



GROWTH SERVICING PLAN - 2018

March 2018

CONTENTS

1.0	INTRODUCTION.....	2
2.0	DEFINITIONS AND TERMINOLOGY	4
3.0	SUPPLY AREA.....	5
4.0	DRIVERS FOR GROWTH	6
5.0	PLANNING PROCESS.....	9
5.1	STRATEGIC ASSET MANAGEMENT APPROACH	9
5.2	SERVICING URBAN GROWTH.....	10
6.0	DEVELOPER INITIATED INFRASTRUCTURE.....	11
6.1	DEVELOPMENT APPROVALS	11
6.2	RETICULATION INFRASTRUCTURE	11
6.3	LEAD-IN INFRASTRUCTURE	11
6.4	REIMBURSEMENT SCHEME	11
7.0	THE GROWTH SERVICING PLAN.....	12
7.1	HOW WE DEVELOP OUR CAPITAL PROGRAM	12
7.2	SUMMARY OF PROJECTS.....	14
7.3	NORTH WEST PRIORITY GROWTH AREA	16
7.4	SOUTH WEST PRIORITY GROWTH AREA.....	17
7.5	WESTERN SYDNEY PRIORITY GROWTH AREA	18
7.6	GREATER MACARTHUR PRIORITY GROWTH AREA	19
7.7	GLENFIELD TO MACARTHUR URBAN RENEWAL CORRIDOR	20
7.8	WEST LAKE ILLAWARRA GROWTH AREA.....	21
7.9	GREATER PARRAMATTA PRIORITY GROWTH AREA	22
7.10	SYDNEY METRO NORTH WEST PRIORITY URBAN RENEWAL CORRIDOR	23

1.0 INTRODUCTION

The Growth Servicing Plan outlines Endeavour Energy's plans to provide 'trunk' infrastructure to service greenfield and infill development areas across Endeavour Energy's franchise area. This plan is based on 10 year Endeavour Energy's Strategic Asset Management Plan and is underpinned by the Australian Energy Regulator's (AER) regulatory determination which will determine the level of capital expenditure that Endeavour Energy is allowed to make over the 2019-2024 regulatory period. This document is intended to inform developers, prospective developers, urban planning specialists, consultants, Councils, NSW Government and other agencies about the extent and timing of likely infrastructure requirements for servicing developing areas to 2024.

Endeavour Energy's infrastructure investment plans address the need to provide electricity supply to meet development within Sydney's growth areas. However, these plans need to be balanced against community expectations with regard to price and shareholder expectations in relation to return on assets. Endeavour Energy takes an evidence-based approach to meeting development needs to ensure investments in infrastructure are made for the right amount, at the right place and at the right time. Infrastructure is therefore rolled out when development indicators provide clear signals in relation to the timing and viability of the investment in our network. In this regard, Endeavour Energy works in close collaboration with the NSW Department of Planning and Environment, developers, and state agencies such as Sydney Water and Road and Maritime Services.

The Growth Servicing Plan sets out Endeavour Energy's high level plans for electricity distribution and subtransmission network infrastructure to service urban growth to a horizon of around 10 years, with greater certainty on timing of projects to the period to 2024. Urban growth includes new housing, industrial and commercial facilities in both greenfield and infill development areas within Endeavour Energy's supply area. It should be noted that most of these projects are proposed projects only and is subject to funding allowed by the AER. Notably, board approved funding commitments have not yet been made for projects in later years. Board approval for funding is generally sought and committed immediately prior to projects commencing.

For greenfield sites, the focus of this document is on provision of subtransmission infrastructure since distribution infrastructure (22kV and below) is contestable and therefore typically driven by the developer, with Endeavour Energy contributing to a portion of the costs. Figure 1 gives an overview of the structure of the electricity supply network, and work on the network that could be potentially contestable is enclosed by the red border. Endeavour Energy has a certification role in the roll out of contestable infrastructure and does not control its timing or prioritisation.

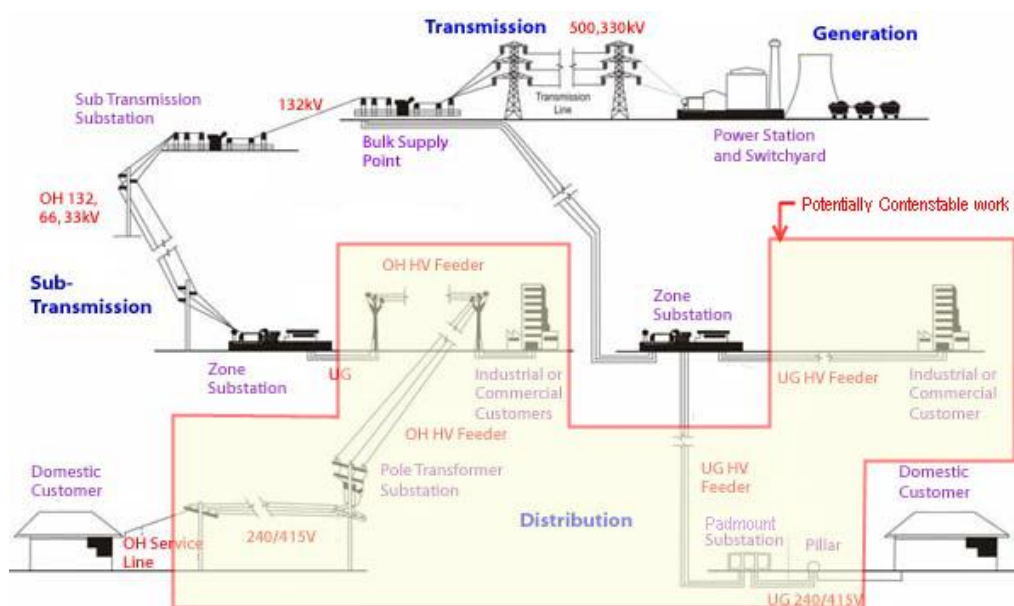


Figure 1 - Structure of Electricity Supply Network

Comments on this report, and any suggestions should be sent to:
Manager Asset Strategy and Planning
Endeavour Energy
PO Box 811
Seven Hills NSW 1730

2.0 DEFINITIONS AND TERMINOLOGY

Industry specific terms used throughout this document are defined in the Table 2 below.

Table 2 - Definitions of Industry terms

Accredited Service Provider (ASP)	An individual or entity accredited in accordance with the Electricity Supply (General) Regulation.
Customer	In the context of this report, an individual, group of property owners or a developer wishing to connect to the network. The developer of a subdivision or multi-unit development is considered to be a single customer for the purposes of apportioning costs for connection assets. For subdivisions and residential apartments, the customer is deemed to be the developer.
Contestable works	Works that are funded by the customer and performed by accredited service providers (ASPs) for the connection of customers to Endeavour Energy's network.
Customer connection assets	The assets fully dedicated to the customer up to the nominated connection point.
Distribution Network	The collection of assets (distribution lines, cables, substations and associated equipment) whose purpose is to distribute power from zone substations to distribution substations that feed the low voltage network. Distribution voltages in Endeavour Energy's network are typically 11kV, 22kV and 12.7kV SWER, the latter generally being found in remote rural areas. Note that in the context of this document, distribution denotes both Endeavour Energy's distribution and low-voltage networks.
Distribution Substation	A substation with a primary voltage of 11kV, 22kV or 12.7kV and is part of Endeavour Energy's distribution network.
Recoverable works	Works carried out by Endeavour Energy on behalf of a third party and funded by the customer as non-contestable customer funded works
Sub-transmission Network	The collection of assets (lines, cables, substations and associated equipment) whose purpose is to distribute power in bulk from transmission substations to zone substations which feed the distribution network or a particular customer.
Transmission Substation	A substation with a primary voltage of 132 kV and secondary voltage of 66 kV or 33kV which is part of Endeavour Energy's transmission network and supplies the sub-transmission network.
Zone Substation	A substation with a primary voltage of 132 kV, 66 kV or 33 kV and secondary voltage of 22kV or 11kV which is part of Endeavour Energy's subtransmission network.

3.0 SUPPLY AREA

Endeavour Energy's network spans across Sydney's Greater West, the Illawarra, South Coast, Blue Mountains, and the Southern Highlands. Figure 1 shows Endeavour Energy's area in relation to the other two Distribution Network Service Providers (DNSPs) in New South Wales.

The Electricity Supply Act 1995 requires an electricity distributor operating in New South Wales holding a licence to abide by the conditions imposed by the Act and by the Minister for Energy.



Figure 2 - Endeavour Energy Network Franchise area

Endeavour Energy, under its Operating Licence, has the responsibility for ensuring that the electrical services to consumers within its supply area are designed, constructed, maintained and operated so that customers receive a quality electrical supply via commercially viable environmentally appropriate systems.

For ease of reference, the Growth Servicing Plan splits Endeavour Energy's area into regions that are broadly consistent with Department of Planning and Environment Priority Growth Areas. The context map in Figure 3 sourced from the Department of Planning and Environment indicates that the largest Greenfield development areas all fall within Endeavour Energy's supply area.

