Jemena Electricity Networks (Vic) Ltd

Application to reopen the 2021-26 Electricity Distribution Price Review Determination

Appendix B-01

Unforeseen event expenditure

Jemena
bringing energy to life

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Abbreviations

AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AI	Artificial Intelligence
ARR	Annual Revenue Requirement
Augex	Augmentation capital expenditure
EDCoP	Electricity Distribution Code of Practice
ESOO	Electricity Statement of Opportunities
DAPR	Distribution annual planning report
DNSP	Distribution Network Service Provider
HIA	Housing Industry Association
ICCS	Incremental cost customer specific
ICSN	Incremental cost of shared network
ISP	Integrated System Plan
JEN	Jemena Electricity Networks (Vic) Ltd, ACN 064 651 083
kVA	Kilovolt-amperes
LV	Low Voltage
MVA	Megavolt-amperes
NEO	National Electricity Objective
NER	National Electricity Rules
PTRM	Post-tax Revenue Model
RIT	Regulatory investment test
SCS	Standard Control Services
SoNS	systems of national significance
TCPR	Transmission Connection Planning Report
TNSP	Transmission Network Service Provide
VAPR	Victorian annual planning report
VDSN	Victorian Declared Shared Network
VHBA	Victorian Health Building Authority
VTP	Victorian Transmission Plan

1. Introduction

1.1 Purpose

This appendix provides Jemena Electricity Networks (Vic) Ltd. (**JEN**'s) explanation for the capital expenditure (**capex**) and associated capital contributions arising from unprecedented and unforeseen number of major connection customer requests.

This appendix should be read in conjunction with JEN's application to the Australian Energy Regulator (**AER**) to recover costs associated with these major connection customer requests in accordance with National Electricity Rule (**NER**) clause 6.6.5.

1.2 Structure of this appendix and supporting materials

This appendix is structured to explain:

- **Section 2** – What JEN had **forecast for the 2021–26 regulatory period** and the circumstances of that forecasting
- **Section 3** – What **transpired in the 2021–26 regulatory period** and how JEN has met the customer-initiated major connection and augmentation capex needs
- **Section 4** – How JEN has prepared its **revised 2021–26 forecasts**
- **Section 5** – How JEN ensures its **expenditure is prudent and efficient**

1.3 Financial and capacity data

All financial data presented in this document is in real $ June 2021 unless otherwise stated. This reflects the forecasting basis used in preparing the 2021–26 expenditure forecasts that this reopener application seeks to reforecast.

All references to maximum demand presented in this document are to non-coincident peak demand unless otherwise stated.

2. What was JEN expecting back in 2020?

When the AER conducted its 2021–26 determination in 2020, there was high economic uncertainty due to COVID and data centres were not being identified as a major driver of electricity demand. This section sets out what JEN forecast for the 2021–26 regulatory period with respect to major connection customers and details the circumstances of that forecasting.

2.1 The world in 2020

JEN's 2021–26 determination was conducted amid COVID and economic uncertainty

JEN prepared for and the AER conducted the 2021–26 determination amid the unprecedented uncertainty of Victoria's COVID response and economic recovery pathway. Just five weeks after JEN submitted its regulatory proposal at the end of January 2020, Melbourne entered its first of what was to become seven lockdowns totalling 262 days of enforced isolation and suppression of Victoria's economic activity, the longest cumulative total in the world.[1]

Very few of the numerous digital stimulus policies that emerged during and shortly after the pandemic, as detailed in Section 3.2.1, were in place at the time JEN submitted its revised proposal in December 2020.

Data centres were not being identified as a major driver of electricity demand

Significant increases in data centre capacity were not being forecast in 2020. For example, neither the August 2020 nor the July 2021 versions of the AEMO's ISP Inputs, Assumptions and Scenarios Report (**IASR**) mentioned data centres as a driver of demand. In fact, the August 2020 report expected a general contraction in economic activity[2]:

> *The extent of COVID-19 restrictions leads to significant variance in the forecast economic outcomes of the coming years. Despite fiscal stimulus throughout the shut-down period, and assumed to continue during economic recovery, many domestic businesses will not survive the downturn, resulting in some loss of economic activity, particularly in the travel, tourism and higher education sectors. Manufacturing output is forecast to contract, due to supply chain disruptions and a sharp decline in the export of manufactured goods, while mining is expected to remain relatively resilient.*

Similarly, demand forecasts prepared for JEN by ACIL Allen in January 2020 highlighted rooftop PV, battery storage, and electric vehicles as key drivers of demand, but made no mention of demand centres. The opinion report provided by ACIL Allen in Attachment B-02 provides further evidence that.

While a few isolated reports noted an increase in data centre demand, the increases were quite modest. For example, a 2020 CBRE report[3] noted the following:

> *CBRE's 2020 Asia Pacific Investor Intentions Survey found that 30% of investors in the region are considering purchasing data centers this year, a substantial increase on the 18% recorded in 2019. Despite rising investor interest in Asia Pacific data centers, direct investment remains limited due to a lack of investable stock and relatively tight regulatory restrictions. Data centers accounted for just 1.5% of total Asia Pacific industrial real estate investment volumes between 2015 and 2019.*

By August 2021 (well after JEN's revised proposal was submitted), CBRE was forecasting more data centre demand, but the forecasts were still relatively modest – for example a 2021-24 pipeline of 456MW for Sydney.[4]

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1 The New York Times, Melbourne, after 262 days in lockdown, celebrates a reopening, 22 October 2021

2 Page 31, 2020 Inputs, Assumptions and Scenarios Report, AEMO

3 2020 Asia Pacific Investor Intentions Survey, CBRE Research

4 CBRE Asia Pacific Data Centre Solutions, CBRE Research, August 2021

JEN had connected 47 MVA of new major connections between 2016 to 2020

In the lead up to its 2021–26 proposal, JEN had connected only three major connections (defined here as those with maximum demand to exceed 10MW), as summarised in the table below.

Table 2.1:JEN Major Connections connected from FY2016 to FY2021

Major connection project	MVA of connection capacity	Month and year of commissioning
Melbourne Airport	30 MVA (to take total to 60 MVA)	Nov 2016
Westgate tunnel	12 MVA	Dec 2018
CSL	5 MVA (to take total to 14 MVA)	Dec 2018

2.2 JEN's 2020 approach to forecasting major connection capex

JEN prepared bottom-up forecasts based on major connection customer engagement

In its 2020 proposal, JEN forecasted new customer initiated major connection projects on a bottom-up basis. Major connections were forecast separately from other general connection growth, which was forecast on a top-down basis using a combination of historical trends and forecasts of economic activity. Major connection customer initiated projects were defined as:[5]

> *"those where a customer requires a supply for maximum demand above 10 MW".*

This threshold included connection inquiries where the customer's demand would surpass 10MW and where they were already at that capacity and were seeking to upgrade their capacity.

As described in its proposal,[6] JEN's bottom-up forecast of new major connections was based on engagement with its existing and prospective customers. In cases where the customer had not committed to the connection, JEN only included those that it judged to have a high probability of proceeding during the period. And where JEN had presented multiple options to the customer, it made a judgement about the most likely of those options to proceed (and in some cases averaging alternative options).

JEN ensured cost estimates were prudent and efficient by using site-specific assessments

JEN's forecast of major connection capex was prepared using a bottom-up estimate of the works required for each project, consistent with its Cost Estimation Methodology for non-routine work.[7] The methodology incorporates top-down approaches in early-stage project scoping, and then relies primarily on bottom-up approaches for the detailed scope of works, drawing on historical data, vendor pricing, and detailed risk assessments to develop accurate, fit-for-purpose estimates. For new customer connections, the focus is on ensuring accurate, site-specific cost assessments, which involves gathering detailed information about site access, local conditions, utility locations, and environmental factors, along with performing risk assessments and cost breakdowns.

JEN's approach to preparing cost estimates for major connection projects (applied in both its 2020 proposal and this reopener application) are further described in section 4.2.1.

5 JEN, 2021-26 Electricity Distribution Price Review Regulatory Proposal - Attachment 05-01: Forecast capital expenditure, 31 January 2020, p.71

6 JEN, 2021-26 Electricity Distribution Price Review Regulatory Proposal - Attachment 05-01: Forecast capital expenditure, 31 January 2020, p.71

7 Jemena Limited, Jemena Infrastructure Cost Estimation Methodology, 24 May 2019

2.3 New major connections foreseen in JEN's original proposal

JEN proposed five new major connections, which were considered high probability

JEN identified five major connections as high probability and included them in its original proposal, as summarised in the table below. These connections are identified in Table 2.2[8].

Table 2.2: JEN Original Proposal (Jan 2020) – List of major connections

Major connection project	Type	Capacity[9]	Description
YarraBend development stages 2 and 5	Residential Development	10.8 MVA	New mini suburb of over 1,900 dwellings and multi-level commercial and retail facilities
North East Link project for tunnel construction and operation	Infrastructure Project	30 MVA	Three-lane twin tunnels travelling for six kilometres to connect the M80 and Eastern freeways
Moonee Valley Racecourse redevelopment	Residential Development	7.1 MVA	Construction of a new grandstand, commercial centre and residential precincts containing 2,000 new dwellings
Footscray Hospital	Infrastructure Project (Hospital)	10 MVA	$1.5 billion facility containing 504 hospital beds
A large data centre (M2)	Data Centre	60MVA	A major new data centre, with 60MVA of capacity[10]

JEN forecast $20.5m of net capex relating to major connections

JEN's original proposal included $37.1m of gross capex across the five major connections, as summarised in Table 2.3 below.

Table 2.3: JEN Original Proposal (Jan 2020) – Forecast gross capital expenditure (direct, escalated, excluding overheads) for major connection projects ($ June 2021, millions)

Major connection project	FY22	FY23	FY24	FY25	FY26	Total
YarraBend development stages 2 and 5	1.7	1.7	2.3	2.3	-	8.0
North East Link project for tunnel construction and operation	8.7	0.5	-	-	-	9.2
Moonee Valley Racecourse redevelopment	-	-	-	2.4	2.4	4.7
Footscray Hospital	-	-	1.8	3.6	1.8	7.1
A large data centre	0.4	4.0	3.6	-	-	8.1
Total	10.8	6.3	7.6	8.2	4.2	37.1

Source: JEN January 2020 regulatory proposal (JEN - Att 05-11 Capex model – 20200131)

JEN assumed the following capital contributions for each of the five major connections:

8 JEN, 2021-26 Electricity Distribution Price Review Regulatory Proposal - Attachment 05-01: Forecast capital expenditure, p72, 31 January 2020

9 Contracted capacities were uncertain at the time of the proposal. Values shown here were based on a risk-based approach applied to determine the additional capacity would be needed. Actual connected capacities vary from these estimates.

10 For Stage 2. Stage 0 (3.75MVA) and Stage 1 (16MVA) were implemented in the previous regulatory period.

Table 2.4: JEN Original Proposal (Jan 2020) – Forecast capital contributions (as percentage of direct, un-escalated gross capex) for major connection projects

Major connection project	Type	Contribution %	Source
YarraBend development stages 2 and 5	Residential Development	31.9%	Calculated using a three-year historical average for the category
North East Link project for tunnel construction and operation	Infrastructure Project	62.0%	Feasibility Study, an average of two cost estimates for most likely option
Moonee Valley Racecourse redevelopment	Residential Development	31.9%	Calculated using a three-year historical average for the category
Footscray Hospital	Hospital	31.9%	Calculated using a three-year historical average for the category
A major data centre	Data Centre	58.3%	Project estimates

Source: JEN January 2020 regulatory proposal (JEN - Att 05-11 Capex model – 20200131)

The resulting forecast net capex of $20.5m relating to the five major connections is summarised in the table below.

Table 2.5: JEN Original Proposal (Jan 2020) – Forecast net capital expenditure (direct, escalated, excluding overheads) for major connection projects ($ June 2021, millions)

Major connection project	FY22	FY23	FY24	FY25	FY26	Total
YarraBend development stages 2 and 5	1.2	1.2	1.5	1.6	0.0	5.4
North East Link project for tunnel construction and operation	3.3	0.2	0.0	0.0	0.0	3.5
Moonee Valley Racecourse redevelopment	0.0	0.0	0.0	1.6	1.6	3.2
Footscray Hospital	0.0	0.0	1.2	2.4	1.2	4.9
A major data centre	0.2	1.7	1.5	0.0	0.0	3.4
Total	4.7	3.1	4.3	5.6	2.8	20.5

Source: JEN January 2020 regulatory proposal (JEN - Att 05-11 Capex model – 20200131)[11]

JEN did not propose any augmentation capital expenditure associated with these five projects.

2.4 The AER's responses to JEN's original proposal

AER largely accepted JEN's proposed connection capex

The AER's draft decision largely accepted JEN's proposed major connections capex. The exception is that it adjusted down the capex forecast for all connections capex that JEN forecast for FY22 by 42% to reflect its view of the impact of the COVID-19 pandemic:

> *"Compared to current regulatory control period expenditure, prior to COVID-19 effects, Jemena's net connections capex is reasonable from a top-down perspective… We have therefore adopted this forecast but made a COVID-19 adjustment, based on HIA forecasts released in April"*[12]

The AER did not make any comments specific to JEN's forecast of new major connections.

11 Calculated by deducting capital contributions from gross capital expenditure for each project

12 AER, Attachment 5: Capital expenditure | Draft decision – Jemena 2021–26, 30 September 2020, pp.5-28.

2.5 JEN's revised proposal

JEN accepted the AER's draft decision as a minimum level of net capital expenditure

In its December 2020 revised regulatory proposal JEN accepted the amount for customer initiated major connection project expenditure included in the AER's draft decision as a minimum level of net capital expenditure that it was likely to incur during the next regulatory period.

In doing so, JEN identified that one new Metro Trains Melbourne project[13] had subsequently applied for a connection, but JEN considered that, having regard to the corresponding connection contribution, the net capex was not materially different to the draft decision.

Specifically, JEN stated:

> *"When developing our revised proposal, we considered the impact of the most recent available customer information on our bottom-up forecasts for our major customer connection projects. Largely due to expanded requirements of a major government infrastructure project and the addition of a large new traction (rail) supply project, we expect a significant increase in our gross connections expenditure from the amount we forecast in our initial proposal. However, after accounting for the customer contributions associated with these projects, the increase in our net connections expenditure is relatively small. We therefore consider that the amount for major customer connection project expenditure included in the AER's draft decision—and accepted by us—represents a minimum level of net capital expenditure that we are likely to incur during the next regulatory period."*[14]

At the time it was possible to accept one major connection late in the price review process without any revision to the net capex forecast, however, had there been 19 new applications—most of which are substantially larger than the one Metro Train Melbourne project — as is the case in this application, it would not be possible to accommodate these within the approved forecast.

2.6 The AER's final decision

AER updated cost escalations, gifted assets, and the COVID-19 adjustment

In its April 2021 final decision, the AER accepted JEN's revised proposal, except for:

1. Applying updated cost escalation based on the latest available data
2. Updating the taxation treatment of gifted assets steaming from a recent Federal Court decision
3. Updating the COVID-19 adjustment amount using the latest Housing Industry Association (**HIA**) housing forecasts, and
4. Updating to only apply the COVID-19 adjustment to residential connections (and thereby removing the draft decision's COVID-19 adjustment to major connection customers).

