**	**-0.4**	**-0.4**	**-0.3**	**-0.1**
PORT KEMBLA	PV	-0.3	-0.5	-0.7	-0.9	-1.1	-1.3	-1.5	-1.6	-1.8	-2.0
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.5	2.0	2.6
	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7	-0.8
PORT KEMBLA Total		**-0.3**	**-0.7**	**-0.9**	**-1.2**	**-1.3**	**-1.2**	**-1.0**	**-0.9**	**-0.6**	**-0.2**
PORTLAND	PV	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4	-0.5
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4
	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2
PORTLAND Total		**-0.1**	**-0.2**	**-0.2**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.2**
PRESTONS	PV	-0.4	-0.7	-1.0	-1.3	-1.5	-1.7	-2.0	-2.2	-2.5	-2.7
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.1	1.5	2.0	2.7
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.9	-0.9	-1.0
PRESTONS Total		**-0.5**	**-0.9**	**-1.3**	**-1.6**	**-1.7**	**-1.7**	**-1.6**	**-1.6**	**-1.4**	**-1.0**
PROSPECT	PV	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6	-0.7	-0.8
	EV	0.0	0.0	0.1	0.1	0.3	0.5	0.8	1.1	1.5	2.0
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8	-0.9
PROSPECT Total		**-0.2**	**-0.4**	**-0.5**	**-0.6**	**-0.6**	**-0.6**	**-0.4**	**-0.3**	**0.0**	**0.3**
QUAKERS HILL	PV	-0.5	-0.9	-1.3	-1.7	-2.0	-2.4	-2.7	-3.0	-3.3	-3.7
	EV	0.0	0.0	0.1	0.2	0.5	1.1	1.8	2.4	3.3	4.3
	ESS	-0.2	-0.3	-0.5	-0.6	-0.8	-1.0	-1.1	-1.3	-1.4	-1.6
QUAKERS HILL Total		**-0.7**	**-1.2**	**-1.7**	**-2.1**	**-2.3**	**-2.3**	**-2.0**	**-1.9**	**-1.5**	**-0.9**
QUARRIES	PV	-0.1	-0.2	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6	-0.7
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.2
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4
QUARRIES Total		**-0.1**	**-0.2**	**-0.3**	**-0.4**	**-0.4**	**-0.4**	**-0.3**	**-0.2**	**-0.1**	**0.1**
RINGWOOD	PV	-0.1	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.8	-0.8
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.7	0.9
	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4
RINGWOOD Total		**-0.2**	**-0.3**	**-0.4**	**-0.4**	**-0.5**	**-0.5**	**-0.5**	**-0.5**	**-0.4**	**-0.3**
RIVERSTONE	PV	-0.2	-0.4	-0.6	-0.8	-0.9	-1.1	-1.2	-1.3	-1.4	-1.6
	EV	0.0	0.0	0.0	0.1	0.3	0.5	0.8	1.1	1.5	2.0
	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6
RIVERSTONE Total		**-0.3**	**-0.6**	**-0.7**	**-0.9**	**-0.9**	**-0.9**	**-0.8**	**-0.7**	**-0.5**	**-0.2**
ROBERTSON	PV	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.6	0.8	1.1
	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
ROBERTSON Total		**-0.1**	**-0.3**	**-0.4**	**-0.4**	**-0.4**	**-0.4**	**-0.4**	**-0.4**	**-0.3**	**-0.1**

ZS PMA impact (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
ROOTY HILL	PV	-0.5	-0.8	-1.2	-1.5	-1.8	-2.1	-2.4	-2.7	-3.0	-3.3
	EV	0.0	0.0	0.1	0.2	0.4	0.8	1.3	1.9	2.5	3.3
	ESS	-0.1	-0.2	-0.3	-0.4	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
ROOTY HILL Total		**-0.6**	**-1.1**	**-1.5**	**-1.8**	**-2.0**	**-2.0**	**-1.9**	**-1.8**	**-1.5**	**-1.1**
ROSEHILL	PV	-0.1	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4	-0.4
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.5	0.6	0.9
	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3
ROSEHILL Total		**-0.1**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.1**	**0.0**	**0.1**
RUSSELL VALE	PV	-0.3	-0.5	-0.7	-0.9	-1.1	-1.2	-1.4	-1.5	-1.7	-1.9
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.1	1.5	2.0	2.7
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0
RUSSELL VALE Total		**-0.4**	**-0.7**	**-1.0**	**-1.2**	**-1.3**	**-1.2**	**-1.0**	**-0.9**	**-0.6**	**-0.2**
RYDALMERE	PV	-0.3	-0.5	-0.7	-1.0	-1.2	-1.4	-1.5	-1.7	-1.9	-2.1
	EV	0.0	0.1	0.4	1.0	1.6	2.4	3.3	4.3	5.7	7.5
	ESS	-0.1	-0.3	-0.4	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.4
RYDALMERE Total		**-0.4**	**-0.7**	**-0.7**	**-0.6**	**-0.2**	**0.2**	**0.7**	**1.4**	**2.5**	**3.9**
SCHOFIELDS	PV	-0.6	-1.1	-1.6	-2.0	-2.4	-2.8	-3.2	-3.6	-4.0	-4.4
	EV	0.0	0.0	0.1	0.2	0.5	0.8	1.4	1.9	2.5	3.3
	ESS	-0.1	-0.3	-0.4	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1	-1.2
SCHOFIELDS Total		**-0.7**	**-1.4**	**-1.9**	**-2.3**	**-2.6**	**-2.8**	**-2.7**	**-2.7**	**-2.6**	**-2.3**
SEVEN HILLS	PV	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6	-0.6	-0.7
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.2	1.5
	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5
SEVEN HILLS Total		**-0.2**	**-0.3**	**-0.4**	**-0.5**	**-0.5**	**-0.4**	**-0.3**	**-0.1**	**0.1**	**0.3**
SHELLHARBOUR	PV	-0.5	-1.0	-1.4	-1.8	-2.2	-2.5	-2.9	-3.2	-3.6	-3.9
	EV	0.0	0.0	0.1	0.2	0.4	0.8	1.5	2.1	2.8	3.7
	ESS	-0.1	-0.3	-0.4	-0.6	-0.7	-0.8	-1.0	-1.1	-1.3	-1.4
SHELLHARBOUR Total		**-0.7**	**-1.3**	**-1.8**	**-2.2**	**-2.5**	**-2.5**	**-2.4**	**-2.3**	**-2.0**	**-1.6**
SHERWOOD	PV	-0.2	-0.4	-0.5	-0.7	-0.8	-0.9	-1.0	-1.2	-1.3	-1.4
	EV	0.0	0.0	0.1	0.2	0.4	0.8	1.5	2.0	2.7	3.6
	ESS	-0.1	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.1	-1.2	-1.3
SHERWOOD Total		**-0.3**	**-0.6**	**-0.9**	**-1.0**	**-1.0**	**-0.9**	**-0.5**	**-0.2**	**0.2**	**0.9**
SMITHFIELD	PV	-0.3	-0.5	-0.7	-0.9	-1.1	-1.2	-1.4	-1.5	-1.7	-1.8
	EV	0.0	0.0	0.0	0.2	0.5	1.0	1.7	2.4	3.2	4.3
	ESS	-0.1	-0.3	-0.4	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.4
SMITHFIELD Total		**-0.4**	**-0.8**	**-1.1**	**-1.3**	**-1.3**	**-1.1**	**-0.7**	**-0.3**	**0.2**	**1.0**
SOUTH GRANVILLE	PV	-0.2	-0.3	-0.5	-0.6	-0.7	-0.9	-1.0	-1.1	-1.2	-1.4
	EV	0.0	0.0	0.1	0.3	0.6	1.1	1.8	2.5	3.4	4.4
	ESS	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.8
SOUTH GRANVILLE Total		**-0.3**	**-0.5**	**-0.6**	**-0.6**	**-0.5**	**-0.2**	**0.2**	**0.7**	**1.4**	**2.2**
SOUTH LEPPINGTON	PV	-0.4	-0.7	-1.1	-1.4	-1.6	-1.9	-2.2	-2.4	-2.7	-3.0
	EV	0.0	0.0	0.0	0.1	0.2	0.5	0.9	1.2	1.7	2.2
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.6	-0.7
SOUTH LEPPINGTON Total		**-0.5**	**-0.9**	**-1.2**	**-1.5**	**-1.7**	**-1.8**	**-1.8**	**-1.7**	**-1.6**	**-1.4**
SOUTH MARSDEN PARK	PV	-0.2	-0.4	-0.6	-0.8	-1.0	-1.1	-1.3	-1.5	-1.7	-1.9
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.6	0.8	1.0
	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2
SOUTH MARSDEN PARK Total		**-0.2**	**-0.4**	**-0.6**	**-0.8**	**-0.9**	**-1.0**	**-1.0**	**-1.0**	**-1.0**	**-1.0**
SOUTH NOWRA	PV	-0.1	-0.1	-0.2	-0.3	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5
	EV	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.6
	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
SOUTH NOWRA Total		**-0.1**	**-0.2**	**-0.2**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.2**	**-0.1**
SOUTH WINDSOR	PV	-0.4	-0.7	-1.0	-1.3	-1.6	-1.8	-2.1	-2.3	-2.6	-2.8
	EV	0.0	0.0	0.0	0.1	0.3	0.5	1.0	1.3	1.8	2.4
	ESS	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9
SOUTH WINDSOR Total		**-0.5**	**-0.9**	**-1.3**	**-1.6**	**-1.8**	**-1.8**	**-1.8**	**-1.7**	**-1.6**	**-1.3**
SOUTH WOLLONGONG	PV	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5	-0.6
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.6	0.7
	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.4	-0.4	-0.5	-0.5	-0.6
SOUTH WOLLONGONG Total		**-0.1**	**-0.3**	**-0.4**	**-0.5**	**-0.5**	**-0.6**	**-0.5**	**-0.5**	**-0.5**	**-0.4**
SPRINGWOOD	PV	-0.2	-0.3	-0.5	-0.6	-0.7	-0.8	-0.9	-0.9	-1.0	-1.1
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.1	1.5	2.0	2.7
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.9	-1.0	-1.0
SPRINGWOOD Total		**-0.3**	**-0.5**	**-0.7**	**-0.8**	**-0.8**	**-0.7**	**-0.5**	**-0.3**	**0.0**	**0.5**
ST MARYS	PV	-0.4	-0.7	-1.0	-1.3	-1.6	-1.9	-2.1	-2.4	-2.6	-2.9
	EV	0.0	0.0	0.0	0.1	0.4	0.8	1.3	1.8	2.4	3.3
	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8	-1.0	-1.1	-1.2
ST MARYS Total		**-0.5**	**-0.9**	**-1.3**	**-1.7**	**-1.8**	**-1.8**	**-1.7**	**-1.5**	**-1.3**	**-0.8**
SUSSEX INLET	PV	-0.2	-0.3	-0.4	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	0.9	1.2	1.6
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4
SUSSEX INLET Total		**-0.2**	**-0.4**	**-0.5**	**-0.6**	**-0.7**	**-0.6**	**-0.5**	**-0.4**	**-0.3**	**0.0**