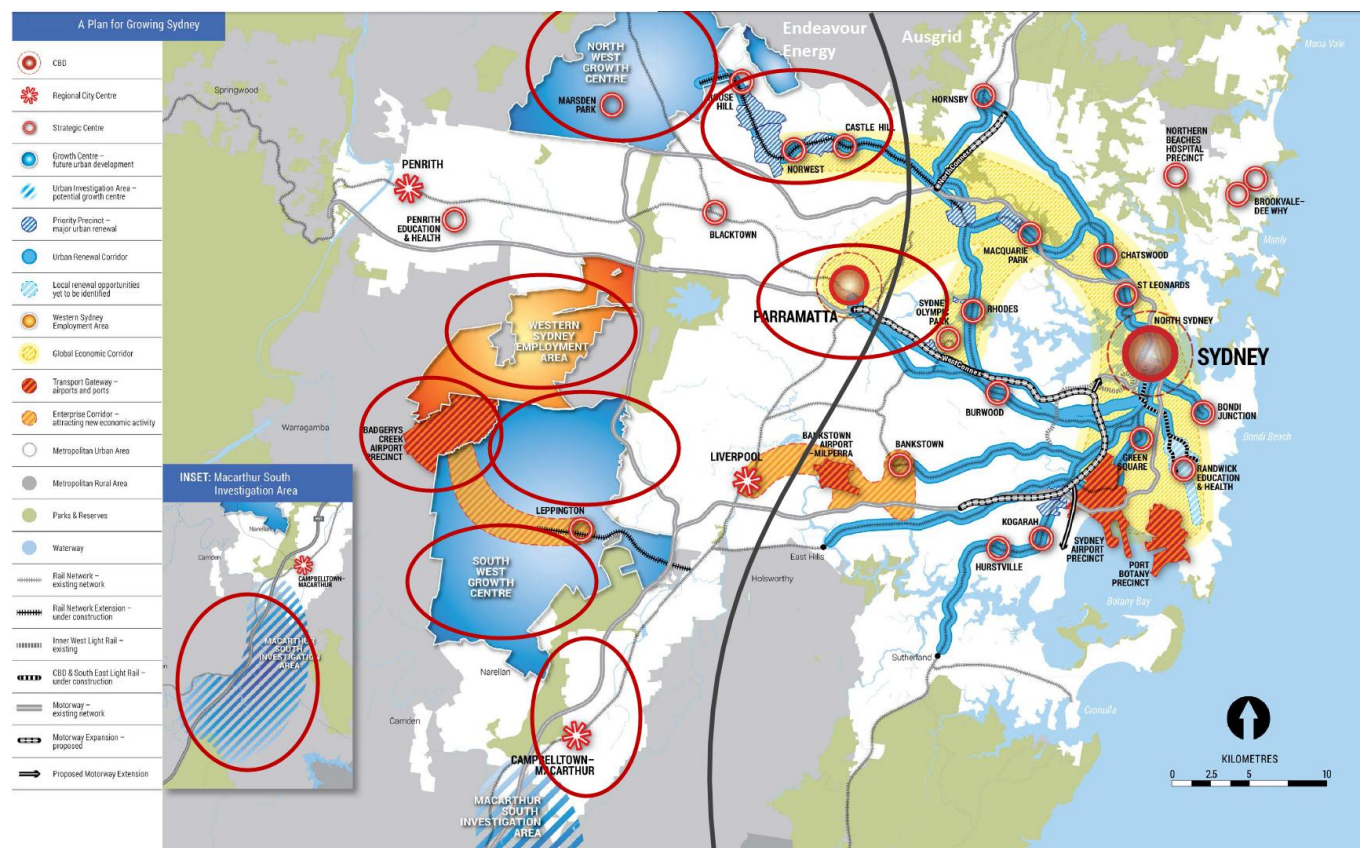


Figure 3 - Development Growth Areas

The NSW Government priority growth areas and precincts falling within Endeavour Energy's franchise area are as follows:

- North West Priority Growth Area
- Western Sydney Priority Growth Area
- Western Sydney Employment Area
- South West Priority Growth Area
- Greater Macarthur Priority Growth Area
- Glenfield to Macarthur Urban Renewal Corridor
- Greater Parramatta Priority Growth Area
- Sydney Metro Northwest Priority Urban Renewal Corridor
- Wilton

In addition to these priority growth areas, Endeavour Energy also has developments occurring in:

- The Westlake Illawarra Region
- Significant urban density developments around Liverpool and Penrith CBD areas.

4.0 DRIVERS FOR GROWTH

Endeavour Energy services the 3rd largest economy in Australia and the fastest growing communities in NSW, with the population of Greater Western Sydney to grow approximately 46 percent by 2031 and the development of the Western Sydney Airport at Badgerys Creek.

A key driver for our capital program in the current and the next several regulatory periods will be servicing the significant growth in our network as a result of population growth. The population of Greater

Western Sydney will grow by 1 million people between 2011 and 2031. Figure 4 compares the population growth rates of Western Sydney with Sydney Metro and other NSW regions.

Our network includes the North West, and South West priority growth areas in Greater Western Sydney which are projected to accommodate 500,000 new residents over the next 30 years, the equivalent of two cities the size of Canberra and Wollongong. Additionally, we will need to support the development of the Western Sydney Airport at Badgerys Creek and the large surrounding residential, commercial, and industrial areas in the Western Sydney priority growth area planned to support the Greater Sydney Commission's vision of a 'third city' for Sydney.

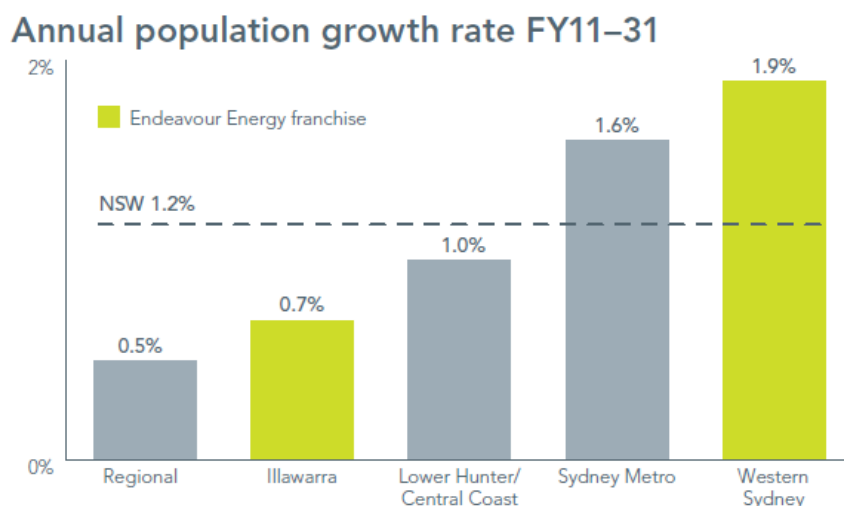


Figure 4 - Comparison of annual population growth rates - NSW regions

Endeavour Energy expects approximately 151,600 new connections over the next seven years through to 2024 including 144,200 residential connections. This is based on independent forecasts by NIEIR for residential and industrial/commercial customers for the whole of Endeavour Energy's area.

This results in an average of 20,600 new residential connections per year.

In the short term higher growth rates are being experienced with actual total new connections of 22,400 in FY17 and an estimated 23,000 in FY18.

The remainder of the forecasts align well with long term projections from the Greater Sydney Commission and Department of Planning which translated into residential dwelling numbers of 21,370 per annum for Endeavour Energy.

The Greater Sydney Commission's Greater Sydney Region Plan (p.62) shows a 20 year housing projection of 19,600 per annum just for the Central City and the Western City, both of which are in the Endeavour Energy area. Parts of the South District and the North District are also supplied by Endeavour Energy but have not been included in this count. The Illawarra Shoalhaven Regional Plan (Page 33) published by NSW Department of Planning recommends a minimum housing target of 1,770 homes per year.

Figure 5 below demonstrates the extent of undeveloped industrial zoned land that is available for development of employment lands within the Endeavour Energy franchise area. This implies that apart from growth in the residential sector, there is also significant potential for growth in industrial and commercial load.

Apart from the priority growth areas nominated by the NSW Government, we are experiencing flow on effects in other regions of our franchise area. For example, there are significant developments occurring in nearby major centres such as Liverpool, Penrith and Blacktown. Flow on effects associated with the

housing market, housing affordability, improved transport links and lifestyle choices have activated developments in the Illawarra region where we are experiencing increased residential activity in regions such as West Dapto and Calderwood.