[13] As explained in Table 3.1, the Victorian government subsequently expedited the Sunbury line element of its High Capacity Metro Trains project during the pandemic to capitalise on the reduced passenger movements and lesser disruption caused by those works. This project was therefore subsequently rescoped from just Tottenham traction sub upgrade to also include Calder park sidings and Footscray west new traction sub.

[14] JEN, Jemena Electricity Networks (Vic) Ltd 2021–26 Electricity Distribution Price Review - Revised Proposal: Attachment 04-01 Response to the AER's draft decision - Capital expenditure, 3 December 2020, p.7.

Resulting net capital expenditure allowances were $19.1m versus JEN's original proposal of $20.3m

The resulting determination allowed for $34.1m of gross capex across the five major connections, as summarised in Table 2.6 below.

Table 2.6: AER Final Decision (Jan 2021) – Forecast gross capital expenditure (direct, escalated, excluding overheads) for major connection projects ($ June 2021, millions)

Major connection project	FY22	FY23	FY24	FY25	FY26	Total
YarraBend development stages 2 and 5	1.1	1.7	2.3	2.3	0.0	7.4
North East Link project for tunnel construction and operation	6.4	0.5	0.0	0.0	0.0	7.0
Moonee Valley Racecourse redevelopment	0.0	0.0	0.0	2.4	2.4	4.7
Footscray Hospital	0.0	0.0	1.8	3.6	1.8	7.2
A major data centre	0.2	4.0	3.6	0.0	0.0	7.9
Total	7.8	6.3	7.7	8.2	4.2	34.1

Source: AER 2021–26 determination final decision (*AER - Final decision - Jemena distribution determination - 2021-26 - Capex model - April 2021 - updated 11 May 2021.xlsx*)

The capital contribution percentages applied to each of the five major connections were unchanged from JEN's original proposal in January 2020. The resulting net capex allowance of $19.2m relating to the five major connections is summarised in Table 2.7 below.

Table 2.7: AER Final Decision (Jan 2021) – Forecast net capital expenditure (direct, escalated, excluding overheads) for major connection projects ($ June 2021, millions)

Major connection project	FY22	FY23	FY24	FY25	FY26	Total
YarraBend development stages 2 and 5	0.7	1.2	1.5	1.5	0.0	5.0
North East Link project for tunnel construction and operation	2.4	0.2	0.0	0.0	0.0	2.7
Moonee Valley Racecourse redevelopment	0.0	0.0	0.0	1.6	1.6	3.2
Footscray Hospital	0.0	0.0	1.2	2.4	1.2	4.9
A major data centre	0.1	1.7	1.5	0.0	0.0	3.3
Total	3.3	3.1	4.3	5.6	2.9	19.2

Source: AER 2021–26 determination final decision (*AER - Final decision - Jemena distribution determination - 2021-26 - Capex model - April 2021 - updated 11 May 2021.xlsx*) [15]

[15] Calculated by deducting capital contributions from gross capital expenditure for each project.

3. What new major connections have arisen since 2020?

Since the AER's decision in 2020, JEN has received an unprecedented and unforeseen series of customer initiated major connection requests, relating to data centres and major infrastructure projects. This section sets out what has transpired in the 2021–26 regulatory period and how JEN has met the customer-initiated major connection and augmentation capex needs.

3.1 Overview of unforeseen series of major connection applications and inquiries since 2020

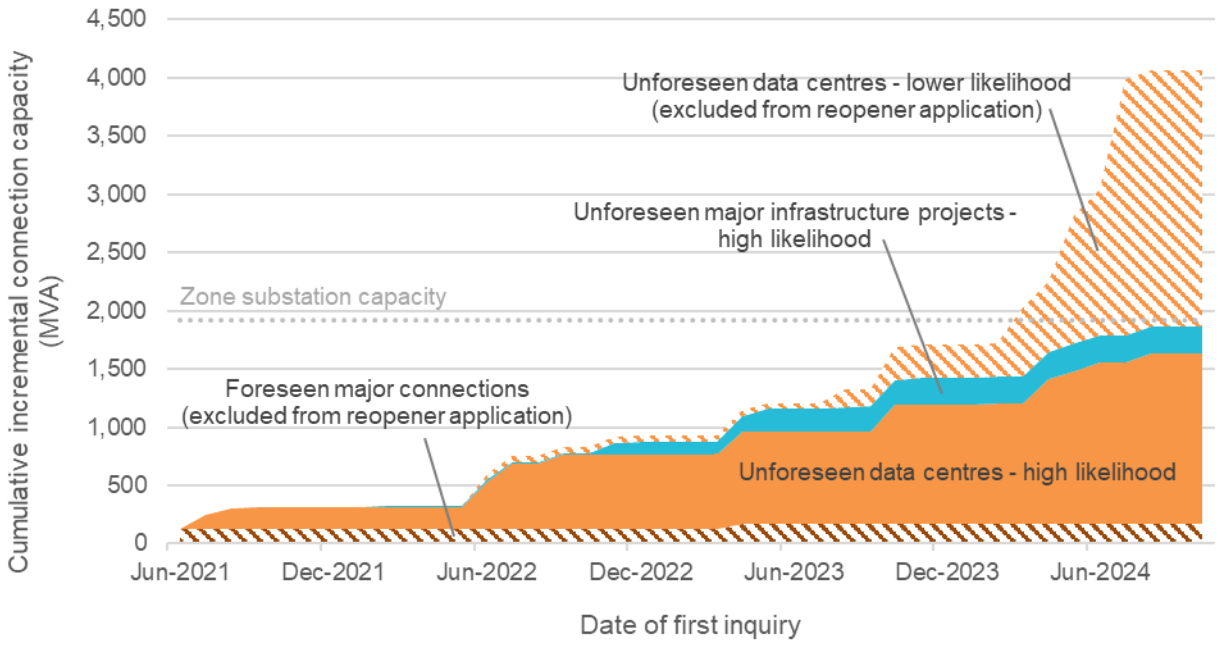
The unforeseen series of applications and inquiries comprises two types of major connections – data centres and major infrastructure

Since JEN's proposal and the AER's decision in 2020, an unforeseen series of major connection applications and inquiries were triggered by customer initiated major connection applications and inquiries. These can be grouped into two broad categories:

- **Data centres**: Following JEN's final 2021–26 determination, state and federal policymakers swiftly responded to the significant shift in online work, shopping, and learning by launching major digital transformation initiatives and funding measures. The Victorian and Commonwealth governments aimed to sustain this momentum to enhance productivity and expand digital participation across both public and private sectors, resulting in a data centre boom in Australia, particularly in Victoria. This has led to 12 data centre connection inquiries or applications that were unforeseen and JEN considers are highly likely to proceed to a connection during the 2021–26 period (or are already underway).
- **Major infrastructure projects:** Following JEN's final 2021–26 determination, JEN has received 7 different inquiries about connecting major infrastructure projects that were unforeseen, and JEN considers are highly likely to proceed. These arose for a variety of reasons but have primarily been driven by Victoria's pandemic response and post-covid stimulus.

The timing and scale of these unforeseen connection applications and inquiries, by category, is illustrated in Figure 3.1. This also identifies the capacity associated with connection inquires that are still active, but JEN judges have a lower likelihood of proceeding in the 2021–26 regulatory period and are therefore excluded from this reopener application. These lower likelihood inquiries and the pace of data centre demand growth mean JEN still faces risk of connection overspend beyond the capex revisions proposed in this reopener application.

Figure 3.1: Unforeseen major connection applications and inquiries, by date of first inquiry and incremental capacity indicated



In this reopener application, we retain the definition of major connection customers from JEN's original January 2020 proposal, referring to customers requiring a supply for a maximum demand exceeding 10MW. This includes connection inquiries where the customer's demand will surpass 10MW and where they are already at that capacity and seek upgrading.

Twelve unforeseen data centre major connection applications and inquiries

The unforeseen major connection inquiries and applications relating to data centres that JEN deems have a high likelihood of completing or commencing connection delivery in the 2021–26 regulatory period are summarised in Table 3.1 below.

Table 3.1: The unforeseen series of major connection applications and inquiries – Data Centres

Major connection	Date of first inquiry	JEN connection projects
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Major connection	Date of first inquiry	JEN connection projects
[redacted]	[redacted]	[redacted]

The underlying triggers for the above major connections are further elaborated in section 3.2.

Seven unforeseen major infrastructure project connection applications and inquiries

The unforeseen series of major connection applications and inquiries relating to major infrastructure projects that JEN deems have a high likelihood of completing or commencing connection delivery in the 2021–26 regulatory period are summarised in Table 3.2 below.

Table 3.2: The unforeseen series of major connection applications and inquires – Major Infrastructure Projects

Major connection	Customer type	Date of first inquiry	JEN connection projects	Summary of connection application or inquiry trigger
13. **Thomas Embling Hospital (Alphington)**	Hospital	February 2022	• Thomas Embling Hospital - Alphington - [redacted] Connection • Thomas Embling Hospital - Alphington - [redacted] Connection	Government funding from the Victorian Health Building Authority
14. **Metro Trains Melbourne**	Rail	August 2021[16]	• MTM - Calder Park – [redacted] Connection • MTM - Tottenham – [redacted] Connection • MTM - Footscray – [redacted] Connection	Government funding for higher capacity trains on selected rail lines
15. **Intermodal Terminal Company**	Rail	September 2022	• Somerton Intermodal Dry Dock rail terminal - Somerton - [redacted] Connection	Government funding for Port Rail Shuttle Network and Port Rail Transformation Project
16. **Amaroo Drive Business Park**	Robotic distribution centre	December 2022	• Amazon Distribution Centre - Amaroo - [redacted] Connection	Pivot to online shopping, leading to approach by [redacted]
17. **Latrobe University**	University	November 2022	• Latrobe Uni - [redacted] Connection • Latrobe Uni [redacted] Connection • Latrobe Uni - [redacted] Connection	BioNTech planning to develop and commission a state-of-the-art mRNA clinical-scale manufacturing facility
[redacted]	[redacted]	May 2023	• Melbourne Airport - [redacted]	2022 Melbourne Airport Master Plan
19. **Essendon Airport**	Airport	August 2023	• Essendon Airport - [redacted]	Airport growth prompting inquiry to JEN (no up to date masterplan)

16 [redacted]

The underlying triggers for the above connection applications and inquiries are further elaborated in sections 3.3.

3.2 Unforeseen new data centres

3.2.1 Drivers of data centre demand

Government policies and funding measures have increased investment in digital infrastructure

Capitalising on the massive behavioural shift in how we work, shop and learn, the Victorian and Commonwealth governments announced major digital transformation efforts in response to the COVID-19 pandemic. This acceleration was triggered by the move of businesses and consumers from offline to online, the move to remote working and online collaboration tools, the shift from face to face to online learning and a shift to new service delivery models (for example, telehealth).

In response, the Commonwealth and Victorian Governments introduced a series of policies and funding initiatives aimed at maintaining this momentum, with the goal of enhancing productivity and fostering greater digital engagement across both public and private sectors. These efforts have largely focused on substantial investments in digital infrastructure, services, and capabilities. Notably, these policies coincided with the rapid rise in the use of Artificial Intelligence (AI), particularly the widespread adoption of large language models such as ChatGPT-3, launched in June 2020. This surge in AI usage necessitated the deployment of distributed servers globally to manage the increased traffic and processing demands. Key measures implemented by the Commonwealth and Victorian Governments are summarised in Table 3.3 below.

Table 3.3: Government policy initiatives and funding measures established in the COVID and post-COVID period

Commonwealth Government initiatives	Digital Economy Strategy 2030 (2021-22 Budget, 11 May 2021)
	Digital Economy Strategy 2030 Update (2022-23 Budget, 29 March 2022)
	National Reconstruction Fund (2022-23 Budget, 25 October 2022)
	Critical Technologies Support (2023-24 Budget, 9 May 2023)
Victorian Government initiatives	Cyber Strategy 2021 (September 2021)
	Victorian Digital Strategy 2021-2026 (October 2021)

These policies, their timing, fiscal scale and focus areas are summarised in Box 1.

Box 1: Commonwealth and Victorian Government policy initiatives and funding measures over the period 2020-2024

Key Commonwealth Government policy initiatives and funding measures established in the COVID and post-COVID period include:

1. Digital Economy Strategy 2030 (2021-22 Budget, **11 May 2021**):
    - Initial investment: $1.2 billion
    - Additional funding: $347 million
    - Key allocations: a. Digital skills support: $100+ million b. AI capabilities: $124.1 million c. myGov overhaul: $200.1 million d. My Health Record enhancement: $301.8 million e. Consumer Data Right acceleration: $111.3 million
2. Digital Economy Strategy 2030 Update (2022-23 Budget, **29 March 2022**):
    - Additional allocation: $1.1 billion

- Key investments:
    1. Technology Investment Boost: $1 billion
    2. Quantum Commercialisation Hub: $70 million
    3. 5G innovation support: $22.6 million
    4. Women's mid-career digital transition: $3.9 million
    5. Digital payment system reforms
    6. Online safety measures

3. National Reconstruction Fund (2022-23 Budget, **25 October 2022**):
    - Allocation: $15 billion
    - Focus: Diversifying and transforming Australia's industry and economy, including by enabling key capabilities such as data science
4. Critical Technologies Support (2023-24 Budget, **9 May 2023**):
    - Allocation: $101.2 million
    - Focus: Growth of quantum and AI technologies
5. Other Key Initiatives:
    - Cyber Security Strategy 2020: $1.67 billion **(August 2020)**
    - JobMaker Digital Business Plan: $800 million **(September 2020)**
    - NBN Upgrades: $4.5 billion (**September 2020**)
    - JobTrainer: $1 billion (**May 2021**)

Key Victorian Government policy initiatives and funding measures established in the COVID and post-COVID period include:

1. Cyber Strategy 2021 (**September 2021**)
    - Focus: Strengthening cybersecurity across Victorian government networks and services
2. Victorian Digital Strategy 2021-2026 (**October 2021**)

Focus: This strategy aims to drive digital transformation across the Victorian government.

These initiatives did not place direct obligations on JEN as a licenced Distribution Network Service provider (**DNSP**), but they have had a significant impact on the digital landscape, including increasing demand for data storage and processing capabilities that has manifest in a burgeoning data centre market. This, in turn, has driven substantial data centre growth in JEN's network area.

Domestic security measures have further driven domestic data centre demand

In February 2022 the Security Legislation Amendment (Critical Infrastructure Protection) Bill 2022 (the Bill)[17] was introduced to parliament. The Bill was to amend the *Security of Critical Infrastructure Act 2018* to implement additional obligations on owners of critical infrastructure assets, particularly those assets which are declared to be systems of national significance (**SoNS**) by the Minister for Home Affairs.

Among other things, the Bill imposed enhanced cyber security obligations on entities responsible for SoNS, including undertaking cyber security exercises and vulnerability assessments, and preparing an incident response plan.