ZS PMA impact (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
TAHMOOR	PV	-0.5	-1.0	-1.4	-1.8	-2.2	-2.6	-2.9	-3.3	-3.7	-4.1
	EV	0.0	0.0	0.1	0.2	0.4	0.7	1.2	1.7	2.3	3.0
	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.8
TAHMOOR Total		**-0.6**	**-1.1**	**-1.6**	**-2.0**	**-2.2**	**-2.3**	**-2.3**	**-2.3**	**-2.1**	**-1.8**
THE OAKS	PV	-0.1	-0.3	-0.4	-0.5	-0.6	-0.7	-0.8	-0.9	-1.1	-1.2
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.7
	ESS	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
THE OAKS Total		**-0.2**	**-0.3**	**-0.4**	**-0.6**	**-0.7**	**-0.7**	**-0.7**	**-0.7**	**-0.7**	**-0.7**
TOMERONG	PV	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6	-0.7	-0.7
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.7	0.9
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.6	-0.6
TOMERONG Total		**-0.2**	**-0.3**	**-0.5**	**-0.6**	**-0.7**	**-0.7**	**-0.7**	**-0.6**	**-0.6**	**-0.5**
ULLADULLA	PV	-0.4	-0.7	-1.0	-1.3	-1.5	-1.8	-2.0	-2.2	-2.4	-2.7
	EV	0.0	0.0	0.1	0.2	0.4	0.9	1.5	2.1	2.8	3.7
	ESS	-0.2	-0.3	-0.5	-0.6	-0.7	-0.9	-1.0	-1.2	-1.3	-1.5
ULLADULLA Total		**-0.5**	**-1.0**	**-1.4**	**-1.7**	**-1.8**	**-1.8**	**-1.6**	**-1.4**	**-1.0**	**-0.4**
UNANDERRA	PV	-0.1	-0.2	-0.2	-0.3	-0.4	-0.4	-0.5	-0.5	-0.6	-0.6
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.5	0.7	0.9	1.2
	ESS	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3
UNANDERRA Total		**-0.1**	**-0.2**	**-0.3**	**-0.4**	**-0.4**	**-0.3**	**-0.2**	**-0.1**	**0.1**	**0.3**
WARILLA	PV	-0.4	-0.7	-1.0	-1.3	-1.6	-1.8	-2.1	-2.3	-2.5	-2.8
	EV	0.0	0.0	0.0	0.1	0.3	0.6	1.1	1.6	2.2	2.9
	ESS	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.9	-1.0	-1.1	-1.2
WARILLA Total		**-0.5**	**-1.0**	**-1.4**	**-1.7**	**-1.9**	**-2.0**	**-1.8**	**-1.7**	**-1.5**	**-1.1**
WENTWORTH FALLS	PV	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6	-0.6	-0.7
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.6	0.8	1.1
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4
WENTWORTH FALLS Total		**-0.1**	**-0.3**	**-0.4**	**-0.4**	**-0.5**	**-0.4**	**-0.4**	**-0.3**	**-0.2**	**0.0**
WERRINGTON	PV	-0.4	-0.7	-0.9	-1.2	-1.5	-1.7	-1.9	-2.1	-2.3	-2.5
	EV	0.0	0.0	0.0	0.1	0.4	0.7	1.2	1.7	2.3	3.1
	ESS	-0.1	-0.2	-0.3	-0.4	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1
WERRINGTON Total		**-0.5**	**-0.9**	**-1.2**	**-1.5**	**-1.7**	**-1.6**	**-1.4**	**-1.3**	**-1.0**	**-0.5**
WEST CASTLE HILL	PV	-0.3	-0.5	-0.7	-0.9	-1.1	-1.3	-1.4	-1.6	-1.8	-2.0
	EV	0.0	0.0	0.1	0.2	0.3	0.5	0.7	1.0	1.3	1.7
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.6	-0.7
WEST CASTLE HILL Total		**-0.3**	**-0.6**	**-0.8**	**-1.0**	**-1.1**	**-1.2**	**-1.2**	**-1.2**	**-1.1**	**-0.9**
WEST LIVERPOOL 11KV	PV	-0.3	-0.7	-0.9	-1.2	-1.4	-1.7	-1.9	-2.1	-2.4	-2.6
	EV	0.0	0.0	0.0	0.1	0.3	0.7	1.2	1.7	2.3	3.0
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.7	-0.8	-0.9	-1.0	-1.1
WEST LIVERPOOL 11KV Total		**-0.5**	**-0.9**	**-1.2**	**-1.5**	**-1.7**	**-1.7**	**-1.5**	**-1.4**	**-1.1**	**-0.7**
WEST PARRAMATTA	PV	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.6	0.8	1.0
	ESS	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3
WEST PARRAMATTA Total		**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**0.0**	**0.1**	**0.2**	**0.3**	**0.5**
WEST PENNANT HILLS	PV	-0.2	-0.5	-0.7	-0.8	-1.0	-1.2	-1.3	-1.5	-1.7	-1.8
	EV	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.2	1.6	2.1
	ESS	-0.1	-0.1	-0.2	-0.3	-0.4	-0.4	-0.5	-0.6	-0.7	-0.7
WEST PENNANT HILLS Total		**-0.3**	**-0.6**	**-0.8**	**-0.9**	**-1.0**	**-1.0**	**-0.9**	**-0.9**	**-0.7**	**-0.4**
WEST WETHERILL PARK 11KV	PV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WEST WETHERILL PARK 11KV Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
WEST WOLLONGONG	PV	-0.2	-0.3	-0.4	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.4	1.8
	ESS	-0.1	-0.2	-0.2	-0.3	-0.4	-0.5	-0.6	-0.6	-0.7	-0.8
WEST WOLLONGONG Total		**-0.2**	**-0.5**	**-0.6**	**-0.8**	**-0.9**	**-0.8**	**-0.7**	**-0.6**	**-0.4**	**-0.2**
WESTMEAD	PV	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.7
	ESS	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5
WESTMEAD Total		-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	0.0
WETHERILL PARK	PV	**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.2**
	EV	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2
	ESS	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
WETHERILL PARK Total		**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**
WHALAN	PV	-0.2	-0.3	-0.5	-0.6	-0.7	-0.8	-0.9	-1.0	-1.1	-1.2
	EV	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.7	1.0	1.3
	ESS	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1
WHALAN Total		**-0.3**	**-0.5**	**-0.8**	**-0.9**	**-1.1**	**-1.1**	**-1.2**	**-1.2**	**-1.1**	**-1.0**
WILTON	PV	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4	-0.4	-0.4
	EV	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4
	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2
WILTON Total		**-0.1**	**-0.2**	**-0.2**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.2**

ZS PMA impact (MW)	PMA Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
WINDSOR	PV	-0.2	-0.4	-0.5	-0.7	-0.8	-0.9	-1.0	-1.1	-1.2	-1.3
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.2	1.5
	ESS	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4
WINDSOR Total		**-0.2**	**-0.5**	**-0.6**	**-0.8**	**-0.8**	**-0.8**	**-0.7**	**-0.6**	**-0.4**	**-0.2**
WISEMANS	PV	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4	-0.5
	EV	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.7	0.9
	ESS	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
WISEMANS Total		**-0.1**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.1**	**0.0**	**0.1**	**0.3**
WOMBARRA	PV	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6	-0.6	-0.7
	EV	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.6	0.8	1.1
	ESS	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4
WOMBARRA Total		**-0.1**	**-0.3**	**-0.4**	**-0.4**	**-0.5**	**-0.4**	**-0.3**	**-0.3**	**-0.2**	**0.0**
WOODPARK	PV	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
	EV	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.5	0.7	0.9
	ESS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WOODPARK Total		**0.0**	**-0.1**	**-0.1**	**-0.1**	**0.0**	**0.1**	**0.2**	**0.3**	**0.5**	**0.7**
YATTE YATTAH	PV	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.7
	EV	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.8	1.1	1.4
	ESS	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3
YATTE YATTAH Total		**-0.1**	**-0.2**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.1**	**0.0**	**0.1**	**0.4**
YENNORA	PV	-0.2	-0.3	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1	-1.2	-1.3
	EV	0.0	0.0	0.1	0.2	0.4	0.8	1.4	2.0	2.7	3.6
	ESS	-0.1	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6	-0.6	-0.7
YENNORA Total		-0.3	-0.5	-0.6	-0.7	-0.7	-0.5	0.0	0.3	0.9	1.6
GRAND TOTAL		**-50.9**	**-95.9**	**-133.8**	**-161.9**	**-175.6**	**-173.4**	**-155.2**	**-139.0**	**-108.1**	**-59.3**

10 APPENDIX 4 – EMBEDDED GENERATORS CONNECTED AT 11kV AND ABOVE

10.1 Total Generation on System

Table 1 lists the major generators installed within EE's franchise area. It is not intended to be a comprehensive list, as many customers within the area have small back-up generators to meet individual needs. This list of generators includes only those generators that EE is aware of and may have an effect on peak demand or network operation. Only the generators at Tallawarra, Appin, Tower and Marubeni are taken into account when calculating the forecast system demand. These generators are individually listed in the relevant Sub-transmission Substation entries of the forecast.