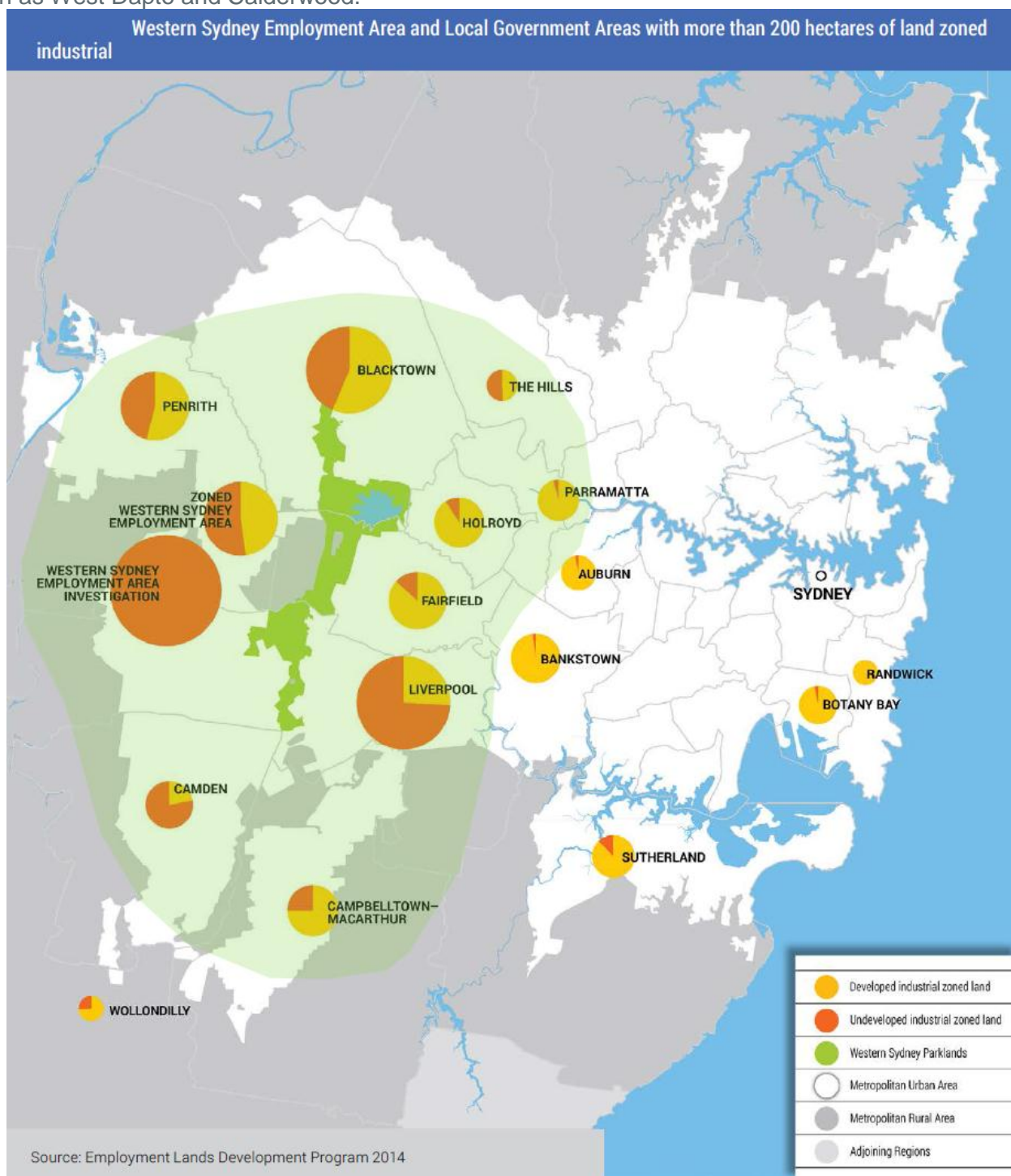


Figure 5 - Industrial Zone Land in the Greater Sydney Region

Our role is critical in supporting this growth. Our plans and processes will ensure that Endeavour Energy connects new development areas and customers to the network in an efficient and timely manner. This will support affordable housing, employment opportunities and economic growth in our network area. We work closely with NSW Government and developers to ensure that our capital program is well targeted and adequate in meeting this expected growth.

5.0 PLANNING PROCESS

The Endeavour Energy planning process integrates several elements relating to asset management strategies in terms of network and non-network options giving consideration to:

- Safety and environmental issues;
- The service and reliability requirements of all Endeavour Energy's customers;
- Network capability, and asset age, condition and performance as leading indicators of customer outcomes;
- The requirements of Endeavour Energy's stakeholders.

5.1 STRATEGIC ASSET MANAGEMENT APPROACH

Electricity networks are characterised by large, capital intensive assets with long lives of 35 years or more. The ten-year capital works program is set out in the Strategic Asset Management Plan (SAMP) and includes a detailed breakdown of the asset management outcomes and system solutions.

The SAMP determines the required network expenditure in the areas of capacity driven capital expenditure which can be driven by organic growth needs or greenfield developments. It also integrates asset maintenance, refurbishment and replacement needs as well as incorporation of non-network solutions where these have been identified as feasible. It takes into account the drivers affecting the network business, including Endeavour Energy's customer needs, stakeholder expectations, environmental issues, community issues and concerns, network condition, and business and financial challenges and opportunities.

The SAMP sets priorities and summarises the required investment in Endeavour Energy's electrical network to maintain the ongoing capability of the network consistent with a "best in class" network asset manager. Figure 6 below outlines the relationship of the documents in relation to development of the Growth Servicing Plan.



Figure 6 - Document relationships

One of the key tenets of this approach, as it relates to this Growth Plan Document is prudent and efficient capital expenditure. This requires a degree of certainty attached to the timing of individual development proposals for Endeavour Energy to commit capital without running substantial risks of investing in assets that may become stranded. Endeavour Energy's philosophy in relation to strategic growth planning is therefore to work in concert with development proponents to achieve a "just in time" capital investment model. Endeavour therefore uses every available opportunity to facilitate developments by using spare capacity in adjacent network plant up to the point where investment in significant infrastructure is justified.

5.2 SERVICING URBAN GROWTH

Whereas broad based planning is driven by Department of Planning and Environment forecasts, actual infrastructure investments, particularly timing is driven largely by applications for connection. Endeavour Energy considers this process necessary to minimise the risk of investing in assets that might become stranded because of developments not proceeding.

To invest in growth assets, Endeavour Energy must assess the need for those assets. This assessment is based on a broad consideration of the NSW Government's "A Plan for Growing Sydney" to identify where major asset needs are required. This is followed up with detailed discussions with developers where the likelihood and timing of developments are assessed.

As a first step Endeavour considers the capability and feasibility of existing nearby assets for supplying initial development in growth areas. This is followed by firming up the timing of any additional major infrastructure required. The trigger for firming up the timing of infrastructure development is confirmed applications for supply from developers.

Major developments such as zone substations typically require lead times of three years if a site is available. If a site is not available longer lead times are required. Negotiations for a site usually involve matters beyond Endeavour Energy's control. Lead times for subtransmission feeders depend on the length, land ownership and degree of terrain difficulty. Difficulties with acquiring line route easements can result in typical lead times for subtransmission feeders extending beyond three years.

To minimise risks associated with stranded assets and to take advantage of civil works already occurring for the development, Endeavour Energy generally prefers to undertake development for major works concurrently with the development. This is especially so where some capacity may be available in the adjacent electricity network. Where investments are required before development commences, Endeavour Energy has to take risk mitigation measures to minimise the risks of stranded investments.

Connection to Endeavour Energy's network is made in accordance with Endeavour Energy's Model Standing Offers which:

- Identifies the electrical and physical provisions for customers connecting to the network; and
- Makes provision for customers to connect to the network in a fair and equitable manner at reasonable user pays principles.

These are in line with the Electricity Supply Act 1995 and the determinations of the Australian Energy Regulator (AER) and the Electricity Supply (Customer Contract) Regulations. This will ensure an acceptable quality of electrical supply for existing and future customers.

6.0 DEVELOPER INITIATED INFRASTRUCTURE

As a general rule, customers initiate the installation of the lines and equipment up to a defined point of connection to the network (known as “connection costs”) in accordance with the Company’s Connection Policy. Endeavour Energy contributes a portion of these connection costs. Upstream augmentations for “shared” infrastructure where there are multiple beneficiaries are fully funded by Endeavour Energy. However, developers should consult Endeavour Energy in relation to specific circumstances.

6.1 DEVELOPMENT APPROVALS

Prior to the issuance of a construction certificate, parties undertaking development of properties may be required by their local council to obtain correspondence from their local network service provider indicating that suitable arrangements for the permanent supply of electricity to the development have been made.

Developers are required to lodge a relevant application for the required connection service to Endeavour Energy in order to receive either a connection offer if network augmentation is required, or a confirmation that supply is available at the location. After all of the terms and conditions of the connection offer have been satisfied, a “Permission to Connect” letter is issued. If required, once necessary arrangements have been made, Endeavour Energy can issue a notice relating to the provision of electricity to the development which the developer can supply the local council for the release of a construction certificate.

Further information is available under “Our Network/Network Connections” on Endeavour Energy’s website www.endeavourenergy.com.au.