17 Security Legislation Amendment (Critical Infrastructure Protection) Bill 2022.

The responses of entities responsible for SoNS to these obligations have seen domestic data retention policies proliferate, contributing significantly to domestic data centre demand.

Data centre demand is sky rocketing

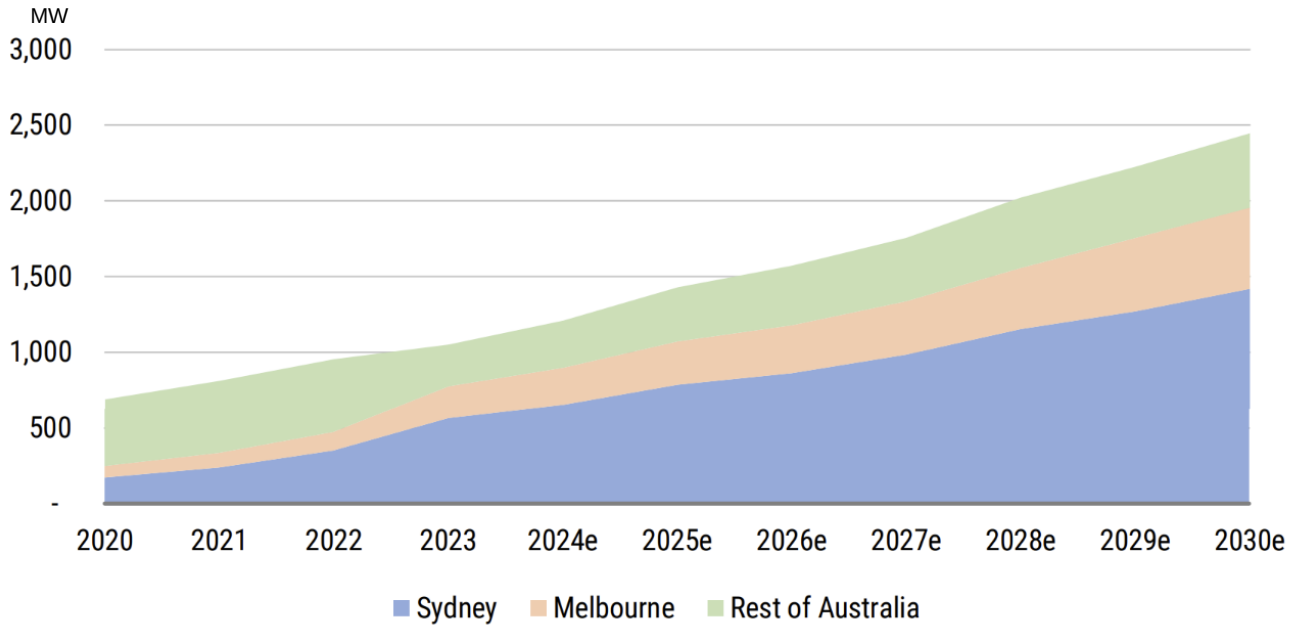
Australia's response to the COVID-19 pandemic has swiftly positioned the country among the top five global data centre hubs, with data centre capacity set to experience explosive growth in the coming years. JEN holds a uniquely informed perspective, being directly involved in the front lines of this expansion and having access to connection application requests not publicly available. Details of JEN's involvement are outlined in Section 3.2.2 below. Even based on publicly available data, industry analysts are already forecasting significant growth, as further explained in the remainder of this section.

Analysis expect growth in data centre demand to remain strong in the Asia-Pacific region[18]:

> *The impact of AI is becoming increasingly evident, driving the demand for larger and more sophisticated data centers. This trend suggests a rise in investment values over the next year. More new entrants are expected in Asia-Pacific due to this demand, particularly because its market is more fragmented than in the U.S. and Europe.*

Publicly available information shows data centre demand in Australia grew from around 690MW in 2021 to 1,050MW today. Morgan Stanley Research forecasts this to grow to approximately 2,500MW by 2030, with Melbourne accounting for approximately 540MW of that total capacity (up from 210MW today),[19] as illustrated in the figure below.

Figure 3.2: Historical and forecast data centre demand in Australia (MW)



Source: Morgan Stanley Research, Australia – Data Centre Handbook, May 2024, p.2[20]

[18] CBRE Research, 2024 Global Data Center Investor Intentions Survey, June 2024, p.13

[19] Morgan Stanley Research, Australia – Data Centre Handbook, May 2024, p.7

[20] Whilst the report is informative about the general industry trend, the volumes should not be considered a proxy for the data centre capacity being built due to locational differences, redundancy requirements, co-location of multiple data centres to manage risk and other customer drivers.

This demand is likely to make up a very significant proportion of Australia's electricity demand. Morgan Stanley recently forecast up to 15% in its 'bull' case[21]:

> *We estimate current data centre electricity consumption at ~5% of Australia's total power generation, growing to ~8% in 2030e in our base case, and ~15% in our bull case, vs. current Australian Energy Market Operator forecasts (~3% CAGR)*

Key underlying drivers for increases in data storage and processing include:

- **Remote Work and Learning**: The shift towards remote work and online learning, accelerated by the COVID-19 pandemic, has increased the reliance on digital infrastructure, boosting data centre demand.
- **Cloud Services**: The adoption of cloud services by businesses and individuals continues to grow, necessitating more data centre capacity to handle the increased data and processing needs.
- **Internet of Things (IoT):** The proliferation of IoT devices generates vast amounts of data that need to be processed and stored, further driving the need for data centres.
- **Digital Transformation**: Businesses are increasingly digitising their operations, which requires robust data centre infrastructure to support various digital tools and platforms.
- **Artificial Intelligence (AI) and Machine Learning**: The rapid rise of AI and machine learning technologies requires significant computational power and storage, leading to increased demand for data centres.
- **Cyber Security**: Australian businesses' proactive and SoNS businesses' *Security of Critical Infrastructure Act* mandated cyber security measures have seen domestic data retention policies proliferate, contributing significantly to domestic data centre demand.

Data centres value reliability, speed of delivery, and securing capacity

In JEN's experience and from discussions on the key value drivers and considerations with the data centre proponents, prospective data centres are focused on meeting the needs of their end customers whose key values include:

- **Capacity and scalability**: Most data centre applicants require large power capacities (≥50 MVA) and prioritise easy scalability to meet growing power demands. While an initial 22 kV connection may suffice for early-stage operations, data centres often require an upgrade to 66 kV as data centre usage intensifies. Delaying this upgrade when customer demand increases is both impractical and undesirable for operators. Therefore, securing capacity early seems to be important, perhaps under the backdrop of potential future network constraints. More importantly, data centre operators need to be able to demonstrate to their prospective customers that they have the capacity available, or available within their expected timeframe, before they will sign contracts with the data centre operators. They take a "build it and they will come" approach as their customers demand the certainty as well as speed to market critical considerations.
- **Reliability and redundancy**: Ensuring a stable, continuous power supply is critical to meet the stringent operational demands of data centres, which typically have inflexible load requirements. While data centres may occasionally allow load shedding in early stages, it is not considered a viable long-term solution, particularly as data centres then need to rely on diesel generators to fill the gap. Operators generally require multiple supply points, necessitating both redundant (n-1) grid connections and on-site backup power. Some operators offer a 100% uptime guarantee, with all facilities equipped with backup generation. Data centres will also require a buffer in their supply requirements to mitigate supply risks. Additionally, some operators prefer clustering multiple data centres in close proximity, to serve as mutual backups providing additional redundancy.[22]
- **Cost efficiency**: Competitive pricing is important, as evidenced by the number of iterations that JEN is seeing during offer negotiations and by competition with direct connections to the transmission network.

21 Morgan Stanley Research, Australia – Data Centre Handbook, May 2024, p.6

22 Due to high degrees of redundancy, the connection capacity can be many times higher than the energy forecast.

- **Location**: Data centre operators tend to have strong preferences around site selection. It is influenced by several factors, including land availability, risk of natural disasters, council planning and regulations proximity to communications networks, and access to electrical infrastructure with sufficient capacity. Customer demand and requirements for easy access to the data centres often dictate the need for data centres to be located near end-users. They are typically clustered around zone substations, based on the perception that these areas offer easier access to the necessary power capacity.

Specific types of data centres include:

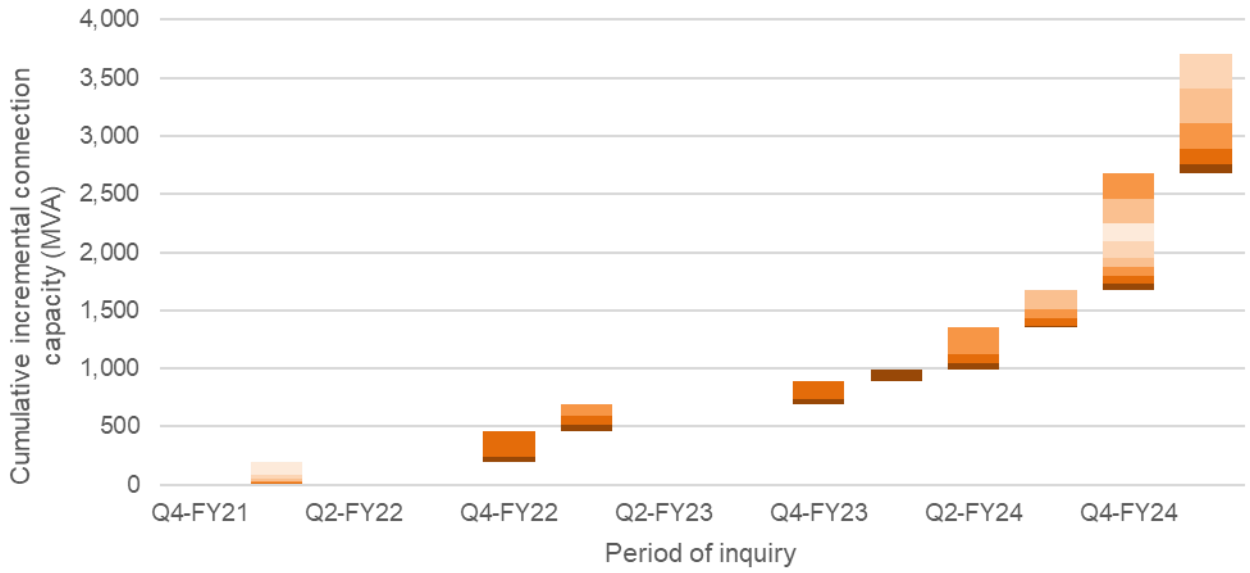
- **Enterprise data centres** - are typically constructed and used by a single organisation for their own internal purposes. These are common among tech giants
- **Colocation data centres** - function as a kind of rental property where the internal “rack” space and resources of a data centre are made available to the people willing to rent it
- **Managed service data centres** - offer aspects such as data storage, computing, and other services as a third party, serving customers directly
- **Cloud data centres** - distributed and are sometimes offered to customers with the help of a third-party managed service provider.

3.2.2 Chronology of JEN’s data centre inquiries

A handful of data centre requests in 2022 and 2023 has now increased to over 20 active connection inquiries, totalling over 3,700 MVA in new capacity

As illustrated in the figure below, JEN has received many new customer initiated major connection inquiries since 2020, totalling over 3,700 MVA of indicated connection capacity. The rate and size of these inquiries is increasing.

Figure 3.3: Active data centre inquiries (including inquiries not considered high likelihood), by date of first inquiry and incremental capacity indicated[23]



[23] Some of the active inquiries shown in this figure relate to the same customer connection (for example, a customer inquiring about both a 100MVA and a 200MVA connection). In such cases, only the incremental capacity of the additional connections is shown (for example 100MVA for the first option an incremental 100MVA for the second option).

JEN's pipeline of potential connections is evolving rapidly

JEN's experience is that data centres move with urgency and therefore JEN's pipeline of potential connections evolves rapidly, and it is even possible that future (unknown) connection requests will require a capital works before the end of this regulatory period. The evolution of JEN's pipeline is illustrated by the four illustrations below.

Figure 3.4: Data centre pipeline: Aug 2022

Figure 3.5: Data centre pipeline: Mar 2023

Figure 3.6: Data centre pipeline: March 2024

Figure 3.7: Data centre pipeline: Aug 2024

Connection inquiries typically take 12-24 months to move from initial inquiry to signing, with delivery commencing a few months after that

JEN's experience is that major connection customers sign a Contract Works Agreement between 12 and 24 months after the customer first approaches JEN, although some customers move faster. JEN's internal workflow processes allow a six-month minimum for customers that skip the feasibility study stage, as described in Section 5.1.2. JEN's experience is also that delivery of connections commences quickly after a customer accepts JEN's firm offer (or signs an Early Works Agreement), except in cases where the customer site is not ready for connection. The timings for the nine data centre projects (across five customer connections) that have already commenced delivery are summarised in Table 3.4.

Table 3.4: Timing of data centre contracts that have commenced delivery

Customer connection	JEN Connection Project	Status	Date of first inquiry	Date firm offer accepted	Date construction began
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
	[redacted]	[redacted]	[redacted]	[redacted]	
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]		[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]		[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]		[redacted]
[redacted]	[redacted]	[redacted]			[redacted]
[redacted]	[redacted]	[redacted]		[redacted]	

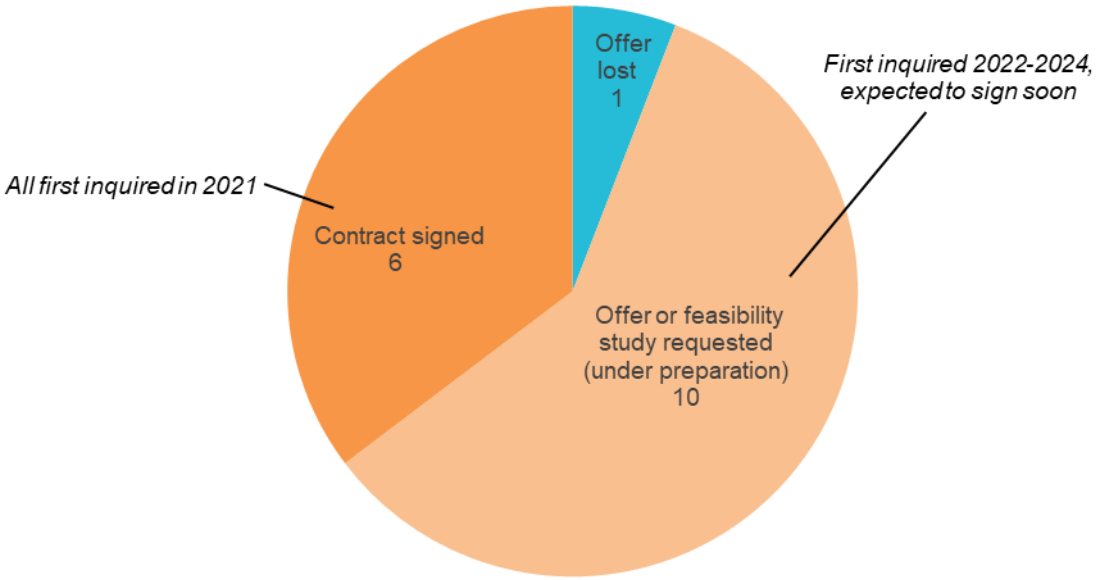
3.2.3 Conversion rate of JEN's data centre inquiries

Historically, a high proportion of JEN's data centre inquiries reach signing

JEN has had 28 different inquiries for new data centre connections since January 2021, with most of those inquiries requesting multiple capacity options. As summarised in Figure 3.8, 17 of these inquiries have made it past the initial approach and through to a requesting a feasibility study or offer. Of those 17, only one has been 'lost' (received an offer but not signed a contract with JEN) – [redacted] which is described in [redacted] in section 5.2.