Table 1. Embedded Generation within the Endeavour Energy Franchise Network Area.

Listed are those generators that are regarded as “embedded” basically connected to the network except for periods of maintenance or operational criteria limits generation capacity. Those units installed as discrete customer standby for “essential services” – which may be “non paralleling” with the network are not included.

NAME	ADDRESS	OPERATOR	SIZE (per unit)	TYPE	NORMAL ARRANGEMENT	COMMENTS
Methane Gas Fuel Based						
West Nowra	Flatrock Road, West Nowra	AGL	1x1MW	Waste Tip Methane	Export into 11kV Distribution network	Operational
Eastern Creek	Wallgrove Road, Eastern Creek	EDL	4x1.35MW	Waste Tip Methane	Export into 11kV Distribution network	Operational (Limited to 2.74 MW)
Smithfield Co-generation	McCredie Rd, Smithfield	Marubeni	3x38MW 1x62MW	Gas fire, steam Co-generation	Generates into 33kV busbar at Guildford TS	Operational – maximum output limited to 160MW
BlueScope Steel	Five Islands Rd, Port Kembla	BlueScope Steel	1x2.5MW 1x7.5MW 1x7.5MW 1x12MW 1x16MW 1x5MW 1x8.75MW	Processed Gas Steam	Capacity absorbed by customer	Operational
LMS Waste Management Centre	Wallgrove Road, Eastern Creek	LMS	8x1.2MW	Waste Tip Methane	Export into the 33kV network	Operational
Appin Colliery	Brooks Point Rd, Appin	Energy Developments Ltd (EDL)	54x1MW	Methane extraction from Coal Mine. Natural Gas Supplements	Export into the 66kV network	Operational
Tower Colliery	Mt Kiera Rd, Wilton	EDL	40x1MW	Methane extraction from Coal Mine. Natural Gas Supplements	Export into the 66kV network	Operational
Jack’s Gully	Richardson Rd, Springs Farm	EDL	2MW	Waste Tip Methane	Export into 11kV distribution network	Operational
Camellia	Grand Avenue, Camellia	Earthpower	3x1.3MW	Methane from bio decomposition in Digesters	Export into 11kV distribution network	Operational
Eastern Creek	Wallgrove Road, Eastern Creek	Global Renewables	2x1MW	Methane from bio decomposition in Digesters	Normal absorbed by Customer – some export at night into 11kV network	Operational
Windsor	Macquarie St, Windsor	Hawkesbury CC	1x360kW	Natural Gas	Normal absorbed by Customer – some export at night into 11kV network	Operational
Westmead Hospital	Darcy Rd, Westmead	Westmead Hospital	2x1MW	Diesel	Customer Standby	Operational
Tahmoor Colliery	Tahmoor	EDL	1x7MW	Mine methane	Connected to 11kV busbar	Operational
Viva Energy	Camellia	Shell/Vitol	6.7+5.6+5.0 MW	natural gas	Absorbed by Customer	Operational

NAME	ADDRESS	OPERATOR	SIZE (per unit)	TYPE	NORMAL ARRANGEMENT	COMMENTS
Mount Druitt Hospital	Luxford Rd, Mount Druitt	Total Energy Solutions	1x250kW	Natural Gas	Capacity absorbed by customer	Operational
Blacktown Hospital	Marcel Crescent, Blacktown	Total Energy Solutions	1x550kW	Natural Gas	Capacity absorbed by customer	Operational
Parramatta Linen Services	O'Connell Street, Parramatta	Total Energy Solutions	1x700kW	Natural Gas	Capacity absorbed by customer	Operational
Westcliff Colliery	Appin Rd, Appin	Westcliff Colliery	1x6MW	Methane / Turbine	Capacity absorbed by customer	Operational
Ex Cathay Pacific	Norwest Bvd, West Castle Hill	Cathay Pacific	4x1875kW	Diesel	Customer Standby	Operational
Tallawarra	Yallah Bay Road, Dapto	Energy Australia	1x440MW	Natural Gas Steam Turbine	Export into 132KV network	Operational
UWS	Victoria Rd, Rydalmere	Command Energy	1MW	Co-Generation	Possible export into 11kV network	Operational
Grange Ave	Grange Ave, Riverstone	EDL	1.25MW	Waste Tip Methane	Export into 11kV network	Operational

Other Energy Forms

Wind Based						
Hampton	Rydal Road, Hampton	Hampton Wind Park	2x660kW	Wind	Export into 11kV Distribution network	Operational

Hydro Based						
Wyuna Water	Reddalls Rd, Kembla Grange	Wyuna Water	2x3.8MW + 1x.78MW	Hydro	Export into the 33kV network	Operational
BlueScope Steel	Reddalls Rd, Kembla Grange	BlueScope Steel	1x750kW	Hydro	Export into 11kV Distribution network	Operational
Nevel Hilton	23 Old cedar Track, Albion Park	Nevel Hilton	1x3kW	Micro hydro		

11 APPENDIX 5 – CONSOLIDATED CONNECTION APPLICATIONS, FORECASTS AND LOAD TRANSFERS

11.1 Spot Loads (Demand (MVA)

ZS	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	TOT
ABC_Tissues		8.00									8.00
Aerotropolis			23.73	13.60	23.98	-2.67	1.99	1.89	18.29	2.54	83.34
Albion_Park	0.69										0.69
Ambarvale	0.44	1.11	1.55	1.62	1.62	1.62	1.62	1.62			11.21
Anzac_Village	2.98										2.98
Appin	0.01			2.48	2.48	2.48	2.48	4.98	2.48	2.48	19.90
Arndell_Park	1.00	12.00									13.00
Baulkham_Hills_11kV	0.25	0.96									1.20
Bella_Vista	1.80										1.80
Berrima_junction	2.25	2.25	2.25	2.25							9.00
Berry	0.05	0.04									0.09
BHP_Douglas_Park		10.00	-0.50								9.50
Blackheath	0.35	0.09									0.44
Blackmans_Flat	0.02		3.36								3.38
Blaxland		0.40									0.40
Bomaderry	0.59										0.59
Bossley_Park	0.20										0.20
Bow_Bowing	5.32	0.15	0.17	0.12	0.12	0.12	0.12	0.12	0.12	0.12	6.50
Bowden_Silvermine			18.00								18.00
Bowral	0.05	0.39									0.43
Box_Hill		4.23	6.26	5.32	5.76	8.07	8.97	5.82	6.12	6.12	56.67
Bringelly	5.91	3.74	3.07	1.37	7.43	7.43	7.43	9.03	9.03	9.03	63.46
Bulli	0.20										0.20
Cabramatta	1.10										1.10
Calderwood	0.94	0.94	0.94	0.94	0.94	0.94	0.94	1.18	1.18		8.93
Campbelltown	1.83	1.69	0.94	0.83	0.86	0.77	0.77	0.77	0.35		8.81
Canley_Vale	0.14	3.50									3.64
Carramar	0.88										0.88
Castle_Hill			0.69								0.69
Casula	0.15	0.56									0.71
Cattai	0.22	0.22									0.44
Cawdor	1.30										1.30
CDC	36.50	60.00	30.00								126.50
Chipping_Norton	0.75										0.75
Claremont_Meadows	16.06			-12.00							4.06
Corrimal	0.26	0.11									0.37
Cranebrook		0.80									0.80
Dapto	0.55										0.55
DCI_Data_Centre	6.00	1.80	15.00	17.00	7.00	3.00					49.80
Dendrobium_Mine	1.11						16.11				17.22
Dendrobium_Vent_Fan_B							2.67				2.67
Doonside	0.00	0.12									0.12
Dundas	0.99	4.96	0.64								6.59
East_Richmond	0.87										0.87
Eastern_Creek	10.10	31.02									41.12
Edmondson_Park	1.19										1.19
Emu_Plains	1.24										1.24
Equinix_Data_Centre		17.97		14.40	14.40	14.30		3.90			64.97
Fairfield	5.70	2.50									8.19
Fujitsu_Data	4.75	4.75	4.75	4.75	4.75						23.75
Gerringong	0.03										0.03