6.2 RETICULATION INFRASTRUCTURE

The process for providing electrical reticulation within land being sub-divided in a contestable works context involves the following participants:

- The owner or owner’s agent of the land being subdivided
- The relevant consent authority, usually the local council
- A Level 3 Accredited Service Provider to design the electrical works
- A Level 1 Accredited Service Provider to construct the works.
- Endeavour Energy

Endeavour Energy’s role in the process is to provide a “Notification of Arrangement” which indicates that necessary arrangements to provide electrical services to the development have been met and that the costs and other servicing requirements identified by Endeavour Energy have also been met.

6.3 LEAD-IN INFRASTRUCTURE

Developers, mostly in Greenfield areas may be required to construct lead-in feeders to connect their development to Endeavour Energy’s Zone substations. These lead in works can typically include the provision of additional feeders (trunk lines) or the augmentation of existing under-rated assets. The need for these works will be considered on a site by site basis. Connection of smaller developments comprising of a small number of dwellings in areas where electricity supply exists may be possible with little or no augmentation works to the electricity distribution network, provided capacity is available.

6.4 REIMBURSEMENT SCHEME

Please refer to the Endeavour Energy website for information on reimbursement for assets constructed by connecting customers. Information is available under “Our Network/Network Connections” on Endeavour Energy’s website www.endeavourenergy.com.au.

7.0 THE GROWTH SERVICING PLAN

7.1 HOW WE DEVELOP OUR CAPITAL PROGRAM

7.1.1 Greenfield

For each greenfield residential precinct a forecast of the number of new dwellings is forecast based on connection applications, developer information, department of planning forecasts (where available). The rates of growth are also sanity checked by actual history of similar development, current and forecast construction activity in the surrounding area using independent sources such as HIA. Rates of growth are also influenced by the provision of other major infrastructure such as water, sewer, roads, transport, health and education.

The dwelling forecasts are then converted into demand forecasts using ADMD (After Diversity Maximum Demand) appropriate for the housing type, which is explained in Section 7.1.3 below.

The resulting demand forecasts are compared with existing capacity to determine when constraints may occur. Options are then considered to alleviate the constraint and allow development to continue. Endeavour Energy often takes a staged approach to providing additional capacity to ensure that investment is economically efficient.

For greenfield industrial precincts a demand forecast is developed using a combination of connection applications, developer information, zoning information and history of similar development. Greenfield industrial development can result in large step change increases if energy intense facilities move such as data centres, cold storage and manufacturing.

In order to enable the development of future zone substations, Endeavour Energy has a strategic land acquisition program that involves both direct negotiations with large developers and market acquisitions in fragmented ownership areas.

7.1.2 Brownfield

Endeavour Energy produces a 10 year spatial demand forecast for each existing zone substation. This includes taking into account future connections and development. Post model adjustments taken into account the effects of energy efficiency, solar PV generation and energy storage.

The ADMDs mentioned in Section 7.1.3 below also apply to brownfield development, with the ADMD for apartments being most relevant.

The existing capacity of zone substations and sub-transmission lines is compared with the forecast load over a 10 year period both under normal and single contingency scenarios. Where a constraint is identified, a probabilistic assessment determines whether investment is justifiable and the appropriate timing. Investment options are then considered to address the constraint.

7.1.3 After Diversity Maximum Demand (ADMD)

Residential ADMD is a measure of the impact that an individual dwelling (as part of a collection of many dwellings) has on the size requirements of the upstream network. Diversity in this context refers to the fact that people impose demand on the network at different times. A single dwelling on its own may impose as much as 10kVA of demand on peak days, however when considered as a group the impact of customers on the network is considerably less. Diversity increases with the number of customers supplied by a particular network element thus decreasing the ADMD. That is, the ADMD measured at a zone substation supplying 5,000 customers will be less than the ADMD measured at a distribution substation supplying 100 customers. A summary of the types of ADMD used by Endeavour Energy in planning are shown in Table 1 below:

Table 1 – ADMD by application

Level of Network	Residential Dwelling Type	ADMD kVA	Example Application
Distribution Substation and Low Voltage network	Detached House	5 (medium) 6.5 (large)	Size Distribution Transformer
	Apartments	3.5	
11kV feeders	Detached House	4	Area Studies
	Apartments	3	
Zone Substation	Detached House	3.2	Summer Demand Forecast
	Apartments	2.4	
	Detached House	4	Area Planning
	Apartments	3	

Figure 7.0 Zone Substation Level ADMD data

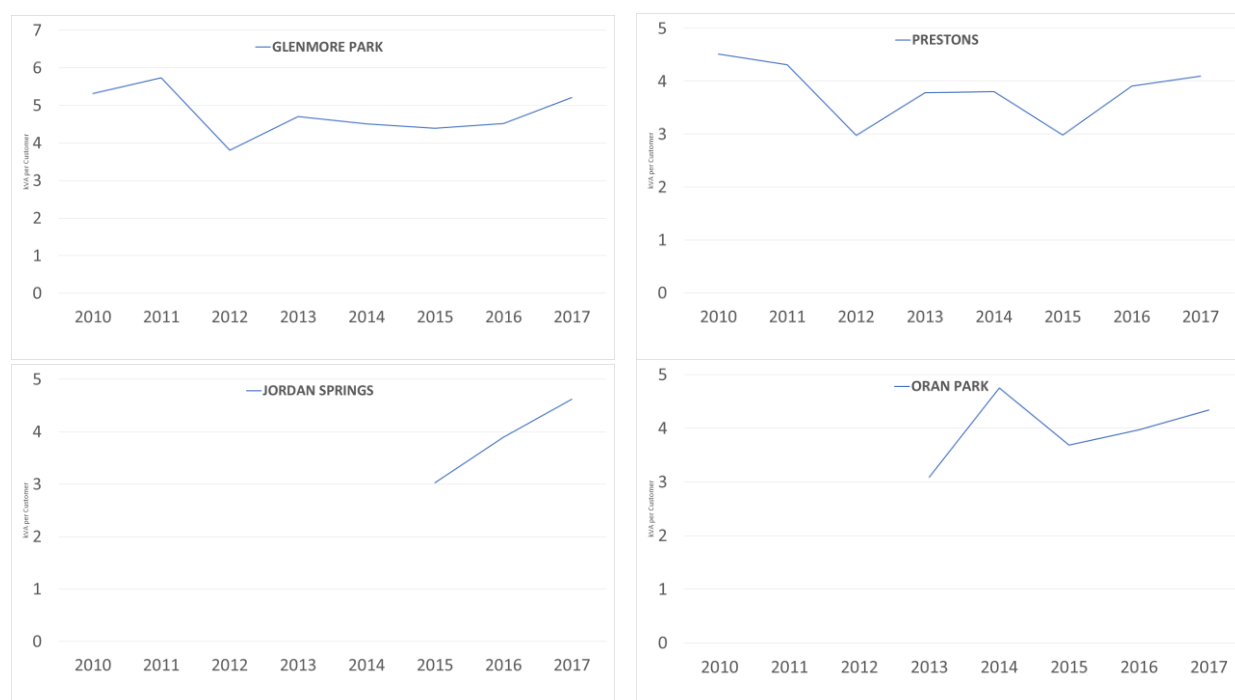


Figure 7.0 shows actual ADMD calculated for various zone substations. Glenmore Park is an older subdivision representative of 8-10 year old housing stock and has an ADMD of 5.2kVA. ADMD for new housing has declined since then.

Prestons, Jordan Springs and Oran Park are more representative of more recent subdivisions and recent housing stock, the data for these locations show a lower ADMD of 4kVA. There has been a slight upward trend in recent years indicating a stabilisation in ADMD values.

In the context of area plans for growth areas the ADMD of 4kVA is therefore appropriate, given that area plans do not separately quantify associated load with local shopping centres, schools, water pumping stations and other community facilities.

With respect to zone substation summer demand forecasting and additional diversity factor of 0.8 is applied to new dwellings, effectively reducing ADMD to 3.2kVA. This lower ADMD takes into account that associated loads are normally itemised separately in the forecast, for example a local shopping centre is normally a separate spot load.

At 11kV feeder level an ADMD of 4kVA is used to take into account that there is less diversity at this level of the network. Similarly the LV planning ADMDs are higher again.

7.2 SUMMARY OF PROJECTS

The following is a summary of projects to address constraints within the network together with indicative completion dates. This forms part of Endeavour Energy's regulatory proposal for funding requirements over the five year period from 2019-2024 as the likely portfolio of projects required to address growth within the Endeavour Energy franchise. AER approval for this funding is yet to be determined. Funding for individual proposed projects requires separate internal approval by Endeavour Energy closer to implementation and once this is obtained, a project is considered 'committed'. Unless otherwise indicated, all projects should be considered as proposed only and therefore do not yet have funding approval. While AER funding approval is for a five year investment cycle, individual internal project funding approval is generally sought in the year prior to commencement of the project. Individual projects also have to satisfy the Regulatory Investment Test for Distribution (RIT-D) or the Regulatory Investment Test for Transmission (RIT-T), if the relevant investment value threshold is met. The Regulatory Investment Test includes consultation with the market for potential non-network solutions that may defer network investment.