24 [redacted]

Figure 3.8: Number of data centre connection inquiries that have made it past the initial customer approach, by status [27]



The six inquiries that never progressed beyond the initial approach stage and JEN now considers inactive, as summarised in Table 3.5. As described in Section 4.1, all the data centre connections that JEN proposes in this reopener application have progressed beyond the initial approach stage. In preparing this application, we have taken into account the proportion of major connections that proceed based on the experience with this type of customer.

Table 3.5: Inactive data centre inquiries

Customer connection	Status	Date of first inquiry	Date of last communication	Notes
[redacted]	[redacted]	[redacted]		[redacted]
[redacted]	[redacted]	[redacted]		[redacted]
[redacted]	[redacted]	[redacted]		[redacted]
[redacted]	[redacted]	[redacted]		[redacted]
[redacted]	[redacted]	[redacted]		[redacted]

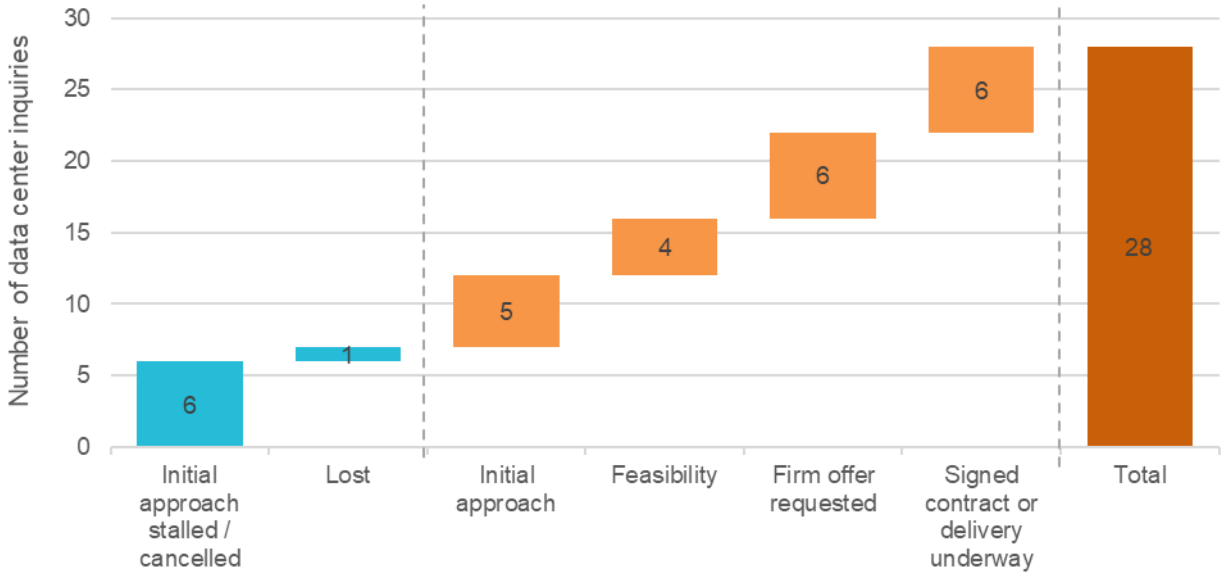
[27] The ratio of works proceeding are broadly in proportion to the forecast as outlined in Figure 3.1.

Customer connection	Status	Date of first inquiry	Date of last communication	Notes
[redacted]	[redacted]	[redacted]		[redacted]

Many of JEN's inquiries are still being processed and will soon be ready for signing

Because it typically takes 12-24 months to progress a customer from first inquiry to contract signing, many of the 21 active inquiries are still being progressed through to signing, as shown in Figure 3.9. The six that have signed a contract all first inquired with JEN back in 2021.

Figure 3.9: Overview of status of all data centre inquiries since January 2021



JEN's network is particularly attractive to data centres, due largely to land availability, reliability, and connection processes

Following closely behind the establishment of data centre facilities in other parts of the world, data centre customers are coming to Australia. When considering strategic locations, data centre customers have told us that Jemena's distribution area is particularly appealing to set up operations for the following reasons:

- [redacted]
- [redacted]
- [redacted]

Also, each data centre operator has other reasons for being located in Jemena's electricity distribution area, such as having good communications infrastructure and being close to the Melbourne International Airport.

The following features of JEN's network make it attractive to data centres and explain JEN's high conversion rate of data centre inquiries to connections:

- **Access to desirable land**: JEN's network operates in areas where land availability is favourable, is within good proximity of existing terminal stations (which is assisting us to provide large supplies to data centres) and does not compete with agricultural uses that affect social licence, enabling the establishment of large-scale data centres in strategically located regions.
- **Available network capacity**: JEN offers robust access to network capacity through a shared network model. The ability to deliver network upgrades as needed, paired with innovative technical solutions and low capital costs, ensures that data centres can scale efficiently without facing significant operational delays.
- **Customer engagement**: JEN provides highly responsive and streamlined connection processes that outperform other DNSPs or the Transmission Network Service Provider (**TNSP**). By simplifying the engagement to involve only the customer and JEN, the process is more efficient. JEN manages all necessary interfaces, including coordination with the TNSP and AEMO, ensuring a smooth, hassle-free experience for data centre operators.
- **Network reliability**: JEN boasts one of the most reliable networks in the country, offering data centres a high degree of operational security. This reliability is crucial for meeting the stringent uptime requirements that data centres demand.
- **Commercial flexibility**: JEN offers flexible commercial terms and conditions. This includes the ability to provide incremental upgrades and allowing data centres to scale power capacity as demand grows.
- **Competitive pricing**: JEN's competitive pricing structure, supported by the efficient use of shared network infrastructure, allows data centres to benefit from lower operational costs, making JEN an appealing choice for cost-conscious operators.

Contributing to both the desirable land proximity to termination stations and to our network reliability is the fact that JEN has a very high ratio of terminal stations to network land area. Table 3.6 shows the number of terminal stations for each DNSP. When compared to the network areas[28], JEN's has a much higher density than its peers.

Table 3.6: Terminal stations in each Victorian DNSPs' network

DNSP	Count	List
Citipower	4	FBTS, WMTS, BTS, RTS
Jemena	7	BLTS, BTS, WMTS, KTS, TTS, SMTS, TSTS
AusNet	9	RWTS, MWTS, MBTS, DDTS, WOTS, GNTS, CBTS, ERTS, TSTS, TTS, SMTS
United Energy	9	MTS, SVTS, HTS, ROTS, ERTS, CBTS, TBTS, RWTS, TSTS
Powercor	17	DPTS, BLTS, KTS, ATS, GTS, SHTS, FVTS, BETS, BATS, TGTS, TRTS, HYTS, ARTS, HOTS, WETS, RCTS, KGTS

[28] A map of DNSPs' network areas is available on the Victorian government's website: Find your energy distributor.

Customer feedback evidences the attractiveness of JEN's network to major connections

The above features of JEN's network that make it attractive to data centres are evidenced by a recent customer survey of JEN's major connection customers. Key takeaways with respect to JEN's connection process include[29]:

> *"All eight respondents considered JEN had so far delivered their firms' connection needs consistent with their expectations."*
>
> *"Overall, these respondents considered JEN to be a customer-centric and transparent utility whose quality of engagement is a big success factor."*

Specific quotes from JEN's major connection customers include[30]:

> *"Jemena are equal best with one other utility I've worked with for customer focused support and communication. It takes a customer who understands grid connection to get the best from a relationship with a utility such as Jemena, but given an open dialogue and transparent comms, Jemena is proven to reciprocate and grow effective partnerships"*
>
> *"It has been a great journey working with [Jemena employee redacted] on a few connection work agreements. He is professional, responsive and always tries his best to address customer's concerns/needs. Looking forward to more partnership opportunities with him and the team."*

3.3 Unforeseen new major infrastructure projects

Victoria's pandemic response and the effects of post-covid State and Commonwealth stimulus have driven or hastened new major infrastructure projects

These policy conditions have led to seven different major infrastructure connection applications and inquiries which JEN considers highly likely to complete or commence delivery in the 2021–26 period (i.e., major connections 13–19):

13. **Hospital - Thomas Embling Hospital (Alphington):** This existing hospital received government funding from the Victorian Health Building Authority (**VHBA**) for significant upgrades. To facilitate the development, the hospital engaged JEN in October 2022 to request an upgrade their existing LV supply to a HV supply. This was requested in two separate applications as the VHBA funding was approved in two phases. The VHBA was named in February 2021 and formally established on 2 March 2021 as part of the Victorian Government's $1.9b healthcare system response to the COVID19 pandemic. On 21 May 2021, the 2021-22 state budget announced $1.6b of additional hospital funding of which $349.6m was to deliver an additional 82 secure mental health beds and supporting infrastructure at Thomas Embling Hospital.'[31]

14. **Rail - Metro Trains Melbourne:** The High Capacity Metro Trains (**HCMT**) program was announced by government in 2018 with some initial engagement with JEN across a range of minor and major connection and upgrade projects. Metro Trains own feasibility assessments delayed their formal connection requests for these 3 key projects into the 2021–26 period due to their desire to wait for experience with operation of their first HCMT train line to identify whether [redacted] energy supply was required. This decision was not made by the connection applicant until into the 2021–26 period.[32] The Victorian government subsequently expedited the Sunbury line element of its HCMT project during the pandemic to capitalise on the reduced passenger movements and lesser disruption caused by those works. This project was

[29] Surveying Major Connections, farrierswier, October 2024 (see Attachment E-01)

[30] Surveying Major Connections, farrierswier, October 2024 (see Attachment E-01)

[31] VHBA, 2021-22 Budget delivers $1.6 billion infrastructure boost, 21 May 2021.

[32] Victoria's Big Build, see Sunbury Line Upgrade - Victoria's Big Build

therefore subsequently rescoped from just Tottenham traction sub upgrade to also include Calder park sidings and Footscray west new traction sub.[33]

15. **Rail - Intermodal Terminal Company:** In January 2023, Intermodal Terminal Company announced the $400m Somerton Intermodal Terminal. The terminal builds upon:

    - The Port of Melbourne's $125 million Port Rail Transformation Project announced in 2020[34] which had a plan for rail infrastructure to displace tracks around the port via rail terminal improvements between 2021 and 2023, and
    - The subsequent issuing of grants from the Australian and Victorian governments' $58m Port Rail Shuttle Network funding and process for hub location selection, designs and vendor awarding across the Somerton, Dandenong South and Altona hubs, intended to enable trucks to deliver or pick up containers from these hubs in outer metropolitan Melbourne instead of driving to the Port of Melbourne.[35]

16. **Robotic distribution centre – Amaroo Drive Business Park:** Property developer [redacted] engaged JEN in June 2023 to establish a new [redacted] supply to one of their sites in the Amaroo Business park (North). The greenfield site will host Amazon Australia's second Australian Robotics fulfilment centre and will be the largest warehouse ever built in Australia - surpassing Amazon's Western Sydney robotics site by 9,000 sqm. Amazon opened its first Australian fulfilment centre in Melbourne 2017, with the pivot to online shopping accelerated through Victoria's pandemic lockdowns, this Robotics fulfilment centre will now be Amazon's 6th major facility commissioned in Victoria since then.

17. **University - Latrobe University:** Latrobe University engaged JEN in November 2022 to conduct a feasibility study on their proposed future growth at their site. The future growth includes the university's University City of the Future plans which only secured a development partner (investor) in May 2022[36], thereby enabling them to commence discussions about [redacted]. The university approached JEN exploring options to [redacted] The feasibility study presented options [redacted] The university subsequently submitted an application for [redacted] in November 2023 and has committed to [redacted] (estimated completion of Q4 FY2025). A driver of the university's development needs and capacity upgrades is BioNTech[37] planning to develop and commission a state-of-the-art mRNA clinical-scale manufacturing facility. The BioNTech and Latrobe University agreement (commencing with 'in principle' agreement in 2022 followed by a confirmed agreement announcement in Dec 2023) was facilitated by the Victorian Government as part of its post-pandemic policy response to have Victoria become a home of mRNA vaccine manufacturing. [38]

18. **Airport – Melbourne Airport:** The Airports Act 1996 requires all federally leased airports to prepare a master plan every five years to guide the future growth and development of the airport over the next 20 years. The 2022 Melbourne Airport Master Plan was approved by the Federal Minister for Infrastructure, Transport, Regional Development and Local Government in November 2022 (2.5 years after JEN submitted its regulatory proposal and 17 months into the 2021–26 period). That plan identified its plan for [redacted] as 'Expansion of the electrical network capacity to ensure terminals and properties are not constrained by lack of power supply.'[39] Following this approval, Australia Pacific Airports (Melbourne) (APAM) [redacted]

[33] Australasian Railway Association, see Victorian Budget confirms COVID-19 rail recovery commitment and record pipeline of new trains and trams - Australasian Railway Association (ara.net.au), and Victoria's Big Build, see Sunbury Line Upgrade - Victoria's Big Build

[34] Port of Melbourne, see Port Rail Transformation Project - Overview - Port of Melbourne

[35] Victorian Government, see Freight projects - Port Rail Shuttle | vic.gov.au (www.vic.gov.au)

[36] La Trobe University, see Preferred partner for $5 billion plan, News, La Trobe University

[37] BioNTech gained world-wide public recognition during the pandemic for the Pfizer-BioNTech COVID-19 vaccine which it developed using its pioneering mRNA technology.

[38] Victorian Government, see Victoria To Become Home Of mRNA Vaccine Manufacturing | Premier, BioNTech Partnership To Deliver Next Generation Cancer Care | Premier

[39] Melbourne Airport, Master Plan 2022, November 2022, p.200

19. **Airport – Essendon Airport:** Notwithstanding the obligation cited above, Essendon Airport has not published a master plan since its 2013-18 plan. It is presently consulting on its 2027 master plan.[40] The airport engaged JEN in January 2022 to conduct a feasibility study on their proposed future growth at their site. The customer was exploring options to expand their supply to [redacted] The feasibility study presented options to [redacted] (estimated completion of Q1 FY26).

[40] Essendon Fields, see Master Plan | Essendon Fields (ef.com.au)

4. JEN's updated 2021–26 capex and contributions allowances

In this section, we outline the process and criteria used by JEN to identify and forecast new major connection projects for inclusion in the revised forecast for the 2021–26 regulatory period. This detailed overview will provide insights into JEN's systematic approach to project identification, customer engagement, and the specific steps taken to ensure only high-probability projects are considered for that period.