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ZS	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	TOT
Glenmore_Park	2.72										2.72
Glossodia	0.04										0.04
Granville_132kV	6.29	6.67	1.19								14.14
Greystanes	1.45	2.62									4.07
Hazelbrook	0.63										0.63
Healey_Cct_Data	12.00	22.00	24.00	19.00	16.00	9.00					102.00
Helensburgh	0.15										0.15
Hinchinbrook	0.28										0.28
HMAS_Albatross			7.10								7.10
Holroyd	0.46	3.84									4.30
Homepride	5.11										5.11
Horsley_Park		0.00									0.00
Huntingwood	7.68	37.75	16.78	5.88	5.88	5.88					79.83
Huskisson	0.46										0.46
Inner_Harbour	1.14										1.14
Jamberoo	0.08										0.08
Jasper_Road	0.20										0.20
Jordan_Springs	0.28	0.28									0.55
Kandos	0.12	0.01									0.13
Kangaroo_Valley	0.14										0.14
Katoomba	0.50										0.50
Kellyville	0.67	0.92	1.02	0.22	0.22	0.22	0.22	0.22	0.22	0.22	4.16
Kembla_Grange	2.02	0.46									2.48
Kemps_Creek	24.61	-0.16	2.27	-9.75	1.25	5.14	5.14	5.14	5.14	7.29	46.05
Kenny_Street	3.92	3.38									7.30
Kenthurst	0.45										0.45
Kentlyn	0.69	0.28	0.22	0.17	0.20	0.23					1.78
Kiama	0.56		2.22								2.78
Kingswood	1.98	0.84									2.82
Kurrajong	0.21										0.21
Leabons_Lane		0.98									0.98
Lennox	3.84	0.55	0.28								4.67
Lithgow	0.31	1.02									1.33
Liverpool	1.90	10.70									12.60
Liverpool_Military_Area		3.13		3.13							6.25
Luddenham	6.59	5.08	5.10	4.31	4.31	5.15	4.34	5.78	5.78	7.13	53.57
Macquarie_Fields	0.25	0.73	0.51	0.51	0.51	0.51	0.51	0.51	0.51		4.54
Maldon	1.48										1.48
Mamre	44.22	6.02	-15.28								34.96
Marayong	11.00	2.90									13.90
Marsden_Park	8.13	17.63	7.62	3.91	2.56	3.94	5.85	5.85	5.85	5.85	67.21
MB_Logistics_Park	15.00			10.00							25.00
Meadow_Flat	0.04										0.04
Menangle_Park	1.11	3.29	2.78	1.79	2.00	3.08	4.81	4.08	3.08	3.08	29.09
Minto	2.91	0.94	0.19	0.26	0.08	0.08	0.08	0.08	0.08		4.70
Mittagong	2.35										2.35
Moorebank	0.55	2.99									3.54
Moss_Vale	3.20	0.19									3.39
Mt_Ousley	0.42	0.31									0.73
Mungerie_Park	6.79	14.23	2.74	4.91	0.45	0.45	0.45	0.45	0.45	0.45	31.36
Narellan	3.60	1.37	1.98	2.59	2.76	2.28	1.74	1.74	0.12	0.12	18.32
Nepean_ZS	4.42	0.72	-2.58	0.42	0.42	0.42	0.42	0.42			4.64
Newton	3.48	6.66	8.45								18.59
North_Eastern_Creek	17.15	1.90	10.00	10.00							39.05
North_Leppington	3.06	3.82									6.88
North_Parramatta		2.70		0.92	0.92	0.92	0.99	0.99	0.99	0.99	9.41
North_Richmond	0.16	0.25									0.41
North_Rocks	0.70										0.70
North_Wollongong	1.32	0.10									1.42
Northmead	0.21	0.84									1.05

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ZS	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	TOT
Nowra_	1.24	0.19									1.43
Oran_Park	7.44	8.04	6.16	6.69	6.71	5.13	5.13	7.44	2.97	3.76	59.47
Parklea	1.34	1.98									3.32
Penrith_11kV	3.56	1.77									5.33
Plumpton		0.06									0.06
Port_Central	0.99										0.99
Port_Kembla	1.63										1.63
Portland	0.72	0.17									0.89
Prestons	1.88	0.53									2.42
Prospect	0.44	0.55	0.08								1.07
Quakers_Hill	0.24	0.60	0.55					2.50			3.89
Quarries	5.99	7.88	3.00								16.87
Ringwood	0.86	0.14									1.00
Riverstone	3.10	4.49	12.82	3.30	3.30	3.17	0.60	0.60	0.60	0.60	32.58
Robertson	0.19										0.19
Rooty_Hill	2.65	0.30	0.56								3.51
Rosehill	35.38	6.03	0.57	-21.40							20.58
Russell_Vale	0.80	0.08									0.88
Rydalmere			0.45								0.45
S32_No4_Shaft_Project							6.67				6.67
Sand_Mine_Clarence	1.00										1.00
Schofields	6.25	17.21	12.43	12.33	7.29	7.10	5.40	3.24	3.24	3.24	77.73
Science_Park				2.29	2.29	2.29	2.29	3.73	3.73	3.73	20.35
Seven_Hills	7.28	0.88	1.00								9.16
Shellharbour	1.16	0.39	2.22								3.76
Sherwood	0.12	1.18									1.30
Smeaton_Grange	4.20	4.20	4.20	8.30	8.10	4.00	8.10	4.00	4.00	4.00	53.10
South_Erskine_Park	32.98	-10.41	1.43	1.45		1.73	1.45				28.63
South_Granville	0.15	1.75									1.90
South_Leppington	1.55	0.10									1.65
South_Marsden_Park	2.52	7.85	4.93	4.08	4.08	4.08	4.08	2.08	2.08	2.08	37.86
South_Nowra	-2.86	0.23									-2.63
South_Windsor	2.36	1.75	0.43								4.53
South_Wollongong	0.35		0.30								0.64
Springwood			0.68								0.68
St_Marys	2.32	0.93									3.25
Sussex_Inlet	0.05										0.05
SW_Sector_Macarthur_66								0.24	1.86	0.24	2.34
Syd_55				16.00	16.00	16.00	16.00				64.00
Syd_Metro_West			55.00								55.00
Tahmoor	1.05	0.56	0.47								2.08
Tahmoor_Colliery		5.00									5.00
Trifalga_Data_Centre			10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	80.00
Ulladulla	0.55	0.81									1.35
Unanderra	0.26										0.26
water_board_dams	0.12										0.12
Wentworth_Falls	0.06	0.11									0.17
Werrington	10.65	0.57		-3.60							7.62
West_Castle_Hill		0.88		0.44							1.32
West_Dapto			1.06	1.06	1.06	1.18	1.18	1.18	1.29		7.99
West_Liverpool_ZS	3.84										3.84
West_Parramatta	9.74	3.28		-2.52	15.67	8.74	7.77	6.11	5.62	4.92	59.33
West_Pennant_Hills	0.60	0.42	0.08								1.09
West_Wetherill_Park	14.00										14.00
Westmead	2.51	4.17	0.50	1.42	0.58	0.62	0.65	0.69	0.73	0.77	12.63
Wetherill_Park	14.21										14.21
Whalan	0.54	0.31									0.85
Wilton	1.01	0.73	0.73	0.73	2.06	2.06	2.06	2.77			12.16
Windsor_	0.15	0.11									0.26
Wisemans	0.12	0.70	3.14								3.96
Wmead_132KV		1.89	2.85	2.55	7.74	6.40	4.83	2.83	2.84	0.60	32.53
Woodpark	4.15	3.70									7.85
Yennora	1.64	0.41									2.06

11.2 Spotloads (Count of projects)

ZS	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	TOT
ABC_Tissues		1.00									1.00
Aerotropolis			2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	16.00
Albion_Park	4.00										4.00
Ambarvale	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00			10.00
Anzac_Village	1.00										1.00
Appin	1.00			1.00	1.00	1.00	1.00	3.00	1.00	1.00	10.00
Arndell_Park	1.00	3.00									4.00
Baulkham_Hills_11kV	1.00	2.00									3.00
Bella_Vista	1.00										1.00
Berrima_junction	1.00	1.00	1.00	1.00							4.00
Berry	1.00	1.00									2.00
BHP_Douglas_Park		1.00	3.00								4.00
Blackheath	1.00	1.00									2.00
Blackmans_Flat	1.00		1.00								2.00
Blaxland		1.00									1.00
Bomaderry	5.00										5.00
Bossley_Park	1.00										1.00
Bow_Bowing	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	14.00
Bowden_Silvermine			1.00								1.00
Bowral	3.00	1.00									4.00
Box_Hill		2.00	3.00	3.00	4.00	4.00	4.00	3.00	3.00	3.00	29.00
Bringelly	6.00	2.00	2.00	5.00	3.00	3.00	3.00	4.00	4.00	4.00	36.00
Bulli	2.00										2.00
Cabramatta	1.00										1.00
Calderwood	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		9.00
Campbelltown	9.00	5.00	3.00	3.00	3.00	2.00	2.00	2.00	1.00		30.00
Canley_Vale	1.00	1.00									2.00
Carramar	2.00										2.00
Castle_Hill			2.00								2.00
Casula	1.00	1.00									2.00
Cattai	3.00	2.00									5.00
Cawdor	1.00										1.00
CDC	1.00	2.00	1.00								4.00
Chipping_Norton	2.00										2.00
Claremont_Meadows	11.00			2.00							13.00
Corrimal	1.00	1.00									2.00
Cranebrook		1.00									1.00
Dapto	2.00										2.00
DCI_Data_Centre	1.00	1.00	1.00	2.00	1.00	1.00					7.00
Dendrobium_Mine	1.00						1.00				2.00
Dendrobium_Vent_Fan_B							1.00				1.00
Doonside	1.00	1.00									2.00
Dundas	3.00	5.00	3.00								11.00
East_Richmond	4.00										4.00
Eastern_Creek	7.00	13.00									20.00
Edmondson_Park	2.00										2.00
Emu_Plains	6.00										6.00
Equinix_Data_Centre		1.00		1.00	1.00	1.00		1.00			5.00
Fairfield	7.00	2.00									9.00
Fujitsu_Data	1.00	1.00	1.00	1.00	1.00						5.00
Gerringong	1.00										1.00