Figure 7.1 - Summary of Future Greenfield Projects (FY19 Real \$)*

ID	Description	FY19 (R)	FY20 (R)	FY21 (R)	FY22 (R)	FY23 (R)	FY24 (R)
PR110	Edmondson Park ZS establishment	2,187,000	1,887,805	5,711			
PR248	Penrith Lakes ZS site acquisition					1,000,000	
PR249	Establish Penrith Lakes 33/11kV Zone Substation						3,610,000
PR258	Menangle Park 66/11kV ZS establishment	3,800,000	3,500,000				
PR292	South Marsden Park (industrial) 132/11kV ZS establishment	14,500,000	9,560,976				
PR423	Maryland ZS establishment			4,166,800	8,333,600	8,333,600	
PR425	Austral ZS establishment (interim initially)			2,379,536			
PR427	Leppington North ZS establishment	10,000,000	2,911,434	284,588			
PR430	North Rossmore ZS site purchase					3,000,000	
PR432	Rossmore ZS site purchase						3,000,000
PR438	North Bringelly ZS site purchase						3,500,000
PR499	Southpipe (Oakdale Estate) ZS 132/11kV establishment		5,452,000	12,904,000	8,904,000		
PR602	Riverstone West site purchase						
PR620	West Dapto ZS establishment				2,467,000	4,934,000	4,934,000
PR656	Leppington South ZS establishment (permanent)	10,900,000	12,195,122	1,903,629			
PR657	Calderwood ZS establishment (interim initially)	200,000	7,851,000	7,851,000			
PR659	Avondale (South West Dapto) 132/11kV Zone Substation						
PR698	Marsden Park (residential) 132/11kV ZS - stage 2		3,462,500	5,462,500			
PR703	Riverstone East site purchase		6,000,000				
PR713	Box Hill 132/22kV ZS establishment		4,964,000	15,928,000	13,928,000		
PR717	Acquire improved site for West Dapto ZS		2,000,000				
PR722	Camellia TS connection works for Ausgrid	187,082	31,070	95,725			
PR723	Supply to Luddenham Science Park		6,104,000	18,208,000	16,208,000		
PR724	Establish Mt Gilead ZS				3,854,000	7,708,000	7,708,000
PR727	Luddenham ZS site purchase		975,610				
PR728	Western Sydney Employment Lands ZS				4,696,000	9,392,000	9,392,000
PR739	South Gilead (South Campbelltown)						3,854,000
PR742	North Bomaderry ZS establishment				3,692,000	7,384,000	7,384,000
PR744	Termeil ZS establishment					3,972,500	3,972,500
PR748	Establish permanent Catherine Park ZS				1,913,000	3,827,000	3,827,000
AUGEX GREENFIELD TOTAL (Excl Contingent Projects)			66,895,517	69,189,488	63,995,600	49,551,100	51,181,500
AUGEX GREENFIELD TOTAL (REAL \$FY19 FOR 2019-2024 REG PERIOD)							300,813,205

* Excludes 132kV works for Western Sydney Airport and surrounding areas which is separately classified as a contingent project.

Figure 8.2 - Summary of Future Brownfield Projects (FY19 Real \$)

ID	Description	FY19 (R)	FY20 (R)	FY21 (R)	FY22 (R)	FY23 (R)	FY24 (R)
AG	Automation - operational/capacity risk	300,000	300,000	300,000	300,000	300,000	300,000
HVW	HV development works	7,057,544	6,800,844	7,103,063	6,647,368	6,275,047	5,947,097
LV001	Overloaded distribution sub uprates	120,000	120,000	120,000	120,000	120,000	120,000
PR113	Augment feeder 308 Nepean to Douglas Park	518,000	6,072,000				
PR677	South Penrith Zone Substation		4,615,000	13,230,000	10,230,000		
PR700	Riverstone east ZS establishment				4,129,000	8,258,000	8,258,000
PR732	Feeder 214/215 constraints		4,725,000	4,725,000			
PR740	AFIC upgrade Minto, Prospect, Kingswood	1,900,000					
PR751	Parklea ZS to Bella Vista ZS load transfer		4,000,000				
PR754	Augment Westmead Zone Substation					6,417,500	6,417,500
AUGEX GREENFIELD TOTAL (Excl Contingent Projects)			26,632,844	25,478,063	21,426,368	21,370,547	21,042,597
AUGEX GREENFIELD TOTAL (REAL \$FY19 FOR 2019-2024 REG PERIOD							115,950,419

7.3 NORTH WEST PRIORITY GROWTH AREA

The North West Priority Growth Area is approximately 10,000 hectares of mostly rural land that is progressively being urbanised with greenfield development. It is within the boundaries of three local government areas of The Hills, Blacktown and Hawkesbury, which will ultimately have 90,000 homes and over 500 hectares of employment lands.

The NSW Government aims to facilitate delivery of 33,000 homes by 2026 by investing into road, rail and water infrastructure to release land in this area for development, for example the Sydney Metro North West rail line due to be completed in 2019. The State Government is also actively pursuing increased housing supply to tackle housing affordability via policy changes and provision of infrastructure. In addition there has been strong growth in employment lands such as Sydney Business Park at Marsden Park where larger businesses have moved in.

Endeavour Energy has previously invested prudently to support growth in the North West Area, however capacity constraints for greenfield development remain in specific locations. This is because new precincts are released over time, creating new development frontiers; higher densities are being encouraged; and the fact that previous investment has been efficiently staged.

During a five year period starting from 1 July 2019 Endeavour Energy plans to invest approximately \$80m on growth projects to ensure continuing connection capacity is available in the North West Priority Area.

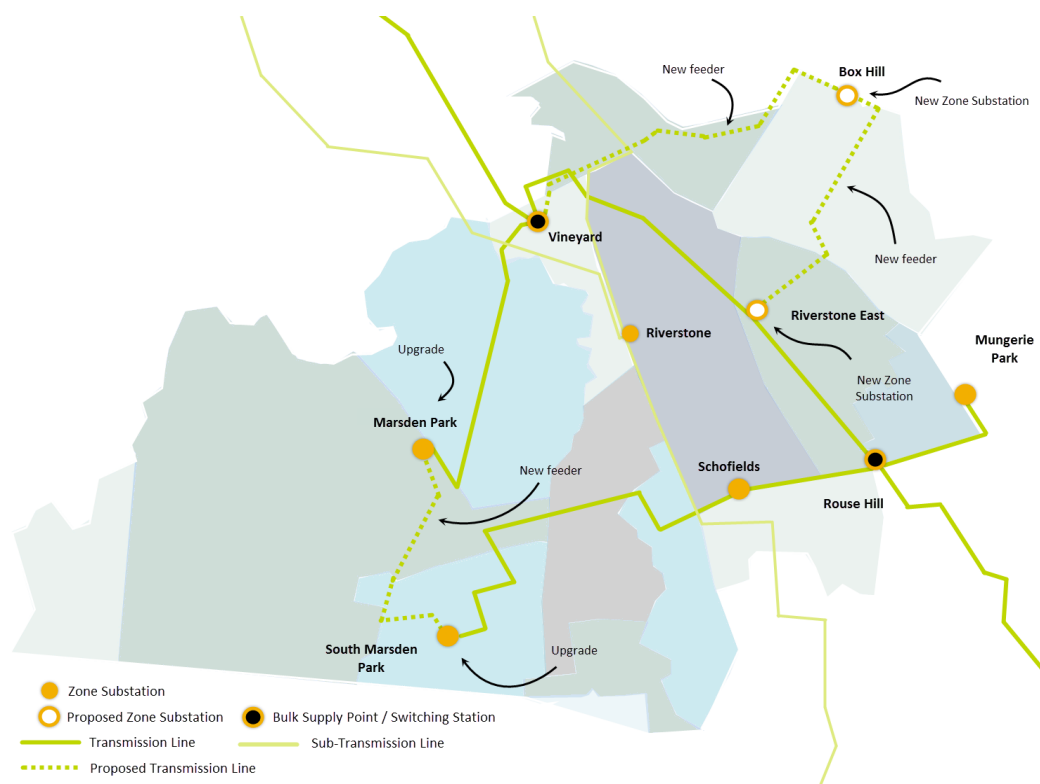


Figure 9 - Endeavour Energy assets servicing the North West Priority Growth Area

7.4 SOUTH WEST PRIORITY GROWTH AREA

The South West Priority Growth Area is approximately 10,000 hectares of mostly rural land that is progressively being urbanised with greenfield development similar to the North West Priority Growth Area. The area is located within the boundaries of the Liverpool, Camden and Campbelltown local government areas. It will ultimately have 132,000 homes and over 450 hectares of employment lands including the new Leppington and Edmondson Park Town Centres.