4.1 Identifying new projects for inclusion in the revised forecast

4.1.1 JEN's overall approach to identifying new major connection projects

JEN has retained the method in its 2020 proposal of using a bottom-up list of high probability projects

JEN has updated forecasts of major connection projects based on the same overall approach that it took in its 2020 proposal: a bottom-up forecast of major connection projects based on customer engagement, with inclusion of those judged to have a high probability of proceeding during the period. More specifically, JEN's approach has the following characteristics:

- **No change to the major connections included in JEN's 2020 regulatory proposal**, which means that we have retained the same allowance determined by the AER for the five major connection projects identified at that time.
- **Only high likelihood new major connections are included** (that were not included in JEN's 2020 regulatory proposal), which means they have already been committed to by the customer or there is strong evidence from customer engagement that the project will proceed in the 2021–26 regulatory period.
- **Network-initiated augmentation projects are included**, in cases where JEN has initiated a specific project in the 2021–26 regulatory period in response to major connection applications.
- **Lower likelihood major connection inquiries are excluded** (including some inquiries about higher capacity variants), because JEN considers them not to be sufficiently firm to proceed in the 2021–26 regulatory period.

Further details of our approach are provided in the following sub-sections.

4.1.2 Major connections foreseen in the 2020 proposal

Capex allowances for the five foreseen major connection projects are unchanged

In JEN's reopener capex forecast for 2021–26, the capex amount for the five foreseen major connection projects remains as included in original proposal and allowance. While these amounts are unchanged for the purpose of this reopener application, we note that all five projects have proceeded, which confirms the reasonableness of our major connection predictions for those that were foreseen as of 2020. Details on JEN's expected actual expenditure on these projects is provided in section 5.3.

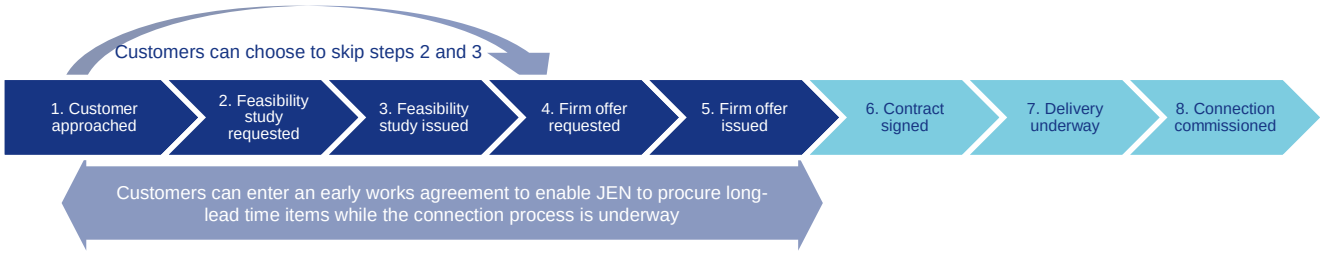
4.1.3 New major connection projects included in this revised forecast

How we assess certainty relies on each applicant's progress in our connection process

JEN processes major connection inquiries through eight key stages, as summarised in Figure 4.1 below. While these are set out as sequential stages, increasingly connection applicants a seeking to make financial co-commitments via Early Works Agreements (that predate the signed Connection Works Agreement at stage 6) to

ensure their requests continue to progress on long-lead time procurement items while early process steps are being refined. Further descriptions of JEN's connection process are provided in section 5.1.2.

Figure 4.1: Overview of connection process



The effect of the Early Works process brings large amounts of committed capital expenditure forward.

JEN's assessment of the likelihood of major connections is based on several factors, including the current status, the type of application, and customer engagement

JEN has retained its original 2021–26 forecasting approach for major connections of only including committed and high likelihood connections.

In assessing which major connection inquiries have a high likelihood of commencing delivery in the 2021–26 regulatory period, JEN has regard to:

- **Status of the connection inquiry**: In the case of customers with a signed Early Works Agreement, JEN has a commitment to connect them and can provide evidence for the deliverability of those projects in this 2021–26 regulatory control period. Customers who have already signed an Early Works Agreement have also already made a substantial financial commitment to the project. Customers who have requested a firm offer (or have had one issued recently) tend also, in JEN's experience, to have a very high likelihood of signing in the near future if customer engagement has been high. Examples of the scale of inquiries and the variability in the timing of connection processes are provided in section 5.1.
- **Type of applicant and project stage/timing:** In the case of data centres, this means assessing whether the applicant is an owner and operator, lessor, or property developer, as further elaborated in Table 4.1 below. Consideration is also given to whether land is secured and commitments that the customer has made to the project proceeding (for example, whether a construction contract has already been awarded).
- **Level of customer engagement and seriousness**: Including the frequency and urgency of engagement, the expertise and resources that the customer brings to bear to the application / negotiation process, and the detail of information being provided to support the customer's inquiry. An example connection checklist is provided in section 5.1 and examples of high levels of customer engagement are provided in section 5.2.
- **Historical conversion rates**: JEN brings the above information to bear alongside historical experience with regards to the conversion rate of customer inquiries. As discussed in section 3.2.3, JEN observes that conversion rates have historically been high, due to attractive characteristics of JEN's network (high reliability, land and capacity availability) and JEN's commercial offering (competitive pricing, strong customer engagement and delivery, flexible commercial contracts).

JEN has a contractual commitment from over half of the proposed new major connections

The firmness of the included 12 data centres and 7 major infrastructure projects is summarised in Figure 4.2 and Figure 4.3 below.

Figure 4.2: Overview of firmness of high likelihood major connections, by number of major connections[41]

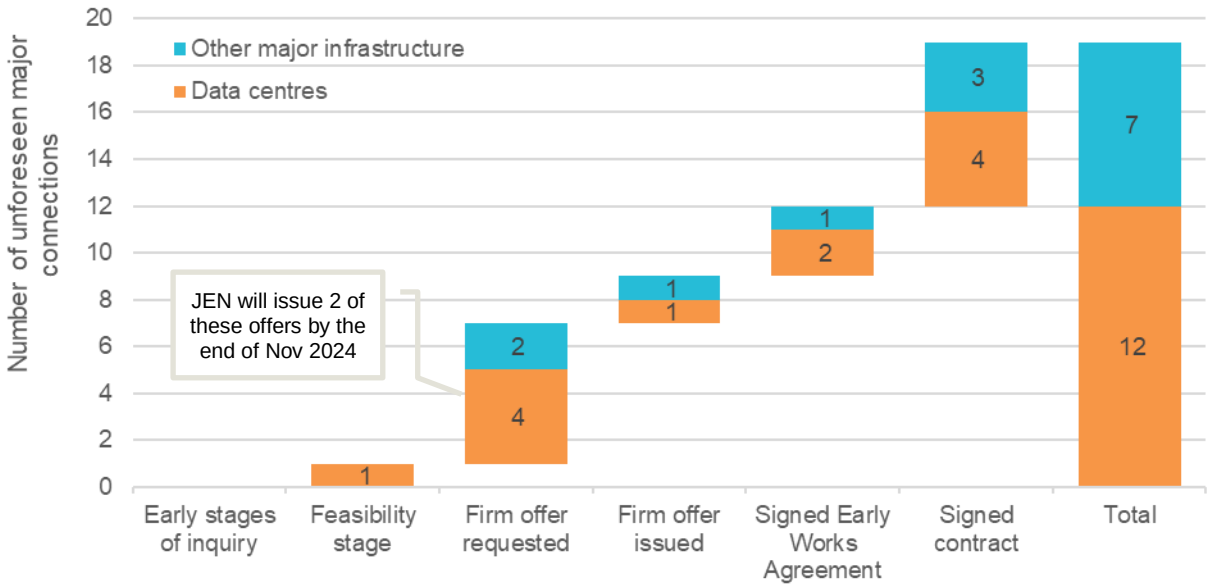
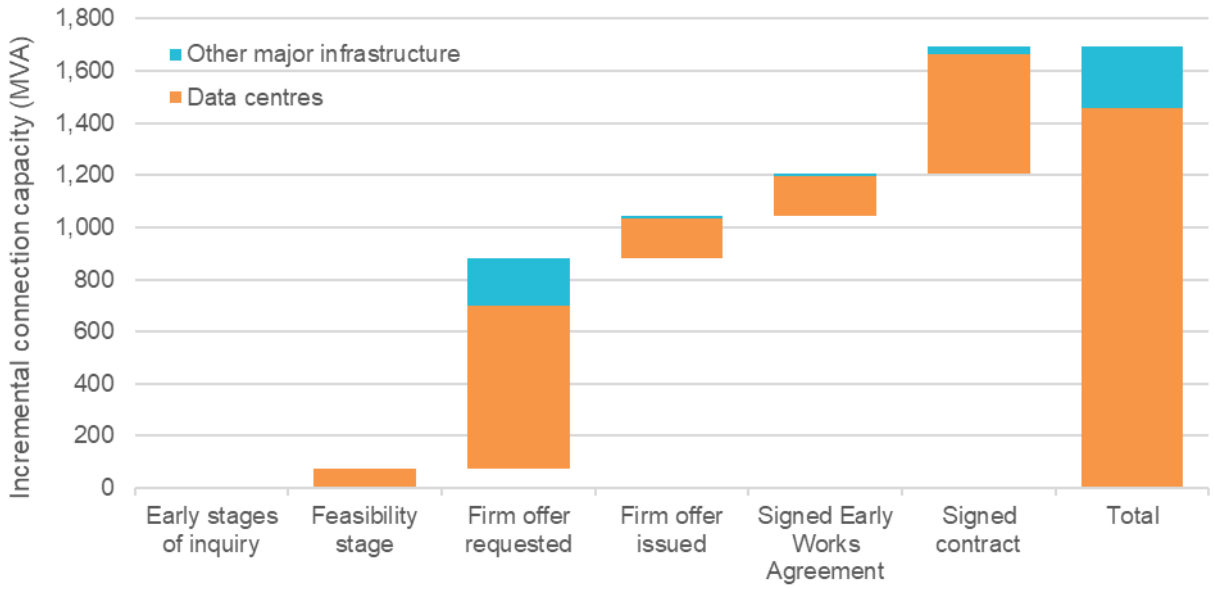


Figure 4.3: Overview of firmness of high likelihood major connections, by connection capacity[42]



JEN has excluded several major connection inquiries from this application on the basis that they are not deemed to have a high likelihood of commencing delivery in the 2021–26 regulatory period, as described in section 4.1.4.

There is strong evidence that those currently without a contractual commitment are likely to soon sign a contract

For the six data centres that have not made a co-commitment via an early works agreement or connection offer, JEN has used a categorisation of data centres by tier, shown in Table 4.1, to determine those included as high likelihood.

41 Some connections comprise multiple projects at different stages of development. In such cases the most advanced stage is shown here.

42 Some connections comprise multiple projects at different stages of development. In such cases the most advanced stage is shown here.

Table 4.1: Tiering of data centre applicants for evaluation of data centre likelihood

Applicant type	Implication on the likelihood of connecting
Applicant will both **own and operate** the data centre [redacted]	JEN considers these Tier 1. They are experienced and motivated end-use occupants of the connection sites and are considered to have very high connection certainty
Applicant will **lease** the data centre to operators [redacted]	JEN considers these Tier 2. They still have a high degree of connection certainty, although their seriousness is slightly more subject to site-specific considerations.
Applicant will **develop** the site and find a separate party to operate the data centre	JEN considers these Tier 3. Their connection certainty depends on several factors, including: 1. How experienced and active is the developer? 2. Does the developer have a data centre operator partner committed to the site? 3. Has the applicant secured land access and tenure?

Table 4.2 and Table 4.3 below provide further details on the status of each included major connection. The tables also summarise considerations that JEN has applied in assessing them as highly likely to proceed to connection delivery in the 2021–26 period.

Table 4.2: Key considerations applied to assessing new major connections as high likelihood – data centres

Customer	Inquiry status	Other factors contributing to a high likelihood
[redacted]	Commissioned [redacted] Delivery underway [redacted] Feasibility study issued [redacted]	[redacted] strong customer relationship
[redacted]	Delivery underway	
[redacted]	Commissioned	
[redacted]	Commissioned [redacted] Firm offer requested [redacted]	Early Works Agreement in place for [redacted]
[redacted]	Firm offer requested	Already in advanced discussions with construction company about temporary supply
[redacted]	Firm offer requested	First offer originally issued for [redacted] with favourable feedback, client came back requesting [redacted]
[redacted]	Firm offer requested	Early Works Agreement in place
[redacted]	Firm offer requested [redacted] Firm offer requested [redacted]	Early Works Agreement in place
[redacted]	Firm offer requested	High engagement with developer and operator (weekly meetings)
[redacted]	Firm offer issued	High engagement with developer and operator (weekly meetings)

Customer	Inquiry status	Other factors contributing to a high likelihood
[redacted]	Firm offer requested	Known developer, client lined up, high engagement (weekly meetings)
[redacted]	Feasibility study requested	Known developer, client lined up, high engagement (weekly meetings)

Table 4.3: Key considerations applied to assessing new major connections as high likelihood – major infrastructure projects

Customer	Customer type	Inquiry status	Other factors contributing to high likelihood
13. Thomas Embling Hospital (Alphington)	Hospital	Delivery underway (Stage 1) Firm offer requested (Stage 2)	
14. Metro Trains Melbourne	Rail	Commissioned	
15. Intermodal Terminal Company	Rail	Firm offer requested	Early Works Agreement in place
16. Amaroo Drive Business Park	Robotic distribution centre	Delivery underway	
17. Latrobe University (Bundoora)	University	Firm offer requested (Stage 1) Feasibility study requested (Stage 2) Firm offer requested (Stage 3)	Projects publicly committed to and have secured Government funding.[43] High customer engagement, already planning for higher rated assets at Stage 1, which gives clear indication of intention to proceed with Stage 2
18. Melbourne Airport	Airport	Firm offer requested	High customer engagement, [redacted] The customer has committed to HV upgrades in its Minister-approved Airport Master Plan[44]
19. Essendon Airport	Airport	Firm offer issued	Early on, the customer explored a different option which did not meet its need and has since pivoted back to the JEN offer

[43] Victorian Government, see Victoria To Become Home Of mRNA Vaccine Manufacturing | Premier, BioNTech Partnership To Deliver Next Generation Cancer Care | Premier

[44] Melbourne Airport, Master Plan 2022, November 2022, p.200, and Commonwealth Government, see Approval of Melbourne Airport Master Plan | Ministers for the Department of Infrastructure

4.1.4 New major connections inquiries not included in this revised forecast

2,200 MVA of active major connection requests have not been included

At this stage JEN has excluded other major connections, or higher variant offers of included new major connections, on the basis that JEN does not consider them highly likely to proceed to connection delivery in the 2021–26 period. A summary of these excluded inquiries is provided in Table 4.4. Notwithstanding this position of high probability being a criteria to fall within in this application, the possibility remains that these projects could advance and still be connected within the 2021–26 period.[45]

Note that the data centre numbering convention that JEN applies internally is based on when a particular data centre site first makes an inquiry. Different sites take different lengths of time to proceed to an offer, as described in Section 5.1 and therefore the lower numbered data centres are not always the most advanced in their status or most likely to connect.