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ZS	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	TOT
Glenmore_Park	5.00										5.00
Glossodia	1.00										1.00
Granville_132kV	4.00	6.00	2.00								12.00
Greystanes	3.00	2.00									5.00
Hazelbrook	1.00										1.00
Healey_Cct_Data	2.00	2.00	2.00	2.00	2.00	2.00					12.00
Helensburgh	2.00										2.00
Hinchinbrook	2.00										2.00
HMAS_Albatross			1.00								1.00
Holroyd	4.00	6.00									10.00
Homepride	4.00										4.00
Horsley_Park		1.00									1.00
Huntingwood	4.00	7.00	6.00	2.00	2.00	2.00					23.00
Huskisson	3.00										3.00
Inner_Harbour	3.00										3.00
Jamberoo	1.00										1.00
Jasper_Road	1.00										1.00
Jordan_Springs	2.00	1.00									3.00
Kandos	2.00	1.00									3.00
Kangaroo_Valley	3.00										3.00
Katoomba	2.00										2.00
Kellyville	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	11.00
Kembla_Grange	3.00	1.00									4.00
Kemps_Creek	12.00	6.00	3.00	5.00	4.00	3.00	3.00	3.00	3.00	4.00	46.00
Kenny_Street	4.00	2.00									6.00
Kenthurst	3.00										3.00
Kentlyn	2.00	1.00	1.00	1.00	1.00	1.00					7.00
Kiama	2.00		1.00								3.00
Kingswood	5.00	2.00									7.00
Kurrajong	2.00										2.00
Leabons_Lane		2.00									2.00
Lennox	7.00	2.00	1.00								10.00
Lithgow	3.00	4.00									7.00
Liverpool	4.00	5.00									9.00
Liverpool_Military_Area		1.00		1.00							2.00
Luddenham	7.00	5.00	5.00	2.00	2.00	3.00	2.00	3.00	3.00	3.00	35.00
Macquarie_Fields	3.00	5.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00		29.00
Maldon	8.00										8.00
Mamre	23.00	8.00	3.00								34.00
Marayong	2.00	3.00									5.00
Marsden_Park	10.00	26.00	8.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	58.00
MB_Logistics_Park	1.00			1.00							2.00
Meadow_Flat	1.00										1.00
Menangle_Park	3.00	4.00	5.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	33.00
Minto	8.00	3.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00		20.00
Mittagong	9.00										9.00
Moorebank	1.00	3.00									4.00
Moss_Vale	18.00	4.00									22.00
Mt_Ousley	2.00	2.00									4.00
Mungerie_Park	5.00	9.00	4.00	5.00	1.00	1.00	1.00	1.00	1.00	1.00	29.00
Narellan	5.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	22.00
Nepean_ZS	5.00	2.00	4.00	2.00	2.00	2.00	2.00	2.00			21.00
Newton	3.00	10.00	2.00								15.00
North_Eastern_Creek	4.00	3.00	1.00	1.00							9.00
North_Leppington	6.00	4.00									10.00
North_Parramatta		2.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.00
North_Richmond	2.00	1.00									3.00
North_Rocks	1.00										1.00
North_Wollongong	2.00	1.00									3.00
Northmead	2.00	2.00									4.00

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ZS	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	TOT
Nowra_	8.00	2.00									10.00
Oran_Park	7.00	8.00	5.00	4.00	4.00	4.00	4.00	5.00	2.00	2.00	45.00
Parklea	2.00	3.00									5.00
Penrith_11kV	4.00	3.00									7.00
Plumpton		1.00									1.00
Port_Central	3.00										3.00
Port_Kembla	4.00										4.00
Portland	1.00	1.00									2.00
Prestons	4.00	1.00									5.00
Prospect	2.00	2.00	1.00								5.00
Quakers_Hill	2.00	2.00	1.00					1.00			6.00
Quarries	7.00	3.00	1.00								11.00
Ringwood	11.00	2.00									13.00
Riverstone	3.00	19.00	14.00	3.00	3.00	3.00	1.00	1.00	1.00	1.00	49.00
Robertson	3.00										3.00
Rooty_Hill	5.00	1.00	1.00								7.00
Rosehill	7.00	6.00	2.00	1.00							16.00
Russell_Vale	1.00	1.00									2.00
Rydalmere			1.00								1.00
S32_No4_Shaft_Project							1.00				1.00
Sand_Mine_Clarence	1.00										1.00
Schofields	16.00	44.00	22.00	6.00	5.00	5.00	3.00	2.00	2.00	2.00	107.00
Science_Park				1.00	1.00	1.00	1.00	2.00	2.00	2.00	10.00
Seven_Hills	4.00	5.00	1.00								10.00
Shellharbour	5.00	1.00	1.00								7.00
Sherwood	1.00	3.00									4.00
Smeaton_Grange	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
South_Erskine_Park	10.00	9.00	1.00	1.00		1.00	1.00				23.00
South_Granville	2.00	5.00									7.00
South_Leppington	3.00	1.00									4.00
South_Marsden_Park	5.00	7.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	29.00
South_Nowra	2.00	1.00									3.00
South_Windsor	3.00	3.00	2.00								8.00
South_Wollongong	2.00		1.00								3.00
Springwood			1.00								1.00
St_Marys	4.00	3.00									7.00
Sussex_Inlet	1.00										1.00
SW_Sector_Macarthur_66								1.00	2.00	1.00	4.00
Syd_55				1.00	1.00	1.00	1.00				4.00
Syd_Metro_West			1.00								1.00
Tahmoor	3.00	1.00	1.00								5.00
Tahmoor_Colliery		1.00									1.00
Trifalga_Data_Centre			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	8.00
Ulladulla	1.00	3.00									4.00
Unanderra	1.00										1.00
water_board_dams	1.00										1.00
Wentworth_Falls	1.00	1.00									2.00
Werrington	8.00	1.00		1.00							10.00
West_Castle_Hill		2.00		1.00							3.00
West_Dapto			1.00	1.00	1.00	1.00	1.00	1.00	1.00		7.00
West_Liverpool_ZS	6.00										6.00
West_Parramatta	8.00	3.00		5.00	4.00	2.00	2.00	2.00	2.00	2.00	30.00
West_Pennant_Hills	1.00	1.00	1.00								3.00
West_Wetherill_Park	4.00										4.00
Westmead	4.00	4.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	25.00
Wetherill_Park	3.00										3.00
Whalan	1.00	2.00									3.00
Wilton	3.00	2.00	2.00	2.00	2.00	2.00	2.00	4.00			19.00
Windsor_	1.00	1.00									2.00
Wisemans	3.00	1.00	1.00								5.00
Wmead_132KV		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.00
Woodpark	3.00	3.00									6.00
Yennora	4.00	1.00									5.00