The NSW Government has delivered the South West Rail Link from Glenfield to Leppington via Edmondson Park to stimulate residential and commercial development in this priority growth area. Investment into road, rail, sewer, water, gas, telecommunication and electricity infrastructure is occurring to meet demand as each precinct is released.

Endeavour Energy has previously invested prudently to support growth in the South West Growth Area however capacity constraints for greenfield development remain in specific locations. This is because new precincts are released over time creating new development frontiers; higher densities around transport corridors and town centres; and the fact previous investment has been staged. During a five year period starting from 1 July 2019 Endeavour Energy plans to invest approximately \$52m on growth projects to ensure continuing connection capacity is available in the South West Priority Growth Area.

The ultimate development of the South West Growth Area will take place over a 40 year period and will require ongoing investment by Endeavour Energy to provide a forecast electricity capacity of 600MVA.

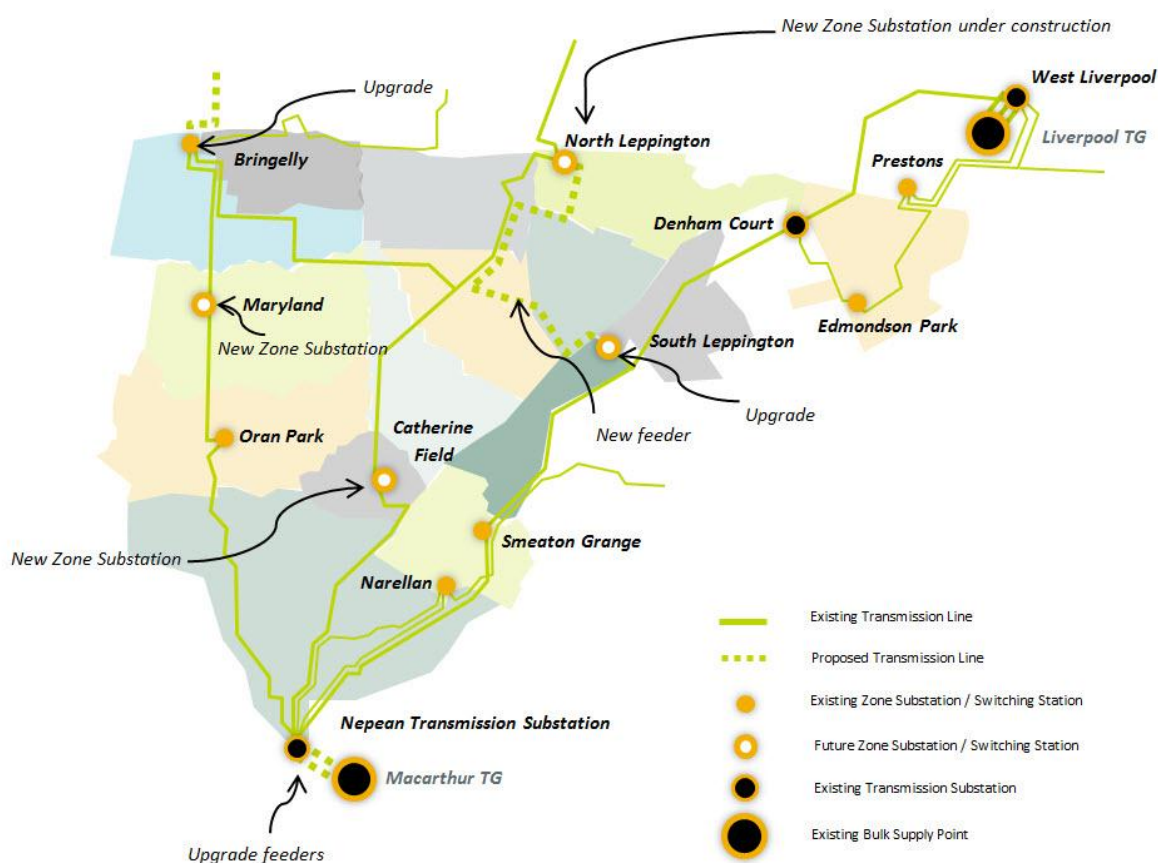


Figure 10 - Endeavour Energy Assets Servicing the South West Priority Growth Area

7.5 WESTERN SYDNEY PRIORITY GROWTH AREA

The NSW Government is working with local councils and service utilities to develop employment opportunities, residential and supporting infrastructure and services around the planned Western Sydney Airport (WSA) at Badgerys Creek in Sydney's west. This forms the basis of the Greater Sydney Commission's vision of a 'third city' for Sydney, after Sydney CBD and Parramatta.

The new Western Sydney Priority Growth Area is approximately 10,300 hectares of rural land that encompasses the proposed airport, the Sydney Science Park and Western Sydney Employment Lands extending from Eastern Creek to Austral, Leppington and Bringelly.

The area is shared between Blacktown, Fairfield, Liverpool and Penrith local government areas with Liverpool and Penrith sharing the majority of the area.

Since the announcement of the construction of the airport, development interest in the surrounding lands continues to increase significantly. The airport is expected to be operational by 2026, however works to clear the site of existing electricity infrastructure will begin in 2018/19, while construction of the 132kV electricity infrastructure to support the airport and the surrounding development areas will need to begin in 2020/21.

During the five year period commencing 1 July 2019, Endeavour Energy plans to invest approximately \$102m on growth projects to support development of the Western Sydney Priority Growth Area.

As the 'third city' vision begins to take shape, further development of the growth area will take place over a 40 year period and will require ongoing investment to provide a forecast capacity of 850MVA.

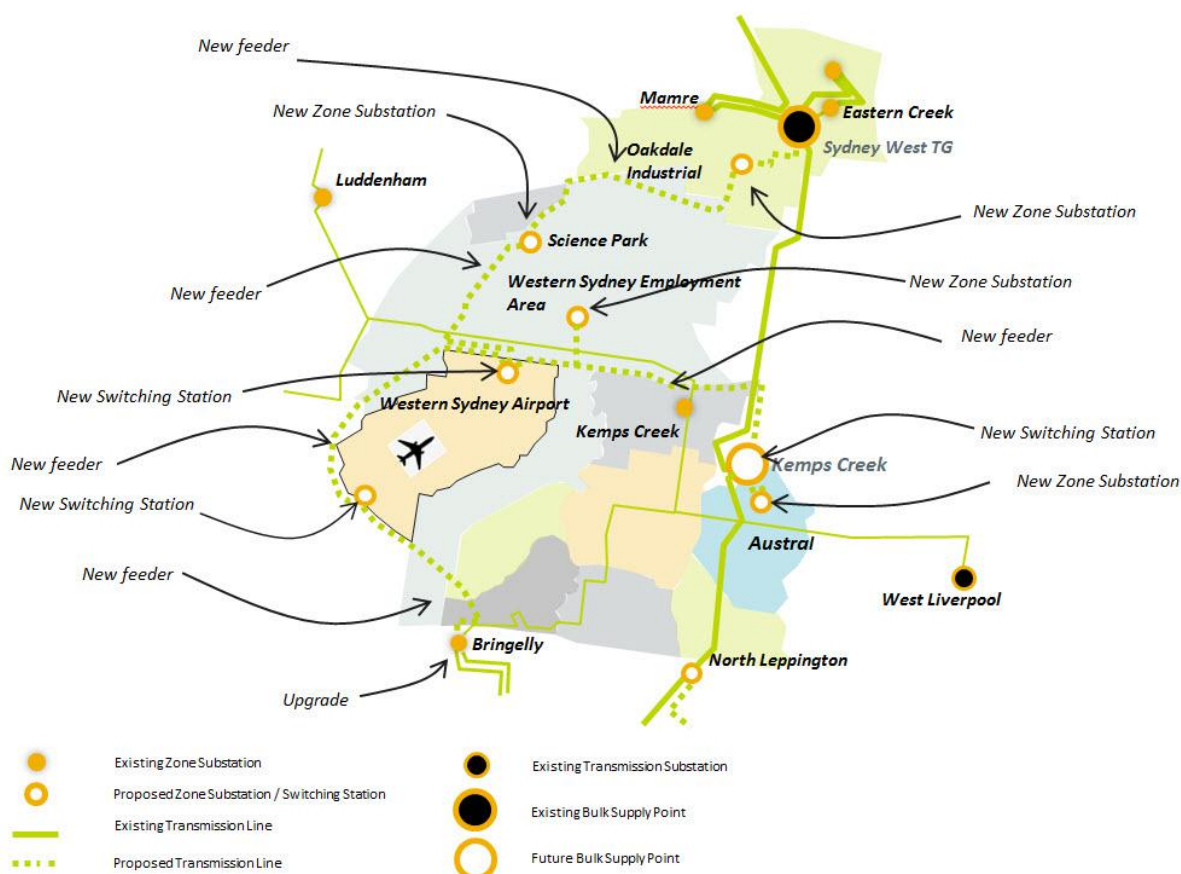


Figure 11 - Endeavour Energy assets servicing the Western Sydney Priority Growth Area

7.6 GREATER MACARTHUR PRIORITY GROWTH AREA

The Greater Macarthur Study area is approximately 17,600 hectares of mostly rural lands across Campbelltown and Wollondilly local government areas. Of this area, the NSW Government has identified approximately 7700 hectares of land that can be developed in the short term and will be priority growth precincts.