Table 4.4: Unforeseen major connection projects excluded from the revised forecast

Project name	Total capacity (MVA)	Incremental capacity[46] (MVA)	Date of first inquiry	Inquiry status	Reason for exclusion
[redacted]	[redacted]			3. Feasibility study issued	Higher capacity variant of included new connection, not considered high likelihood
[redacted]	[redacted]			1. Customer approached	New connection, more likely to commence in 2026-31 regulatory period
[redacted]	[redacted]			3. Feasibility study issued	Higher capacity variant of included new connection, not considered high likelihood
[redacted]	[redacted]			2. Feasibility study requested	Higher capacity variant of included new connection, not considered high likelihood
[redacted]	[redacted]			2. Feasibility study requested	Higher capacity variant of included new connection, not considered high likelihood
[redacted]				4. Firm offer requested	New connection, more likely to commence in 2026-31 regulatory period
[redacted]				2. Feasibility study requested	Higher capacity variant of included new connection, not considered high likelihood
[redacted]	[redacted]			2. Feasibility study requested	New connection, more likely to commence in 2026-31 regulatory period
[redacted]	[redacted]			2. Feasibility study requested	Higher capacity variant of included new connection, not considered high likelihood

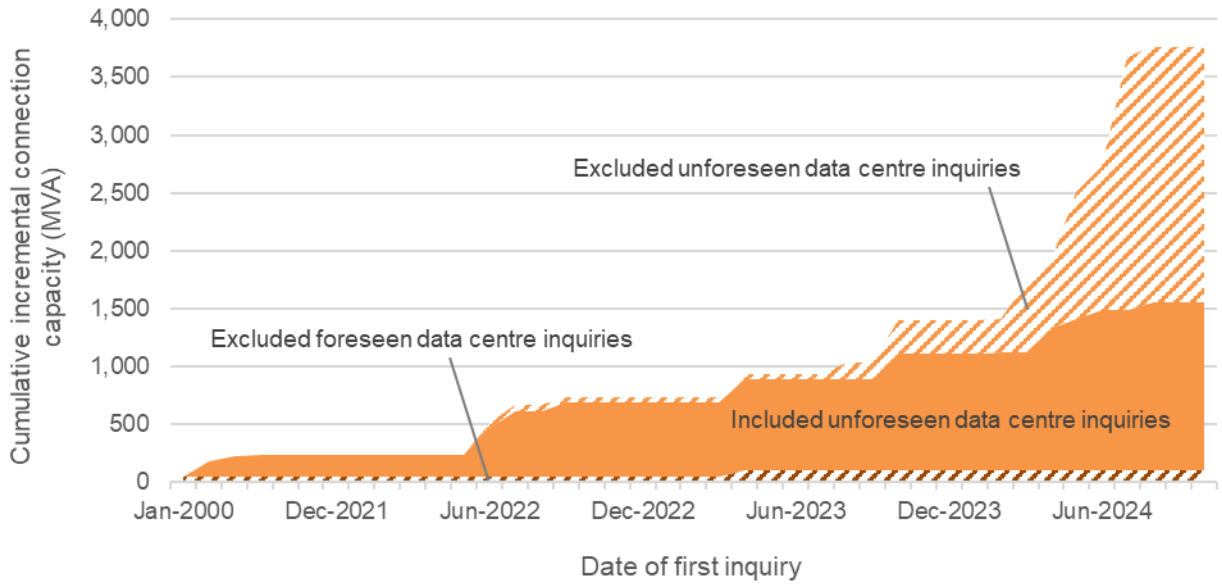
[45] The assessment of likelihood to proceed has been conducted as at the date of this application. JEN will notify the AER as soon as possible if new facts come to light which alter this assessment.

[46] Relative to connection capacity of high likelihood project included in reopener proposal

Project name	Total capacity (MVA)	Incremental capacity[46] (MVA)	Date of first inquiry	Inquiry status	Reason for exclusion
[redacted]	[redacted]	[redacted]	[redacted]	2. Feasibility study requested	New connection, more likely to commence in 2026-31 regulatory period
[redacted]	[redacted]	[redacted]	[redacted]	2. Feasibility study requested	Higher capacity variant of included new connection, not considered high likelihood
[redacted]	[redacted]	[redacted]	[redacted]	1. Customer approached	New connection, more likely to commence in 2026-31 regulatory period
[redacted]	[redacted]	[redacted]	[redacted]	1. Customer approached	New connection, more likely to commence in 2026-31 regulatory period
[redacted]	[redacted]	[redacted]	[redacted]	1. Customer approached	New connection, more likely to commence in 2026-31 regulatory period
[redacted]	[redacted]	[redacted]	[redacted]	1. Customer approached	New connection, more likely to commence in 2026-31 regulatory period
[redacted]	[redacted]	[redacted]	[redacted]	2. Feasibility study requested	New connection, more likely to commence in 2026-31 regulatory period
Total		**2,200**			

The accumulated capacity of the data centre inquiries that are excluded from JEN's reopener proposal, alongside those that are deemed high likelihood and are included, are summarised in Figure 4.4.

Figure 4.4: Data centre connection inquiries, by date of first inquiry and incremental capacity indicated



4.1.5 Network-initiated augex projects associated with new major connection projects

Our revised forecasts include unforeseen augex projects that are triggered by unforeseen major connections

JEN has identified four network-initiated augmentation capital expenditure ('augex') projects that will benefit more than one of the unforeseen new major connections. Such augex is recovered through the Incremental Cost Shared Network (ICSN) component of JEN's connection charge, as per JEN's Connection Policy which is summarised in section 5.1.2. The augex projects are summarised in Table 4.5 below.

Table 4.5: Augmentation projects include in revised forecast

Augmentation project	Project description	Associated major connections
1. DC11&DC20 - ST-SSS 66kV line extension	Address the capacity constraint in the [redacted] Zone Substation Supply Area	[redacted]
2. DC12&DC18&DC01 - augment KTS-AW	Augment the KTS-AW 66kV line to increase its capacity	[redacted]
3. DC02&DC09 - New 66kV line incomer at FW	Construct a new 66kV line exit at FW zone substation to facilitate a new FW-TH 66kV line to tie two sub transmission loops to share capacity between them.	[redacted]
4. DC02&DC09 - Tie TH-FW 66kV loops	Construct a new FW-TH 66kV line to tie two sub transmission loops to share capacity between them.	[redacted]

Connections related repex is not included

JEN has excluded replacement expenditure ('repex') that is or will be brought forward due to major connections that have occurred in the current period. This is because the repex projects that have been identified relate to the YarraBend development, which is a 'foreseen' project that was included in JEN's original 2021–26 proposal.

Augmentation expenditure that has satisfied the regulatory investment test for distribution

Only one of JEN's revised augmentation expenditure projects meet the threshold that requires JEN to undertake a regulatory investment test for distribution (RIT-D), due to the expected capital works costs exceeding $6 million.[47] This being augex project number 1, as shown in the Table 4.5. JEN has initiated the RIT-D process for that project, having published its options screening report (stage 1) in August 2024.[48] JEN has based its forecasts on the best information presently at hand about the outcome of that RIT-D process.

The expected capital works costs for the other augex projects included with this reopener application do not meet the $6 million threshold requirement for applying the RIT-D.

4.2 Forecasting incremental capex for the unforeseen series of major connection applications and inquiries

Capex is forecast in three key steps

This section outlines JEN's approach to forecasting incremental capital expenditure (capex) for major connections as a part of this application. The three steps can be summarised as follows:

- JEN's process starts by applying the Cost Estimation Methodology to estimate the costs for each project (**Step 1**).
- As time goes on, JEN revises and re-profiles the estimate to reflect more up to date information and to recognise any actual costs incurred (**Step 2**). This gives JEN estimated capex in 2024-25 and 2025-26 that is combined with any actual capex over 2021-22 to 2023-24.
- To align with the AER's 2021–26 determination, JEN only uses the direct capex component of its cost estimate for each project. JEN then adjusts these to reflect the real labour cost escalation and incremental overhead assumptions that the AER allowed for (**Step 3**).

4.2.1 Step 1: How are project costs developed?

Bottom-up forecasts through major connection customer engagement follows the original forecast approach

JEN has retained its 2021–26 regulatory proposal forecasting methodology of bottom-up project forecasts. These forecasts are developed through engagement with customers and prepared based on a bottom-up estimate of the works required, consistent with JEN's Cost Estimation Methodology for non-routine work as used in JEN's original 2021–26 major connections forecasting methodology.[49]

The cost estimation process followed is illustrated in Figure 4.5. Within that process, the cost estimation methodology incorporates top-down approaches in early-stage project scoping, and then relies primarily on bottom-up approaches for the detailed scope of works, drawing on historical data, vendor pricing, and detailed risk assessments to develop accurate, fit-for-purpose estimates. For new customer connections, the focus is on ensuring accurate, site-specific cost assessments, which involves gathering detailed information about site

47 NER cl. 5.15.3(d)(1)

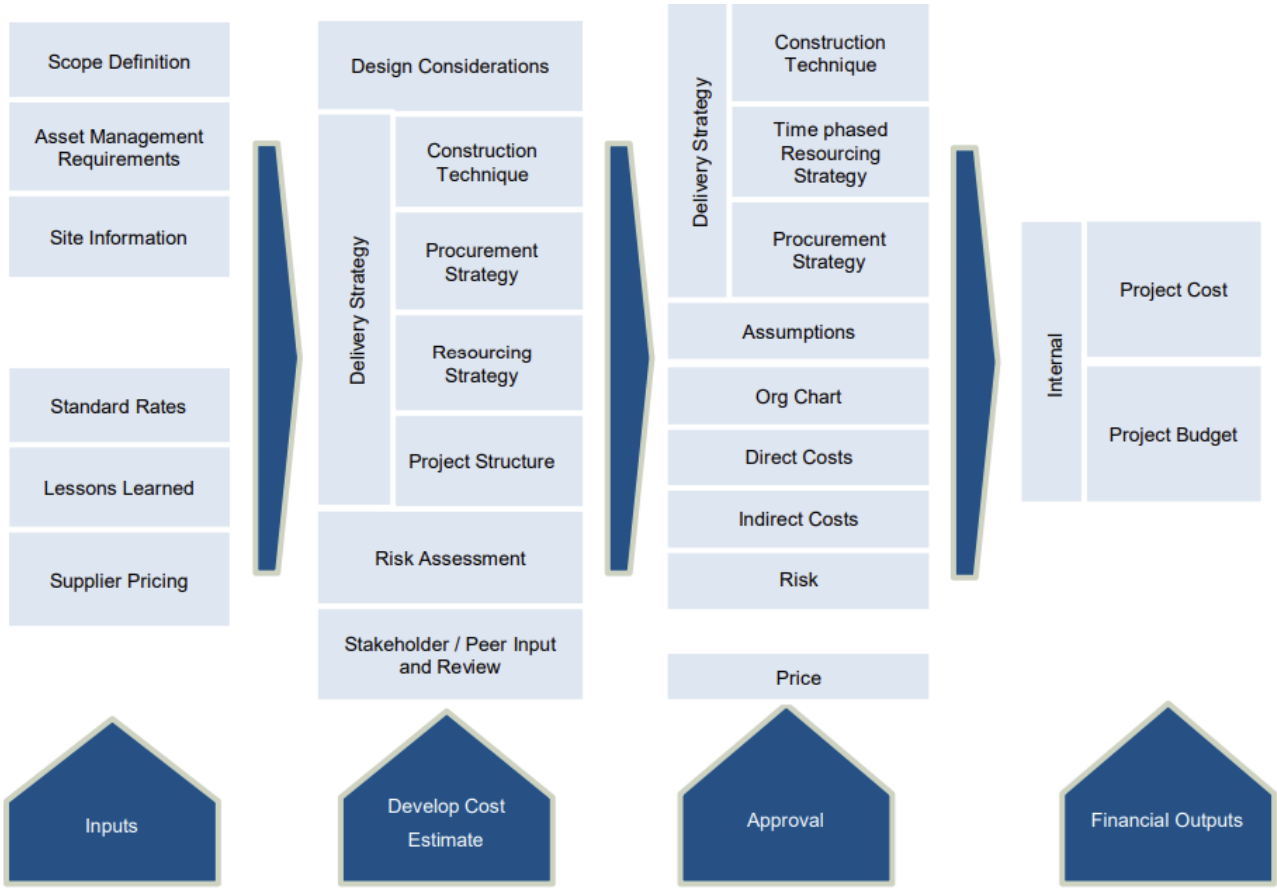
48 https://www.jemena.com.au/siteassets/asset-folder/documents/electricity/st-supply-area-capacity-constraint-rit-d_osr.pdf.

49 Jemena Limited, Jemena Infrastructure Cost Estimation Methodology, 24 May 2019

access, local conditions, utility locations, and environmental factors, along with performing risk assessments and cost breakdowns.

The cost estimate that results from applying the methodology is broken down into four key components, which includes direct costs, overheads, risk, and contingency (where appropriate). For this reopener, we have only included direct unescalated costs prepared through this methodology. As described in section 4.2.3, we have used the labour escalation and incremental overhead assumptions included in the 2021–26 determination instead. We have also not included any contingency amounts, which we often include when seeking approval to spend.

Figure 4.5: Cost estimation process



Source: Jemena Limited, Jemena Infrastructure Cost Estimation Methodology, 24 May 2019

4.2.2 Step 2: Updating for actual project costs and other information

We revise and re-profile our estimates described in Step 1 to reflect more recent information. Once a project starts, we incur actual expenditure. We also receive other information about the future project costs and needs. We use this information to re-profile the expenditure for the forecast years.

How actual costs for 2021-22, 2022-23 and 2023-24 are used and verified

We have used actual project data underpinning annual RIN reporting for FY22 to FY24. This project data is categorised using the unique work breakdown structure (WBS) code used in our financial systems and reflected in the *Unforeseen Major Connections Model* (see Attachment C-01). Actual data is reported in nominal dollars and—as described in section 4.2.3—is adjusted back to CY$18.

Our RIN auditors are presently reviewing this alignment between WBS data and reported annual RIN response templates via an agreed upon procedures review. To maximise the amount of actual capex included within this reopener application, the review will include 2021-22, 2022-23 and 2023-24.

JEN's 2023-24 annual RIN response is not due to submission until 31 October 2024. This means the auditor cannot finish its agreed upon procedures review until that time, so JEN proposes to submit its report at the same time as it submits the annual RIN response for 2023-24 on 31 Oct 2024.

How we prepare our best estimates for 2024-25 and 2025-26

Our major connections team has assessed the capex timing of connections and augex projects categorised as high probability (using the approach outlined above) across 2024-25 and 2025-26 based on their experience and having regard to:

- The Incremental Cost Customer Specific (**ICCS**) for these projects as reflected in their connection agreements (see Appendix F to the Application) and any capex already incurred
- The underlying bottom-up build prepared by the project manager using the project estimation methodology used to set the ICCS, including the monthly scheduling within that forecast that has been designed to best achieve the customer's requested energisation date
- Our project managers' periodic updates for reprofiling the schedule for new information and site progress (note this doesn't change the total ICCS capex unless a variation has been triggered[50]), which considers (among other things):
  - The stage of procurement and delivery for each project
  - The works delivery timeframes considered when preparing the project feasibility studies and project estimations
  - The status of any current known project conditions precedent
  - When the customer expects to be on site.