11.3 Load Transfers

Year	From ZS	From TS	To ZS	To TS	MVA
2024	Albion_Park	Mount_Terry	Calderwood	Mount_Terry	5.10
2023	Ambarvale	Macarthur_66kV	Menangle_Park	Macarthur_66kV	0.44
2023	Ambarvale	Macarthur_66kV	Menangle_Park	Macarthur_66kV	0.69
2026	Anzac_Village	Liverpool_TS	MB_Logistics_Park	Liverpool_TS	6.80
2026	Anzac_Village	Liverpool_TS	MB_Logistics_Park	Liverpool_TS	6.80
2025	Arndell_Park	Sydney_West_132kV	Augusta_DC	Sydney_West_132kV	5.40
2026	Cambridge_Park	Penrith	Claremont_Meadows	Mount_Druitt	0.57
2023	Campbelltown	Liverpool_TS	Kentlyn	Macarthur_66kV	0.38
2023	Cheriton_Avenue	Vineyard	Castle_Hill	Carlingford	0.95
2025	Cheriton_Avenue	Vineyard	Jasper_Road	Baulkham_Hills	1.20
2029	Dapto	Springhill	West_Dapto	Dapto_132kV	16.56
2023	Doonside	Sydney_West_132kV	Rooty_Hill	Sydney_West_132kV	0.65
2023	Fairfield	Liverpool_TS	Yennora	Guildford	1.1
2024	Granville_132kV	Holroyd_132kV	Sherwood	Guildford	0.35
2024	Greystanes	Blacktown	Fairfield	Guildford	0.4
2024	Greystanes	Blacktown	Woodpark	Guildford	1.80
2024	Holroyd	Blacktown	Sherwood	Guildford	0.6
2024	Huntingwood	Sydney_West_132kV	DCI	Sydney_West_132kV	3.60
2024	Huntingwood	Sydney_West_132kV	Honeman_DC	Sydney_West_132kV	5.70
2024	Huntingwood	Sydney_West_132kV	Honeman_DC	Sydney_West_132kV	5.70
2025	Huntingwood	Sydney_West_132kV	Honeman_DC	Sydney_West_132kV	5.70
2023	Huntingwood	Sydney_West_132kV	Whalan	Mount_Druitt	0.50
2024	Kellyville	Sydney_North	West_Castle_Hill	Vineyard	0.40
2029	Kembla_Grange	Springhill	West_Dapto	Dapto_132kV	5.52
2023	Kemps_Creek	West_Liverpool	South_Erskine_Park	Sydney_West_132kV	0.85
2024	Kenthurst	Sydney_North	Mungerie_Park	Vineyard	0.80
2023	Leabons_Lane	Blacktown	Seven_Hills	Baulkham_Hills	0.86
2023	Lennox	Liverpool_TS	Rosehill	Camellia	0.4
2026	Luddenham	Regentville	Science_Park	Sydney_West_132kV	3.185
2026	Luddenham	Regentville	Science_Park	Sydney_West_132kV	3.185
2023	Maldon	Nepean_66kV	Appin	Macarthur_66kV	0.34
2023	Maldon	Nepean_66kV	Nepean_ZS	Nepean_66kV	0.15
2023	Mamre	Liverpool_TS	South_Erskine_Park	Sydney_West_132kV	4.208
2023	Mamre	Sydney_West_132kV	South_Erskine_Park	Sydney_West_132kV	1.20
2023	Mamre	Sydney_West_132kV	South_Erskine_Park	Sydney_West_132kV	3.50
2023	Mamre	Sydney_West_132kV	South_Erskine_Park	Sydney_West_132kV	3.90
2024	Mamre	Sydney_West_132kV	St_Marys	Mount_Druitt	0.66
2023	Minto	Ingleburn	Campbelltown	Macarthur_66kV	0.40
2024	Mungerie_Park	Vineyard	Box_Hill	Vineyard	12
2023	Mungerie_Park	Vineyard	Kellyville	Sydney_North	3.40
2023	Mungerie_Park	Vineyard	Parklea	Vineyard	2.70
2023	Mungerie_Park	Liverpool_TS	Trifalga_Data_Centre	Vineyard	5
2023	Mungerie_Park	Liverpool_TS	Trifalga_Data_Centre	Vineyard	5
2023	Nepean_ZS	Nepean_66kV	Cawdor	Nepean_33kV	0.86
2023	Nepean_ZS	Nepean_66kV	Menangle_Park	Macarthur_66kV	0.78
2025	Newton	Blacktown	Leabons_Lane	Blacktown	2.10
2025	North_Eastern_Creek	Sydney_West_132kV	Syd_55	Sydney_West_132kV	8.00
2025	North_Eastern_Creek	Sydney_West_132kV	Syd_55	Sydney_West_132kV	8.00
2025	North_Eastern_Creek	Sydney_West_132kV	Syd_55	Sydney_West_132kV	8.00
2023	North_Parramatta	Holroyd_132kV	Dundas	Carlingford	1.02
2024	North_Parramatta	Holroyd_132kV	West_Parramatta	Holroyd_132kV	0.60
2023	North_Rocks	Baulkham_Hills	Jasper_Road	Baulkham_Hills	0.44
2024	Quarries	Blacktown	DCI	Sydney_West_132kV	2.50
2024	Quarries	Blacktown	DCI	Sydney_West_132kV	2.50
2024	Riverstone	Liverpool_TS	Box_Hill	Vineyard	2
2024	Rosehill	Camellia	Equinix_Data_Centre	Holroyd_132kV	20.02
2023	Rosehill	Camellia	West_Parramatta	Holroyd_132kV	1.49
2024	Seven_Hills	Baulkham_Hills	Station_DC	Sydney_West_132kV	3.60
2024	Sherwood	Guildford	Fairfield	Guildford	0.40
2025	South_Windsor	Hawkesbury	Box_Hill	Vineyard	3.50
2025	St_Marys	Mount_Druitt	Mamre	Sydney_West_132kV	0.30
2023	West_Parramatta	Holroyd_132kV	Lennox	Camellia	1.43
2023	West_Parramatta	Holroyd_132kV	Lennox	Camellia	0.86
2025	West_Parramatta	Holroyd_132kV	Lennox	Camellia	3.10
2023	West_Parramatta	Holroyd_132kV	North_Parramatta	Holroyd_132kV	0.67
2024	West_Parramatta	Holroyd_132kV	North_Parramatta	Holroyd_132kV	0.90
2024	Westmead	Baulkham_Hills	Wmead_132KV	Holroyd_132kV	24.57
2022	Wisemans	Hawkesbury	Glenorie	Hawkesbury	0.50

11.4 Lot Releases (Count of project)

ZS	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	TOT
Albion_Park	32										32
Ambarvale	5										5
Anzac_Village	2	1									3
Appin	2	4									6
Augusta_DC	0	1									1
Bella_Vista	10										10
Berrima_junction	1										1
Berry	4										4
BHP_Douglas_Park	2										2
Bomaderry	6	5	1	1	2	1					16
Bonnyrigg	2	1									3
Bossley_Park	0	1									1
Bow_Bowing	2										2
Bowral	11	1									12
Bringelly	0			1				1			2
Bulli	1										1
Cambridge_Park	2	1									3
Campbelltown	5										5
Canley_Vale	1										1
Castle_Hill	4										4
Casula	7	2	1	1	1	1	1	1	1	1	17
Cattai	3	2									5
Cawdor	2	1									3
Cheriton_Avenue	9										9
Chipping_Norton	0	1									1
Claremont_Meadows	4	1	2								7
Corrimal	1										1
Cranebrook	1	1	1								3
Dapto	1	3									4
Dundas	1						1	1			3
Eastern_Creek	1	2									3
Edmondson_Park	5	2									7
Emu_Plains	0		1								1
Fairfield	2	1									3
Figtree	2										2
Glenmore_Park	9										9
Granville_132kV	1	2									3
Hinchinbrook	4										4
Homepride	1	1									2
Honeman Data Centre	0		1								1
Horsley_Park	0	3									3
Huskisson	3	1									4
Jamberoo	1										1
Jasper_Road	1										1
Jordan_Springs	4										4
Kangaroo_Valley	2										2
Katoomba	1										1
Kembla_Grange	22										22
Kemps_Creek	3	6		1	1	1	1				13
Kentlyn	3										3
Kiama	1										1
Kingswood	11										11
Kurrajong	1										1
Lennox	4		1								5
Liverpool	2	1	1								4
Luddenham	1	2		1							4

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ZS	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	TOT
Maldon	6										6
Mamre	5	1									6
Menangle_Park	0			1		3		2			6
Mittagong	4										4
Moorebank	0	2									2
Moss_Vale	7	3		1							11
Mungerie_Park	14										14
Narellan	12	3									15
Nepean_ZS	4										4
North_Eastern_Creek	1										1
North_Leppington	2	4		2	1	1	1				11
North_Parramatta	1	1									2
North_Richmond	1										1
North_Warragamba	3	1									4
Nowra_	5	1									6
Oakdale	2										2
Oran_Park	11	4	2								17
Parklea	9										9
Penrith_11kV	12	1	1								14
Prestons	4	7									11
Ringwood	6	1									7
Rosehill	1										1
Russell_Vale	1										1
Rydalmere	1					1			1	1	4
Schofields	5										5
Shellharbour	11										11
South_Erskine_Park	14	3	1	3							21
South_Leppington	8	5									13
South_Marsden_Park	1										1
South_Nowra	8										8
Station St Data Centre	0	1									1
Sussex_Inlet	6										6
SW_Sector_Macarthur_132	0						1				1
Tahmoor	11	1									12
The_Oaks	1										1
Tomerong_ZS	6	1									7
Ulladulla	16	1									17
Werrington	6		1								7
West_Castle_Hill	10										10
West_Liverpool_ZS	1										1
West_Parramatta	9	2	2								13
West_Pennant_Hills	1										1
West_Wetherill_Park	0	2									2
Westmead	1	1	1								3
Wetherill_Park	1										1
Wilton	0			1							1
Yatte_Yattah	2										2
Yennora	1										1