Developments at Menangle Park, Mount Gilead, Wilton New Town and the West Appin precincts are expected to yield over 60,000 dwellings and 700 hectares of employment lands. There has also been more recent interest in developing areas south of Mt Gilead and will result in additional residential dwelling yields. Collectively this will ultimately impose network demand in excess of 300MVA.

Development in the precincts listed is predominantly driven by large single developers and landowner consortiums and consequently could develop at a faster pace than fragmented precincts.

During a five year period starting from 1 July 2019 Endeavour Energy plans to invest approximately \$33m on growth projects to ensure continuing connection capacity is available in the Greater Macarthur Priority Area. Further investment will be required as this new development frontier gathers pace.



Figure 12 - Endeavour Energy Assets servicing the Greater Macarthur Priority Growth Area

7.7 GLENFIELD TO MACARTHUR URBAN RENEWAL CORRIDOR

This urban renewal corridor has been grouped with the NSW Government's Greater Macarthur Priority Area. However, from a growth servicing perspective, Endeavour Energy is better placed to service the urban renewal corridor in comparison with the greenfield areas forming the remaining portion of this priority area.

For the regions affected by the State Government's urban renewal initiative along the rail corridor, Endeavour Energy has made prudent investments in this region previously and continues to make investments in the growing regions. As a result of these investments, Endeavour Energy is able to meet forecast demand arising from these urban renewal works using connections capex for the period to 2024 based on Department of Planning and Environment projections. Endeavour Energy does not foresee significant investment requirements in subtransmission works for this corridor over this period.

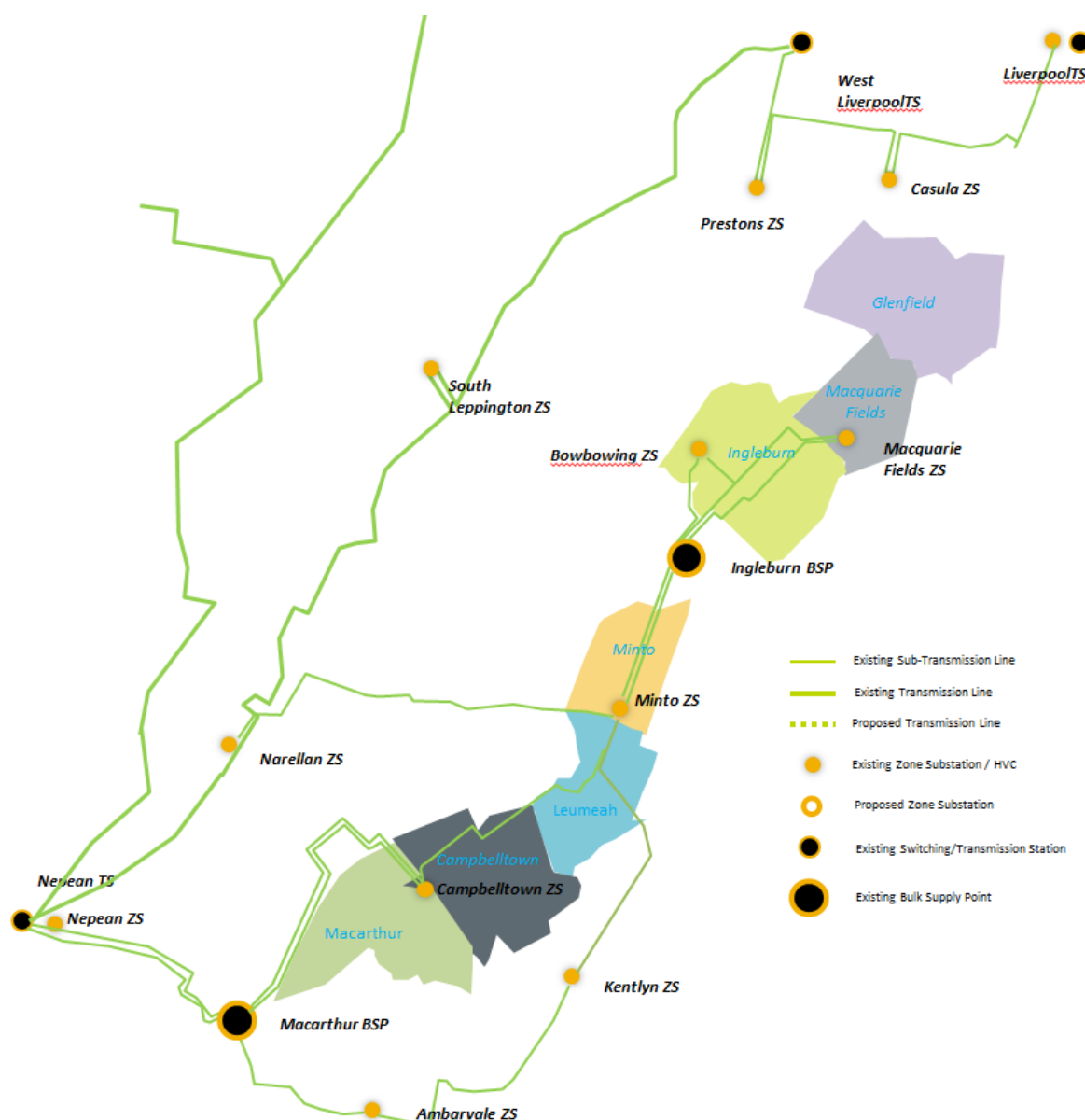


Figure 13 - Endeavour Energy Assets servicing the Glenfield - Macarthur Rail Corridor Urban Transformation Area Precincts

7.8 WEST LAKE ILLAWARRA GROWTH AREA

The West Lake Illawarra growth area is approximately 5,500 hectares of mostly rural land across Wollongong and Shellharbour local government areas. It will ultimately accommodate an estimated 26,000 residential dwellings and comprise 3.1km² of employment lands. Based on the total number of dwellings and employment lands, the ultimate imposed network demand is estimated at 128MVA.

There are four main Greenfield development precincts in the area. These are Calderwood, West Dapto, Tallawarra and Avondale. These precincts are located within the boundaries of the Illawarra escarpment to the west, the existing suburbs of Horsley, Dapto and Tallawarra to the east, the existing Kembla Grange employment lands to the north and Albion Park to the South.

Current developer activity within the Calderwood precinct is driven by a single large single developer whereas the larger West Dapto precinct comprises fragmented land ownership with small developments. Initial development activity has commenced in the Avondale precinct, but there is presently no activity in the Tallawarra precinct.

The NSW Government through the Wollongong office co-ordinates the Illawarra Shoalhaven Development Program. It aims to manage continued land and housing supply in the Illawarra and Shoalhaven through implementation of regional strategies.

During a five year period starting from 1 July 2019 Endeavour Energy plans to invest approximately \$30m on growth projects to ensure continuing connection capacity is available in the West Lake Illawarra Growth Area. Further investment will be required as development matures.