4.2.3 Step 3: Adjustments needed to get on a like basis with AER allowance

As a final step, we apply the real labour escalation and incremental (i.e., variable) overhead assumptions from the AER's 2021–26 determination to the direct capex. To do this, we use the *Capex Model* (see Attachment D-01) included with that determination, updated to include that direct capex. Labour escalation and overheads are applied automatically within that model.

Treatment of cost escalation follows the original forecast approach

Actual and forecast capex is deflated and de-escalated back to CY$18, consistent with the input base used in *Capex Model* (Attachment D-01). Actual capex incurred in 2021-22, 2022-23 and 2023-24 is captured in nominal dollars, while forecast direct capex is estimated in dollars as at 30 June 2024 (with labour escalation up to that point).

We deflate that actual and forecast capex back to CY$18 using actual December on December inflation, consistent with the series used to roll-forward JEN's regulated asset base. We de-escalate that expenditure (i.e., back out labour escalation) using the real labour escalators and weights adopted by the AER in its 2021–26 determination.

[50] As explained in section 4.2.4, the project cost estimates in these connection agreements cannot be varied unless the formal triggers in our connection agreements have occurred.

Once added to the *Capex Model* (Attachment D-01) that expenditure then has actual inflation added to bring it up to dollars as at 30 June 2021, being the dollar basis for inputs to the *Post-Tax Revenue Model* (see Attachment D-02) for the 2021–26 period. It also has real labour escalation added up to the projected year of spend using the weights and labour escalation rates adopted by the AER in the 2021–26 determination.

This approach ensures that we retain the labour escalation assumptions adopted by the AER. Although actual and future labour escalation likely differs from those assumptions, we consider this approach is consistent with NER clause 6.6.5(f)(1), which requires the AER to only vary the 2021–26 determination '*to the extent necessary*' to adjust the capex allowance that the AER determines is appropriate.

Treatment of capitalised network overheads follows the original forecast approach

At the same time, adding the additional direct capex to the *Forecast Capex Model* leads to incremental overheads being added to the capex forecast. There are two components to this:

1. **Variable overheads** | additional variable overheads are estimated as 4.7% of the total capex attracting overheads, which we have assumed applies to the direct capex that we have included in this application.[51]
2. **Fixed overheads** | these are pro-rated across the direct capex that attracts overheads. Although these overheads do not change in aggregate with the addition of the reopener direct capex, they are re-allocated slightly across projects.

Importantly, we have retained the overhead assumptions that the AER adopted in its 2021–26 determination. We consider that this approach is consistent with NER clause 6.6.5(f)(1).

4.2.4 Our capex estimates are highly certain

As explained in section 4.1 above, most of our major connections reflected in this reopener application have signed a connection agreement or an early works agreement, and more have received a firm (and binding) offer from us.

The estimates in these connection agreements cannot be varied unless the formal triggers in our connection agreements have occurred. This means that adjustment to the capex from the project estimates used in these forecasts would only occur if:

- there has been a change in scope (e.g. a customer requests additional scope), or
- an exclusion from our offer has eventuated (e.g. contaminated soil has been encountered on site, and there is an additional cost to manage it).

This gives the project capex forecasts a high degree of certainty that these projects will go ahead in this period and that the project estimates included in this application are an accurate reflection of the costs we will incur.

4.2.5 Residual timing uncertainty can be accounted for in the 2026–31 determination

To the extent there is residual uncertainty, which is limited, the upcoming 2026-31 period revenue determination process can account for that uncertainty and minimise its impact on our customers as described below.

[51] The 4.7% can be seen at cell K53 of the 'Calc|OH' sheet in the *Capex Model* (Attachment D-01).

Uncertainty around the updated capex forecasts will be adjusted for in the CESS and RAB roll forward

The fact that this reopener application is being made relatively late in JEN's 2021–26 regulatory control period, means that JEN and the AER can minimise the long term effect of any residual timing uncertainty for the revised forecast projects.

This is because:

- Any project deferrals can be adjusted for when applying the CESS in the AER's 2026–31 determination in April 2026 (which could benefit from a further 19 months of actual data)
- Only 2024-25 capex affects the 2021–26 revenue allowance (with 1 year of return on and of capital), with 2025–26 capex only added to the RAB at the end of that year
- Any differences between actual and estimated capex in 2025-26 will be trued up for in the 2031 RAB roll forward (in accordance with NER Schedule 6.2 clause S6.2.1(e)(3)) and when applying the CESS over the 2026–31 period (in accordance with section 2.4 of the *Capital Expenditure Incentive Guideline for Electricity Network Service Providers*, April 2023).

4.3 Deliverability of incremental major connection projects

Context to deliverability

As outlined earlier, the unprecedented and unforeseen number of major connection requests has resulted in a significant increase in customer connection capital expenditure over the 2022-26 period.

This is not temporary. Based on connection applications, discussions with developers and third-party projections for data centre demand, we expect that major connections expenditure will be sustained into the 2026-31 period. Over the medium to longer time horizon, this increase will coincide with an increase in replacement expenditure to address growing risk from aged assets (which, based on condition assessments, have reached end of their serviceable life) as well as increased need to augmentation our network to ensure that all consumers are able to receive the benefits of increased electrification and the energy transition.

In a static investment environment, deliverability risks can often be managed by deferring or prioritising particular projects to smooth the overall expenditure profile. However, while being considered and factored in where possible, the overall impact is limited in our circumstances given:

- **Significant economic and consumer costs to delaying certain works**. Timely delivery is essential for connection and augmentation programs. Customers require connections to commence operations while augmentation is required to avoid high consumer costs due to lost load from insufficient network capacity.[52]
- **Delaying work will increase deliverability risks**. Investment requirements are expected to increase over time which means delays will result in a sharper expenditure increase. We note the forecast rise in expenditure could be faster and more material than we are currently forecasting given the asymmetric risks around the pace of electrification in our demand forecast.[53]

JEN's approach to deliverability

While the increased investment requirements represent a significant challenge, our established processes and approach are already working to ensure that we will have the capability to deliver. Two key elements include our

[52] Optimal timing of augmentation projects generally occur when the probability weighted value of loss load (a customer cost) exceeds the cost of network investment.

[53] Our forecast is made on several conservative assumptions around the pace and extent of electrification.

access to our service delivery partner Zinfra's resource depth and capability together with our delivery processes and ability to pull strategic, tactical and operational supply levers.

Zinfra's resource depth

Zinfra is a leading national utility infrastructure service provider specialising in electricity transmission, distribution and zone substations. Zinfra has long-standing operational, maintenance and construction contracts with a range of electricity businesses, such as AusNet, United Energy, TasNetworks. Zinfra also provides services on a project basis, e.g. the QNI upgrade (Transgrid), substation upgrades as part of Powering Sydney's future (Transgrid) and the installation of a new transformer at Strathmore substation (Powerlink).

As a result, Zinfra has a substantial delivery capability enabled by:

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

Historically, the Zinfra JEN dedicated field workforce has been sufficient, with supplementary support from subcontractors and civil works suppliers, to deliver the historical work program. However, given the expanded delivery requirements in recent years and those forecast into the future, [redacted]

In addition, to initiate, scope, design and deliver the investment requirements, Jemena has an Asset Management and Operations workforce of 100+ qualified engineering and technical personnel.

Delivery process and strategic, tactical and operational supply levers

Key processes to ensure delivery capabilities match the program of work include:

- **Works Management Model** – of which key components include Works Planning and Resource Forecasting (2 – 5 year horizon to identify future resource requirements), two year rolling works planning and resourcing (to identify the volume, types and locations of work and allocation to delivery resources) and scheduling (3 month time horizon)
- **Works Planning Optimisation** – [redacted]
- **Best Practice Project Management** – [redacted]

- **Procurement and Contract Management Framework and dedicated procurement team** – this function is essential for the timely supply of services, materials and plant. Long-lead items (such as power transformers and switchgear) are procured in advance, noting that for connection projects, this is facilitated by early works agreements with connection applicants. This function also ensures a standardised approach to reduce complexity (and associated cost and delivery risks) and that capacity can be augmented through the use of additional suppliers.[54]

These processes work together to reduce deliverability risk and enable the deployment of strategic, tactical and operational supply levers. Examples include:

- **Strategic** – based on future long-term resource requirements and future capability gaps, investing in early career development, developing targeting recruitment programs and focussing on retention of key skill areas.[55]
- **Tactical** – based on medium term resourcing requirements and gaps [redacted]
- **Operational** – leveraging digital solutions to increase efficiency, optimising fleet availability ensuring industry leading works practises, robust process and systems to support delivery.

As the examples above illustrate, an extended planning period enables capability to be growth at a lower overall cost, showing the importance of our established systems and processes to efficiently flex up to match the long-term program of works.

Our ability to deliver the FY25 and FY26 work program

The effectiveness of our delivery approach is what has enabled us to increase our network capex delivery capability. This is a significant achievement, given that our allowance had expected our overall work program to decrease.

Given our Works Management and Planning Optimisation processes, we have sufficient resources in place to deliver the FY25 program of work. These processes have also identified that the JEN dedicated workforce has a capacity gap with respect to Zone Substation Testers and Zone Substation Fitters over several months in FY26. [redacted]

As a result, despite the increase in investment requirements, given the access to Zinfra's substantial delivery capability together with the robust and long-established systems, processes we have in place and the arrangement between JEN and Zinfra, we consider delivery risk for the FY25 and FY26 network capex program to be low.

[54] Using bespoke materials and services limits the available resource pools which can be drawn upon.

[55] [redacted]

4.4 Forecasting incremental customer contributions

Customer contributions are forecast using the same methodology adopted in the 2021–26 determination

The approach we use to estimate the customer contributions associated with the unforeseen major connections, both in our original proposal in in this reopener proposal, involves:

- Identifying contribution rate assumptions for each connection type (i.e., data centres, major infrastructure)[56]
- Multiplying actual and forecast direct connections capex by those contribution rates within the *Forecast Capex Model*.

We estimate the contribution rates (as a % of direct connection capex) for data centres and major infrastructure connections as the capex-weighted average of the contribution rates implicit in the connection offers or signed Connection Works Agreements for those projects that had reached that stage (these are provided in Appendix F to the Application).[57] This results in the values shown in Table 4.6, which are noticeably higher than the equivalent values adopted in the 2021–26 determination. These calculations are included in the *Unforeseen Major Connections Model* (see Attachment C-01).

Table 4.6: Contribution rate estimates for major connections (% of direct connection capex)

Connection type	Contribution rates adopted in the 2021–26 determination	Number of projects with a connection offer or signed contract	Capex weighted average contribution rate for reopener projects
Data centres	58.3%	10	72.9%
Major Infrastructure Projects	31.9% or 62.0%	6	82.3%
Total (combined)	45.1%	16	74.5%

4.5 JEN's updated incremental capex forecasts for 2021–26

4.5.1 Summary

$101m of net capital expenditure

Table 4.7 sets out our proposed capital expenditure by year and category over the 2021 – 26 period, in both gross and net terms. Table 4.8 in the next section breaks down the proposed connection direct capital expenditure by the 19 connection applications or inquiries that have been identified for the purposes of this application. [58] Table 4.9 in the subsequent section breaks down the proposed augmentation expenditure into the four projects.

[56] For the 2021–26 determination, this contribution percentage assumptions differed across connection type and were estimated using recent actual or sample data for each category of connection (e.g. residential developments) or using data from the feasibility study of the connection project where available.

[57] We did this by dividing the contribution dollars by the estimated ICCS for each connection with a connection offer or signed agreement.

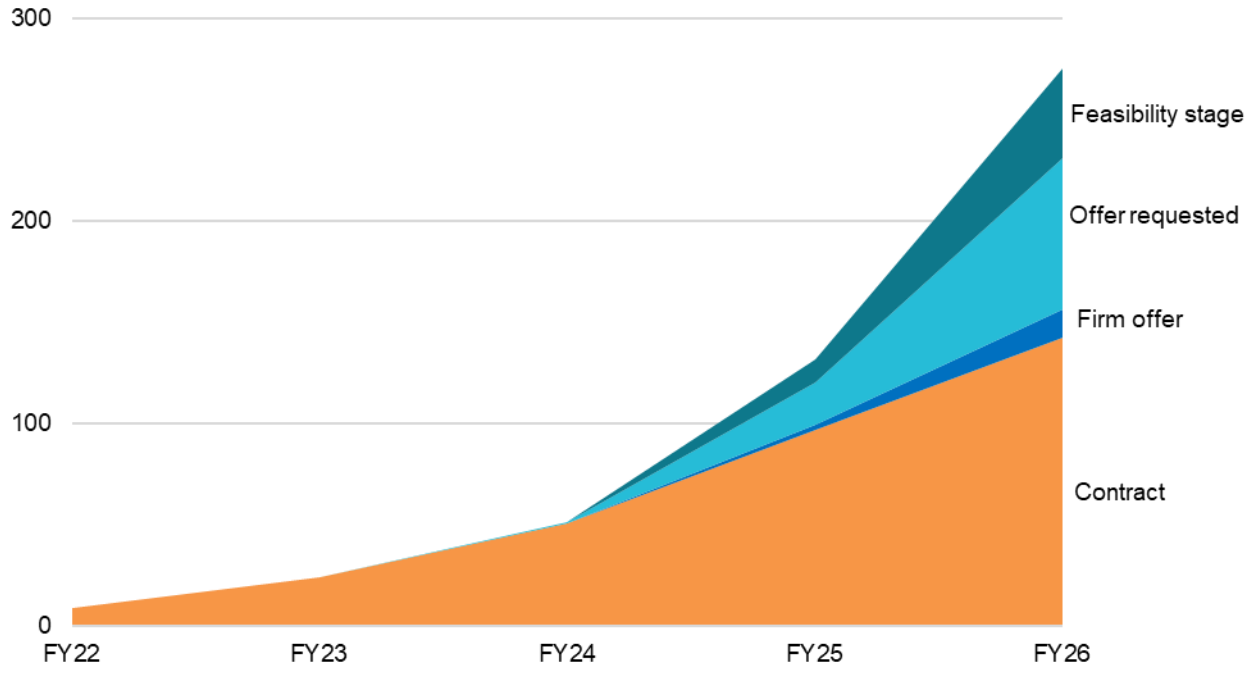
[58] As at the date of this application, JEN has identified 19 connection applications or inquiries which form part of the event, being the unforeseen series of applications or inquiries from major customers. However it is possible that this event may continue to unfold, with either further enquiries / applications being received or existing enquiries becoming more certain to proceed. JEN will notify the AER as soon as possible if the scope of the event expands.