11.5 EE Forecast Customer Numbers by Zonesub

ZONESUB (NIEIR FCST)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
ABBOTSBURY	9602	9822	10042	10255	10462	10670	10887	11115	11356	11635
ALBION_PARK	11683	11801	11907	11997	12070	12135	12200	12270	12342	12442
AMBARVALE	9072	9263	9449	9624	9788	9948	10109	10275	10445	10642
ANZAC_VILLAGE	6979	7169	7357	7538	7712	7885	8060	8240	8425	8635
APPIN	1783	1810	1836	1859	1879	1899	1919	1939	1961	1986
ARNDELL_PARK	5836	5973	6106	6232	6353	6470	6590	6714	6842	6987
BAULKHAM_HILLS_11KV	10009	10252	10491	10719	10936	11150	11369	11595	11828	12092
BELLA_VISTA	8756	8969	9177	9377	9567	9753	9944	10142	10346	10577
BERRY	3689	3727	3760	3789	3812	3832	3853	3875	3898	3929
BLACKHEATH	4191	4196	4197	4191	4180	4165	4151	4137	4124	4121
BLACKMANS_FLAT	1625	1641	1656	1669	1680	1689	1699	1709	1720	1735
BLAXLAND	7595	7600	7597	7583	7557	7526	7494	7465	7436	7424
BOLONG	826	832	837	840	843	845	847	849	851	855
BOMADERRY	8315	8377	8430	8470	8498	8520	8542	8566	8592	8637
BONNYRIGG	12117	12305	12485	12649	12797	12939	13081	13229	13383	13570
BOSSLEY_PARK	7200	7241	7274	7297	7309	7315	7321	7329	7338	7364
BOW_BOWING	4672	4738	4800	4856	4906	4953	5002	5054	5108	5173
BOWRAL	8056	8138	8210	8272	8322	8366	8412	8461	8512	8581
BRINGELLY	2722	2837	2955	3076	3199	3326	3462	3606	3760	3931
BULLI	6633	6743	6852	6954	7051	7148	7248	7356	7470	7607
BYLONG	140	140	141	141	141	141	141	141	141	141
CABRAMATTA	6065	6155	6239	6316	6386	6453	6521	6595	6671	6763
CAMBRIDGE_PARK	8796	8969	9137	9293	9438	9578	9719	9862	10010	10183
CAMPBELLTOWN	10100	10438	10780	11128	11478	11839	12225	12641	13085	13579
CANLEY_VALE	14069	14229	14377	14506	14616	14718	14821	14930	15044	15193
CARRAMAR	7364	7408	7443	7468	7481	7490	7499	7511	7525	7554
CASTLE_HILL	5847	5905	5958	6002	6038	6070	6104	6139	6177	6227
CASULA	10170	10369	10563	10743	10910	11073	11236	11405	11578	11780
CATTAI	3190	3213	3233	3250	3261	3271	3281	3293	3306	3327
CAWDOR	6936	7285	7650	8027	8417	8825	9260	9728	10228	10783
CHERITON_AVENUE	6975	7204	7436	7666	7895	8127	8370	8626	8895	9196
CHIPPING_NORTON	5231	5387	5542	5696	5847	5999	6159	6327	6504	6701
CLAREMONT_MEADOWS	8788	9033	9279	9520	9757	9997	10245	10506	10780	11091
CORRIMAL	10318	10380	10432	10468	10488	10501	10513	10529	10546	10586
CRANEBROOK	5640	5737	5829	5913	5991	6065	6139	6216	6295	6390
CULBURRA	6967	7016	7058	7089	7110	7126	7141	7158	7176	7210
DAPTO	13597	13714	13820	13904	13968	14023	14076	14133	14192	14284
DARKES_FOREST	72	73	74	75	75	76	77	78	79	80
DOONSIDE	17477	17892	18299	18685	19051	19410	19773	20146	20529	20966
DUNDAS	15969	16298	16618	16920	17204	17481	17762	18053	18354	18703
EAST_RICHMOND	5578	5624	5666	5700	5726	5748	5772	5798	5826	5867
EASTERN_CREEK	187	190	193	195	198	200	203	207	210	214
EDMONDSON_PARK	2656	2707	2756	2801	2843	2883	2924	2965	3008	3058
EMU_PLAINS	7150	7183	7208	7223	7228	7228	7228	7230	7234	7254
FAIRFIELD	8012	8064	8107	8139	8160	8174	8190	8210	8231	8270
FIGTREE	9412	9469	9517	9550	9569	9581	9593	9606	9621	9658
GERRINGONG	3396	3442	3484	3522	3555	3586	3617	3650	3684	3727
GLENMORE_PARK	9575	9763	9945	10114	10271	10423	10575	10730	10889	11077
GLENORIE	1494	1525	1556	1584	1611	1638	1664	1693	1722	1755
GLOSSODIA	3989	3995	3997	3993	3983	3970	3957	3945	3934	3931
GRANVILLE_132KV	11001	11196	11383	11557	11717	11871	12028	12192	12361	12559
GREYSTANES	6875	6981	7082	7173	7255	7333	7411	7493	7577	7679
HARTLEY_VALE	286	286	286	286	285	284	283	282	281	281
HAZELBROOK	5174	5177	5176	5166	5149	5128	5106	5086	5066	5058
HELENSBURGH	3034	3053	3068	3078	3084	3088	3091	3096	3101	3113
HINCHINBROOK	13157	13503	13845	14174	14491	14804	15123	15453	15793	16179
HOLROYD	17740	18070	18390	18686	18960	19224	19491	19766	20049	20382
HOMEPRIDE	10155	10418	10674	10922	11159	11394	11635	11887	12147	12438
HORSLEY_PARK	1194	1208	1221	1233	1243	1252	1262	1273	1284	1298
HUNTINGWOOD	1201	1214	1225	1236	1244	1252	1261	1270	1280	1293

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ZONESUB (NIEIR FCST)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
HUSKISSON	8619	8679	8731	8769	8795	8815	8834	8855	8878	8920
ILFORD_HALL	324	326	326	327	327	326	326	326	326	327
INNER_HARBOUR	30	30	30	30	30	30	30	30	31	31
JAMBEROO	1082	1100	1116	1131	1145	1158	1171	1184	1199	1215
JASPER_ROAD	11800	12109	12414	12707	12988	13265	13548	13839	14138	14477
JORDAN_SPRINGS	5832	5928	6021	6105	6181	6254	6328	6403	6480	6574
KANDOS	2228	2237	2243	2246	2245	2243	2242	2241	2240	2245
KANGAROO_VALLEY	1004	1012	1018	1022	1025	1028	1030	1033	1037	1042
KATOOMBA	8621	8634	8637	8628	8607	8579	8552	8528	8506	8502
KELLYVILLE	4947	5075	5201	5322	5438	5552	5668	5786	5908	6047
KEMBLA_GRANGE	2385	2415	2444	2471	2495	2519	2543	2570	2599	2635
KEMPS_CREEK	2206	2254	2301	2346	2388	2429	2472	2517	2564	2617
KENNY_STREET	2363	2374	2380	2386	2388	2388	2391	2398	2406	2417
KENTHURST	4603	4706	4806	4901	4991	5079	5169	5264	5361	5472
KENTLYN	12980	13212	13437	13643	13831	14012	14193	14379	14569	14796
KIAMA	7683	7816	7943	8060	8166	8268	8371	8477	8586	8715
KINGSWOOD	13305	13558	13800	14027	14236	14437	14642	14854	15072	15327
KURRAJONG	4132	4142	4149	4149	4144	4135	4126	4119	4113	4116
LEABONS_LANE	7475	7652	7825	7989	8145	8297	8452	8611	8775	8962
LENNOX	11951	12224	12490	12744	12985	13222	13465	13719	13981	14279
LITHGOW	8260	8296	8323	8337	8340	8336	8333	8332	8332	8351
LIVERPOOL	13385	13723	14054	14373	14677	14978	15286	15605	15934	16306
LUDDENHAM	1416	1470	1526	1582	1640	1699	1762	1830	1901	1981
MACQUARIE_FIELDS	11661	11848	12026	12187	12332	12470	12608	12750	12896	13073
MALDON	5239	5337	5432	5521	5605	5687	5771	5859	5952	6059
MAMRE	8726	8910	9089	9257	9414	9567	9721	9880	10042	10231
MARAYONG	7131	7297	7457	7611	7756	7899	8044	8196	8353	8530
MARSDEN_PARK	4493	4544	4591	4632	4666	4698	4729	4761	4794	4840
MEADOW_FLAT	521	523	524	524	523	522	521	520	519	520
MINTO	16433	16694	16941	17165	17367	17558	17751	17950	18154	18401
MITTAGONG	7971	8111	8244	8367	8480	8589	8700	8815	8935	9076
MOOREBANK	4585	4697	4807	4913	5014	5114	5217	5324	5436	5561
MOSS_VALE	7305	7379	7445	7502	7547	7587	7628	7671	7717	7779
MOUNT_OUSLEY	7463	7509	7547	7573	7588	7598	7607	7617	7629	7658
MUNGERIE_PARK	19987	20423	20850	21253	21633	22004	22380	22768	23167	23627
NARELLAN	17232	18298	19417	20583	21798	23076	24440	25904	27470	29204
NEPEAN_ZS	11617	12387	13199	14048	14934	15868	16865	17933	19077	20344
NEWTON	7107	7271	7429	7581	7724	7864	8009	8160	8316	8492
NORTH_EASTERN_CREEK	131	133	135	138	139	141	143	146	148	151
NORTH_LEPPINGTON	1563	1610	1656	1702	1747	1793	1839	1888	1939	1996
NORTH_PARRAMATTA	14642	15065	15485	15892	16286	16677	17078	17492	17920	18399
NORTH_RICHMOND	3643	3666	3684	3698	3706	3712	3718	3726	3734	3751
NORTH_ROCKS	5788	5932	6074	6209	6339	6466	6597	6731	6871	7028
NORTH_WARRAGAMBA	3149	3210	3269	3325	3378	3431	3485	3542	3602	3672
NORTH_WOLLONGONG	7244	7287	7322	7346	7360	7369	7377	7389	7402	7430
NORTHMEAD	7727	7924	8117	8303	8481	8656	8835	9019	9209	9425
NOWRA	8918	8992	9055	9107	9145	9176	9208	9244	9282	9339
OAKDALE	816	831	846	859	872	885	898	912	926	944
ORAN_PARK	11545	12293	13081	13901	14756	15656	16612	17634	18726	19937
PARKLEA	18386	18881	19372	19851	20316	20780	21260	21761	22284	22875
PENRITH_11KV	7202	7328	7447	7559	7661	7759	7863	7973	8088	8219
PLUMPTON	14130	14478	14821	15148	15459	15766	16075	16393	16719	17092
PORT_CENTRAL	3598	3631	3658	3682	3700	3716	3733	3753	3773	3801
PORT_KEMBLA	7228	7302	7369	7426	7473	7514	7556	7599	7645	7708
PORTLAND	1348	1352	1356	1357	1356	1354	1352	1351	1350	1351
PRESTONS	9030	9328	9629	9926	10221	10519	10828	11150	11488	11866
PROSPECT	8647	8819	8985	9141	9287	9428	9573	9725	9881	10061
QUAKERS_HILL	13720	14032	14336	14624	14896	15162	15430	15706	15988	16314
QUARRIES	3528	3600	3670	3736	3797	3857	3917	3981	4046	4121
RINGWOOD	3305	3339	3369	3394	3415	3433	3451	3470	3490	3518