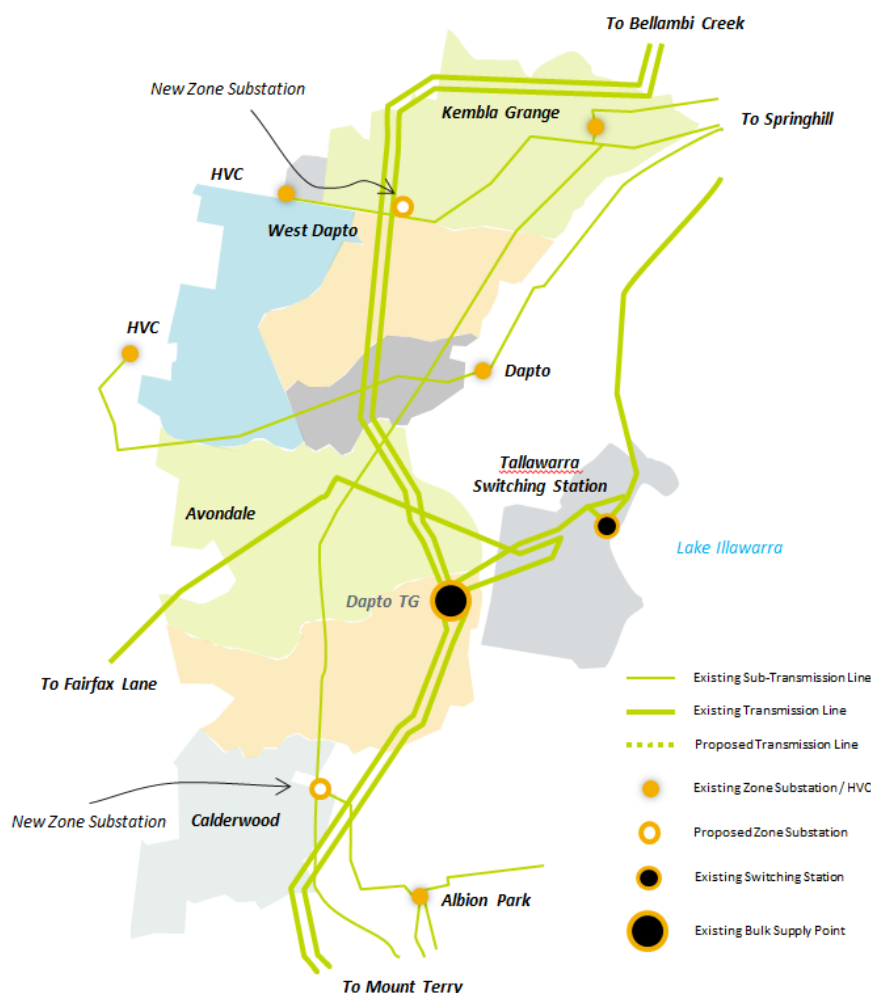


Figure 14 - Endeavour Energy assets servicing the West Lake Illawarra precincts

7.9 GREATER PARRAMATTA PRIORITY GROWTH AREA

Endeavour Energy has previously invested prudently in the greater Parramatta region, with investments such as provision of a 132kV network into the Parramatta CBD area and the construction of new zone substations and switching stations at West Parramatta, East Parramatta and Granville. As a result of these investments, Endeavour Energy is able to meet forecast demand for the region from these newly created assets for most of the redevelopment areas proposed. Endeavour Energy plans to invest approximately \$13million in this region through to 2024 .

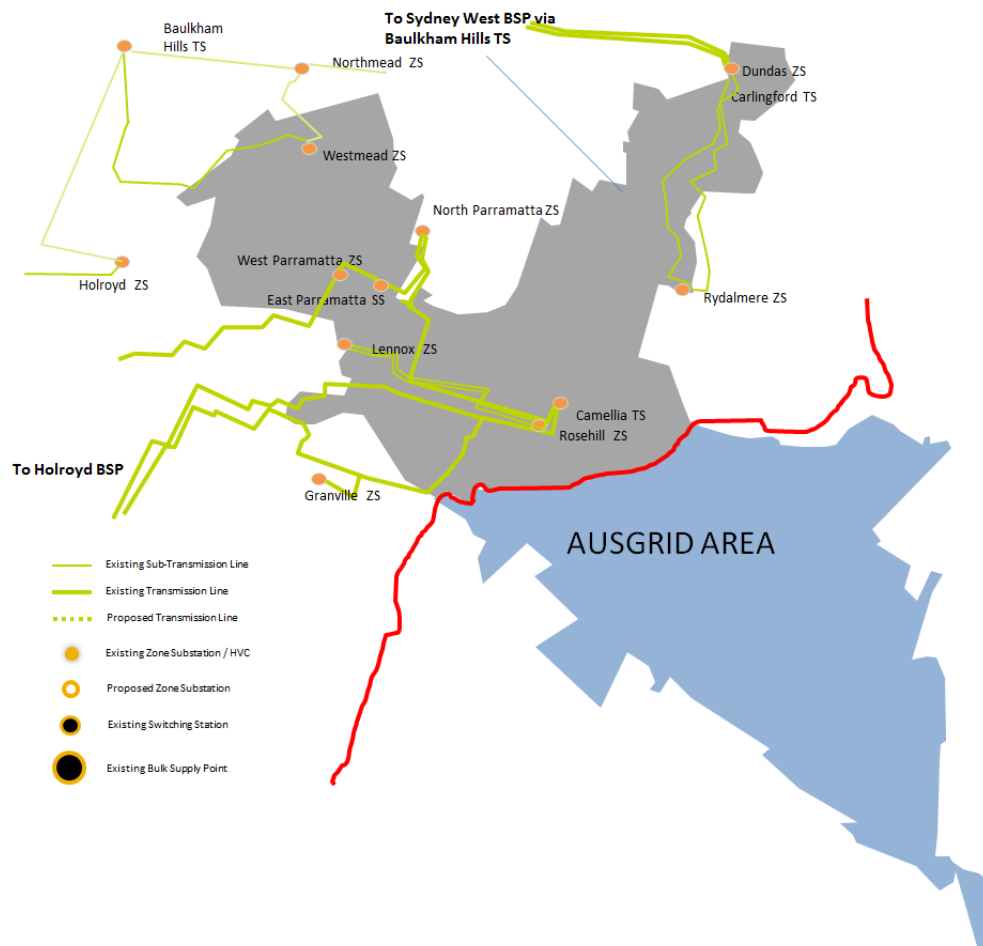


Figure 15 - Endeavour Energy assets servicing the Greater Parramatta - Olympic Peninsula (GPOP) Priority Growth Area

7.10 SYDNEY METRO NORTH WEST PRIORITY URBAN RENEWAL CORRIDOR

Parts of this urban renewal corridor traverses through the former North West Growth Centres areas. Endeavour Energy has made prudent investments in this region previously and continues to make investments in the greater North Western Priority Area. As a result of these investments, Endeavour Energy is mostly able to meet forecast demand arising from these urban renewal works for the period to 2024. Endeavour Energy expects to invest approximately \$13.5 million to address emerging brownfield constraints noted below. Apart from this, Endeavour Energy does not foresee significant investment requirements in the form of major projects for this corridor over this period.

For the period to 2024, Endeavour Energy is forecasting constraints at Parklea Zone Substation and its supply feeders and this will be addressed as part of the North West Area Plan.

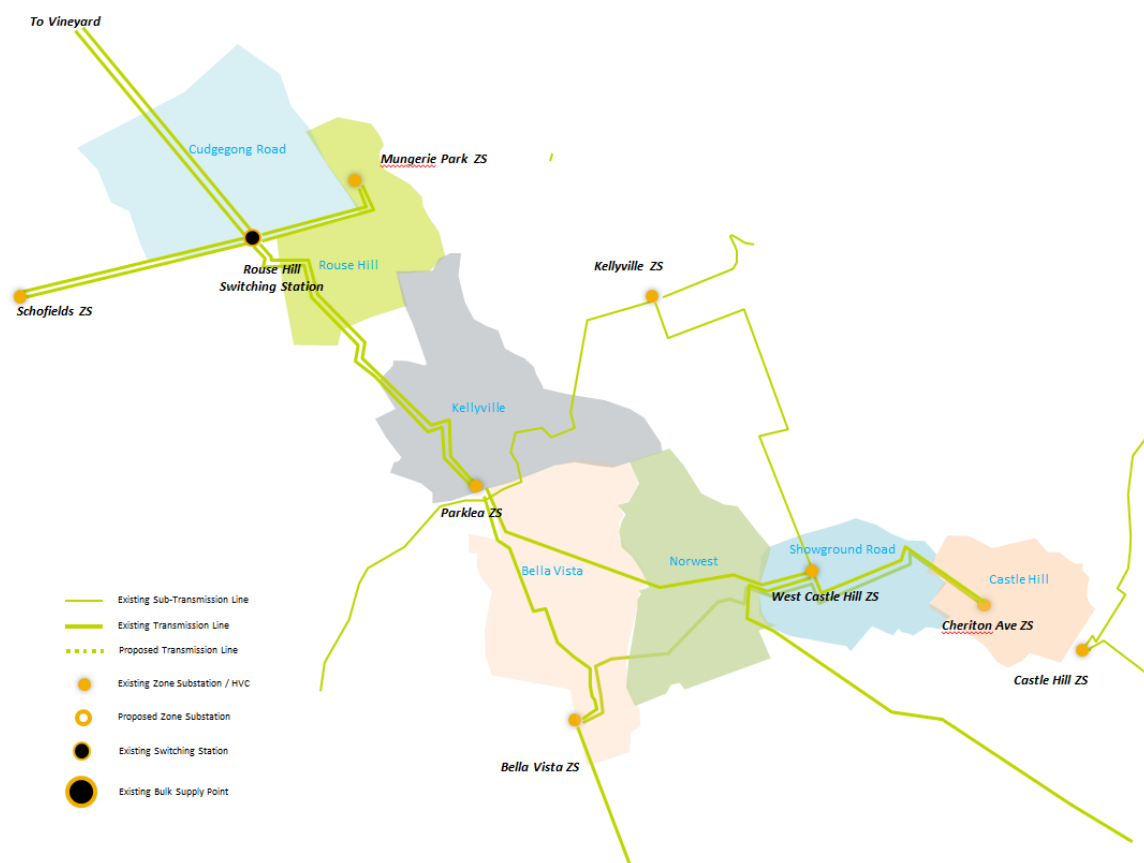


Figure 16 - Endeavour Energy assets servicing the Sydney Metro North West Urban Renewal Corridor