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ZONESUB (NIEIR FCST)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
RIVERSTONE	5476	5556	5632	5701	5763	5823	5884	5949	6016	6098
ROBERTSON	2033	2073	2111	2147	2180	2212	2245	2280	2316	2357
ROOTY_HILL	10071	10305	10534	10751	10957	11159	11364	11575	11793	12041
ROSEHILL	3250	3320	3387	3452	3513	3572	3634	3698	3765	3841
RUSSELL_VALE	8687	8740	8785	8816	8834	8845	8856	8868	8881	8915
RYDALMERE	13129	13454	13773	14078	14370	14656	14949	15253	15566	15920
SCHOFIELDS	10705	10944	11179	11401	11609	11814	12020	12232	12449	12699
SEVEN_HILLS	5892	6032	6166	6296	6420	6541	6667	6800	6937	7091
SHELLHARBOUR	12317	12527	12727	12910	13077	13237	13397	13563	13734	13937
SHERWOOD	11184	11303	11412	11504	11580	11648	11715	11783	11855	11953
SMITHFIELD	12166	12237	12295	12335	12357	12369	12381	12395	12412	12456
SOUTH_GRANVILLE	7459	7555	7645	7724	7792	7856	7919	7986	8055	8142
SOUTH_LEPPINGTON	5791	5927	6062	6193	6319	6445	6575	6711	6854	7018
SOUTH_MARSDEN_PARK	1639	1706	1774	1844	1914	1987	2064	2145	2232	2328
SOUTH_NOWRA	2272	2287	2299	2309	2316	2321	2327	2335	2343	2356
SOUTH_WINDSOR	8504	8607	8701	8786	8858	8926	8996	9072	9151	9250
SOUTH_WOLLONGONG	5486	5518	5544	5562	5573	5578	5585	5594	5605	5627
SPRINGWOOD	8932	8942	8943	8930	8904	8871	8838	8806	8777	8766
ST_MARYS	10498	10715	10926	11123	11308	11486	11667	11853	12044	12265
SUSSEX_INLET	3795	3855	3913	3966	4014	4059	4105	4153	4203	4263
TAHMOOR	6841	6967	7090	7205	7312	7416	7523	7634	7749	7885
THE_OAKS	2255	2365	2479	2598	2720	2848	2984	3130	3285	3459
TOMERONG_ZS	5355	5393	5426	5450	5466	5478	5490	5502	5515	5541
ULLADULLA	13300	13398	13482	13546	13591	13627	13663	13703	13746	13819
UNANDERRA	3048	3065	3078	3088	3093	3096	3100	3105	3112	3124
WARILLA	10834	11006	11169	11318	11451	11578	11705	11836	11971	12134
WENTWORTH_FALLS	3795	3826	3854	3877	3894	3909	3924	3941	3959	3986
WERRINGTON	10879	11098	11308	11507	11693	11872	12057	12250	12450	12678
WEST_CASTLE_HILL	7173	7351	7523	7691	7850	8007	8170	8340	8516	8713
WEST_LIVERPOOL_ZS	10337	10585	10828	11061	11283	11501	11725	11959	12199	12472
WEST_PARRAMATTA	4526	4615	4698	4779	4855	4929	5009	5098	5191	5292
WEST_PENNANT_HILLS	6326	6494	6662	6822	6976	7128	7283	7442	7606	7791
WEST_WETHERILL_PARK	1171	1186	1199	1212	1224	1235	1249	1266	1285	1304
WEST_WOLLONGONG	6548	6589	6623	6646	6660	6669	6677	6686	6695	6720
WESTMEAD	4575	4689	4802	4909	5012	5114	5218	5325	5435	5560
WETHERILL_PARK	1664	1675	1682	1689	1693	1696	1701	1708	1716	1727
WHALAN	10046	10280	10508	10726	10932	11134	11340	11554	11774	12024
WILTON	1377	1395	1413	1428	1441	1453	1465	1478	1491	1507
WINDSOR	4454	4478	4498	4512	4520	4525	4531	4541	4552	4572
WISEMANS	1256	1260	1263	1265	1264	1263	1262	1262	1262	1265
WOMBARRA	3165	3184	3200	3211	3217	3222	3225	3230	3235	3247
WOODPARK	755	765	773	782	789	796	805	815	825	837
YATTE_YATTAH	2343	2384	2423	2459	2493	2525	2558	2591	2626	2668
YENNORA	6359	6400	6434	6459	6474	6485	6496	6510	6526	6555

12 GLOSSARY

Base Forecast	Represents the forecast before the impact of the expected Spot Loads, Load Transfers and Lot Releases. See also Modified Forecast.
Capacity	The rated continuous load-carrying ability, expressed in megawatts (MW) or megavolt-amperes (MVA) of generation, sub-transmission, or other electrical equipment.
Circuit Breaker	A device designed to open a circuit either by manual action or by automatic action when current exceeds a value longer than permitted or for operational reasons. A circuit breaker can enable overcurrent protection.
Circuit Breaker Data	The monitored electricity flow (in amps) within the Circuit Breaker. This data is less accurate than Meter Data, it does not take account of the direction of the flow of electricity, and it can only derive MVA values and is not averaged over a 15 minute period. However, it may be the most accurate data source available for particular regions or feeders where other metering is not available. See also Meter Data and SCADA.
Coincidence	The level of demand at each loading point at exactly the same time as the system peak demand (can be expressed as a percentage, coincidence factor).
Diversified	The load recorded at a point of aggregation. For instance, the load measured at a Sub-transmission Substation that is supplying several Zone Substations. See also Undiversified
Diversification Factor	The factor used to multiply the summated individual loading points at the lower level of the network to obtain the representative load at the aggregate level.
Diversified (Forecast)	Calculated amount determined by multiplying the undiversified demand by a diversification factor. This factor is determined from the historical data.
Diversified (Historical)	The direct load measurement at the substation.
Diversity	The tendency for customer's peak demand to occur at a different time to the load point it is connected to. See also Coincidence.
Exports	Electricity (energy and power) being sent out of a network or part of a network (such as an individual transformer) from the higher level down to the lower level.
Firm Capacity	A substation's maximum capacity from a planning standard's perspective. If a substation has more than one transformer then the firm capacity is defined as being its N – 1 Capacity.
Imports	Electricity (energy and power) being fed into a network or part of a network (such as an embedded generator) from the lower level (alternative energy source) to a higher level and dispersed into the network.
Lot Releases	New development sites (residential, commercial & industrial) which have a defined period of release and number of development sites into load points on the network.
Meter Data	Highly accurate, revenue class metering of the electrical load at a Substation. Readings are taken as an average over a 15 minute period, and are filtered to remove 'spikes' or short term bursts of energy often associated with sudden or momentary surges in consumption resulting from changes being made to the network's configuration. See also SCADA and Circuit Breaker
Modified Forecast	The forecast after the incorporation of Spot Loads, Load Transfers and Lot Releases. See also Base Forecast

Monthly Peak Demand Data	The highest demand recorded at an individual load point during the month. Readings generally include MW, MVA and MVAr.
N – 1	One sub-transmission circuit or transformer out of service.
N – 1 Capacity	The total output capacity of a substation assuming that the substation's (largest) transformer or feeder is not operational.
Peak Demand Forecast	The Summer Demand Forecast, or the Winter Demand Forecast.
Probability of Exceedence (PoE)	The likelihood of a figure being exceeded in any one season. Ie: a 10% PoE forecast figure is estimated to be exceeded by the actual figure only once every 10 seasons on average. A 50% PoE figure is likely to be exceeded once every two years on average.
Reactive Power	The portion of electricity that establishes and sustains the continuous electric and magnetic fields of alternating-current equipment on sub-transmission networks. Reactive power is energy which must be produced for maintenance of the system and is not produced for end-use consumption. Reactive power is provided by generators, synchronous condensers, or electrostatic equipment such as capacitors and directly influences electric system voltage. It is a derived value equal to the vector difference between the apparent power and the real power. Losses incurred in sub-transmission from heat and electromagnetic emissions are included in total reactive power. It is usually expressed as kilovolt-amperes reactive (kVAR) or megavolt-ampere reactive (MVAR).
SCADA	Supervisory Control and Data Acquisition - SCADA is used to monitor the electrical network and provide remote operation of substations and reconfiguration of the network through control over switchgear and transformers. It is also programmed with local control routines that facilitate substation voltage control and feeder and transformer change over. SCADA is the key tool for controlling the network and restoring supply after faults and incidents.
Spot Loads	New load connections which are expected to draw a defined amount of load, on a specified date at a particular point in the network. They are assumed to draw their total expected demand from the day of connection. Spot loads also incorporate expected capacitor installations which have the effect of lowering the MVA required for a given level of MW demand.
TCMD	Temperature Corrected Maximum Demand is the expected peak demand normalised by the temperature. A 10% PoE season is defined as a 1 in 10 year event. A 50% PoE season is defined as a 1 in 2 year event.
Undiversified	The direct summation of the individual peak loads of the lower level substations connected to a point of aggregation – eg: Summation of the substations' peak demand supplied from a loading point even though their individual peak demands occur at different times. See also Diversified.

INDEX

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

Y

(End of Document)