Table 4.7: Summary of incremental capital expenditure relating to major connections ($Million, $2021)

Expenditure	2021-22	2022-23	2023-24	2024-25	2025-26	Total
Connection	8.4	15.6	26.9	80.3	143.9	275.1
Augmentation	-	-	0.1	4.4	9.5	14.0
Overheads	0.4	0.7	1.3	4.0	7.2	13.5
Gross capex	**8.8**	**16.3**	**28.3**	**88.7**	**160.6**	**302.6**
Less contributions	(6.7)	(11.8)	(19.7)	(58.7)	(105.2)	(202.1)
Net capex	**2.1**	**4.5**	**8.6**	**30.0**	**55.4**	**100.5**

Figure 4.6 summarises the incremental connection capex (excluding augmentation and overheads) based on the status of the major connection project.

Figure 4.6: Incremental gross connection capex (excluding augex and overheads), by status of inquiry[59] ($Million, $2021)



4.5.2 Connection capex forecasts

$275m of additional gross capital expenditure, across 19 new major connections

Table 4.8 sets out the proposed capex by year over the 2021–26 period of the 19 major connections that we have included in this reopener application.

Table 4.8: Incremental gross connection capital expenditure relating to major connections ($Million, $2021)

Major connection	2021-22	2022-23	2023-24	2024-25	2025-26	Total
[redacted]	0.4	0.3	2.5	9.6	16.7	29.4

[59] Contract is defined here to be either a Contract Works Agreement or Early Works Agreement

Major connection	2021-22	2022-23	2023-24	2024-25	2025-26	Total
[redacted]	0.3	0.1	6.5	21.7	14.4	43.0
[redacted]	0.0	1.0	3.7	0.0	-	4.7
[redacted]	0.9	8.2	9.5	5.6	8.6	32.9
[redacted]	-	0.0	0.1	3.9	10.4	14.4
[redacted]	-	0.0	0.1	0.6	6.3	7.0
[redacted]	-	0.0	1.6	7.1	8.6	17.3
[redacted]	0.1	0.2	0.1	5.0	11.8	17.2
[redacted]	-	0.0	0.0	6.3	15.4	21.8
[redacted]	-	-	0.0	2.6	10.8	13.4
[redacted]	-	-	0.0	4.5	11.6	16.1
[redacted]	-	-	-	4.8	11.6	16.4
[redacted]	-	0.1	2.6	1.3	-	3.9
[redacted]	6.7	5.7	0.0	-	-	12.4
[redacted]	-	-	0.1	1.9	2.6	4.5
[redacted]	-	0.0	0.0	0.9	0.6	1.5
[redacted]	-	-	0.1	4.3	12.1	16.5
[redacted]	-	0.0	0.0	0.2	2.3	2.6
[redacted]	-	-	0.1	0.0	-	0.1
Total	**8.4**	**15.6**	**26.9**	**80.3**	**143.9**	**275.1**

4.5.3 Augmentation expenditure forecasts

$14m of additional gross capital expenditure, across 4 projects

Table 4.9 shows the proposed capex by year over the 2021– 26 period of the four augmentation projects that we have included in this reopener application.

Table 4.9: Incremental augmentation capital expenditure relating to major connections ($Million, $2021)

Augex project	2021-22	2022-23	2023-24	2024-25	2025-26	Total
1. DC11&DC20 - ST-SSS 66kV line extension	-	-	0.1	3.7	4.9	8.6
2. DC12&DC18&DC01 - augment KTS-AW	-	-	0.0	-	1.9	1.9
3. DC02&DC09 - New 66kV line incomer at FW	-	-	0.0	-	0.9	0.9
4. DC02&DC09 - Tie TH-FW 66kV loops	-	-	-	0.8	1.8	2.6

Augex project	2021-22	2022-23	2023-24	2024-25	2025-26	Total
Total	**-**	**-**	**0.1**	**4.4**	**9.5**	**14.0**

4.5.4 Contributions forecasts

$202m of additional capital contributions, averaging 75% of un-escalated gross capex

Table 4.10 shows the proposed customer contributions by year over the 2021–26 period, split by connection type.

Table 4.10: Incremental customer contributions relating to major connections ($Million, $2021)

Connection type	2021-22	2022-23	2023-24	2024-25	2025-26	Total
Data Centres	1.2	7.1	17.4	51.7	90.9	168.3
Major Infrastructure Projects	5.5	4.7	2.3	7.0	14.3	33.8
Total Contributions	**6.7**	**11.8**	**19.7**	**58.7**	**105.2**	**202.1**

4.6 Resulting revised capex allowances for 2021–26

Revised proposal of $745m of total net capex, compared to $644m in the 2021–26 determination[60]

Table 4.11 shows our proposed updated to the 2021–26 capital expenditure allowance by year over that period, in both gross and net terms.

Table 4.11: Total proposed new capital expenditure allowance ($Million, $2021, ex. ERC)

Expenditure	2021-22	2022-23	2023-24	2024-25	2025-26	Total
Gross capex						
2021–26 determination (including VEBM CPT)	180.5	173.6	157.4	146.2	120.8	778.4
Proposed reopener incremental capex	8.8	16.3	28.3	88.7	160.6	302.6
Updated allowance	189.2	190.0	185.7	234.8	281.3	1,081.0
Net capex						
2021–26 determination (including VEBM CPT)	154.1	147.0	129.8	118.7	94.4	644.0
Proposed reopener incremental capex	2.1	4.5	8.6	30.0	55.4	100.5
Updated allowance	156.2	151.5	138.4	148.7	149.8	744.6

Source: JEN; AER (note that the 2021–26 determination includes the additional allowance from the Victorian Emergency Backstop Mechanism (**VEBM**) cost pass-through).

60 We have included in the 2021–26 determination the additional capital expenditure allowed by the AER in its September 2024 decision to approve JEN's Victorian Emergency Backstop Mechanism (**VEBM**) cost pass through (**CPT**) application.

5. How JEN ensures its expenditure is prudent and efficient

JEN is committed to maintaining a high standard of service and reliability in its network operations. Part of this commitment involves ensuring that capex is managed prudently and efficiently. This section outlines the revised capex allowances for the period 2021–26, and details JEN's methodologies for processing new major connection requests in compliance with the NER.

5.1 JEN's approach to processing new major connection requests

5.1.1 JEN's obligations under the NER

JEN is obliged to offer and connect customers, regardless of whether the connection was forecast

Connection requests are beyond JEN's reasonable control. JEN must respond to connection requests received from our customers, and to deny or seek to delay them in any way them would go against our customer-focused values, customer expectations and our NER and Victorian distribution licence obligations.

The NEL and NER establish a third party access regime applicable to regulated electricity networks like JEN. A key principle of such regimes is the provision of non-discriminatory access to customers seeking use of the regulated infrastructure on reasonable terms. Under the "open access" regime, connection inquiries and requests are initiated by customers. The volume and timing of these inquiries is necessarily outside of JEN's control.

The regime, by design, does not afford JEN an opportunity to control who seeks access to its network or where, when and at what scale customers or prospective customers can seek to gain or increase their access. Rather, JEN must respond to the requests that it receives from customers, including by making an offer to connect within the timeframes prescribed by the NER. NER cl.5A.f.4 requires JEN to make an offer to connect to customers that request it. If accepted, we are then obligated by contract law to connect the customer. JEN cannot decline to offer a connection on the basis that the connection was not forecast in its revenue determination for that period.

In recognition of this feature of the regime, the regime also provides for:

1. Clarity around customers' rights to seek connection or connection augmentation
2. Networks to charge customers for contributions to the costs they incur in making the connection possible on a safe, secure and reliable basis irrespective of whether these costs have been forecast in a relevant AER determination or not
3. A capex category called 'connections capex', which prior to more recent category standardisation was often referred to in the past as 'customer-initiated-capex' by some networks
4. The process to administer the actual outcomes of customer initiated connection and augmentation costs into networks' recoverable cost bases.

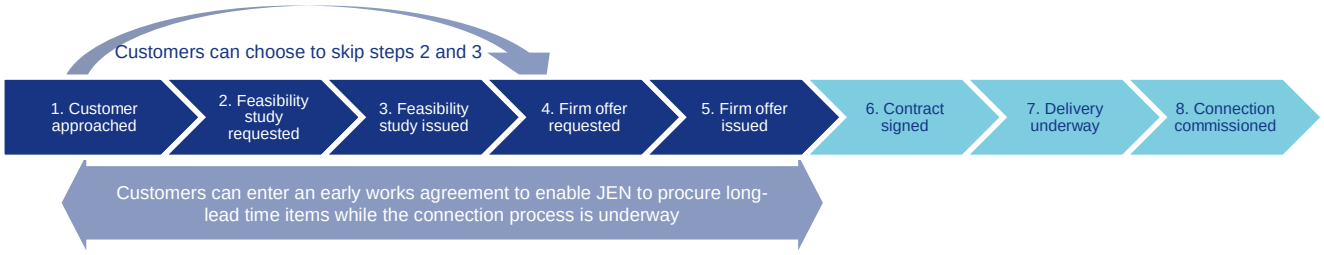
As a licenced Victorian distribution network, JEN faces further obligations for connection to its network under the Essential Services Commission's Electricity Distribution Code of Practice (**EDCoP**). For example, under EDCoP clause 3.5, where JEN cannot meet a customer's (or retailer's) connection request due to an inadequate supply of electricity being available at the required voltage at the boundary of the supply address, JEN must make the connection as soon as reasonably practicable after it has taken measures to provide for sufficient capacity.

5.1.2 JEN's connection application and negotiation process

Applicants progress from first approach to commissioning in eight stages

JEN processes requests through eight key stages, as summarised in the Figure 5.1. While these are set out as sequential stages, increasingly some connections a seeking to make financial co-commitments via early works agreements (that predate the connection agreement at stage 6) to ensure their connect requests continue to progress on long-lead time procurement items while early process steps are still being completed

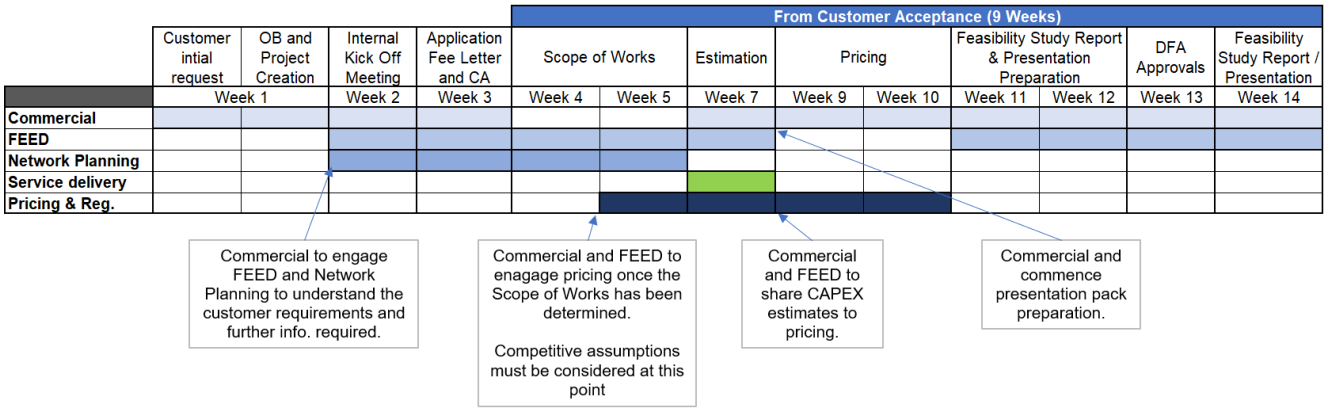
Figure 5.1: Overview of connection process



JEN's workflow for taking a customer from initial request through to firm offer takes approximately 8 months, or around 6 months if a customer skips the feasibility study stage

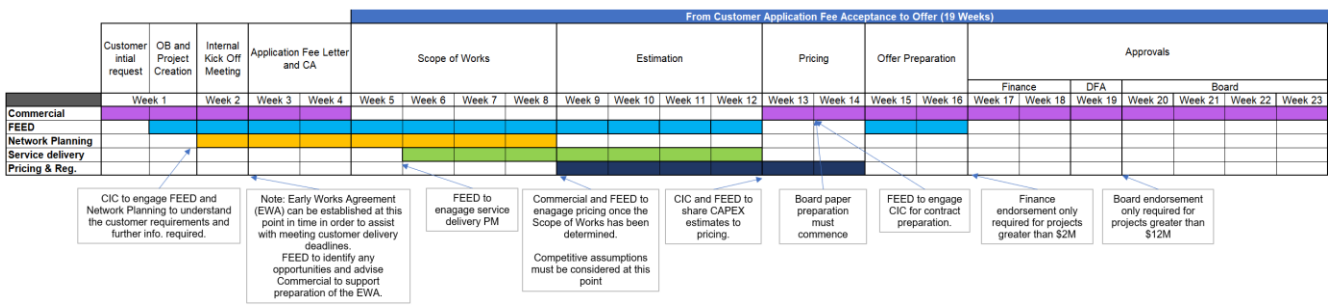
JEN's workflow for processing a feasibility study request is provided in Figure 5.2. A typical timeframe is 9 weeks (~2 months) between customer application and presentation of the feasibility report to the customer. In some instances this process can be even quicker.

Figure 5.2: Feasibility study workflow for data centre connection requests



JEN's workflow for processing a firm offer request is provided in the Figure 5.3. A typical timeframe is 19 weeks (~5 months) between customer application and presentation of the firm offer to the customer. In some instances this process can be even quicker.

Figure 5.3: Firm offer workflow for data centre connection requests



Early Works Agreements are sometimes used when the customer requires urgency

JEN offers an Early Works Agreement (**EWA**) to customers that need urgency. EWAs commit JEN to a final delivery timeframe without a connection agreement on a no regret basis, with the customer paying for all works completed. This early commitment supports the ordering of long lead-time items needed for the eventual connection to avoid connection delays.

The connection checklist helps JEN assess seriousness of inquiry

The connection checklist that JEN uses when receiving a connection inquiry from a data centre is provided in Table 5.1.

Table 5.1: Data centre connection checklist

Jemena Requirement	
1	Supply required date
2	Total floor area available for data centre equipment
	(If multi story data centre, please add all available floor area for IT equipment)
3	Supply redundancy/reliability requirement
	(e.g. N, N-1 etc.)
4	Preferred connection voltage
	(e.g. 66kV, 22kV, 11kV etc.)
5	Do you require a temporary supply prior to the permanent supply connection?
	Temporary Supply Date
	Temporary Supply Capacity Required
Ultimate Maximum Demand (MD) calculations	
1	Total Site Maximum
2	Please specify the basis of calculation
	(such as X kW/m2 for each type of load)
3	Details of equipment contributing to the MD and detailed breakdown:
	IT load (kW)
	Cooling load (kW)
	Lighting load (kW)
	Other load type (kW)
4	Estimated Peak Power Usage effectiveness PUE
5	Load Diversity assumptions (%)
6	Anticipated power factor during maximum demand
Proposed On Site Generation (paralleled with Distribution Network)	
1	Type (Solar PV, Battery Energy Storage system, Synchronous etc.)
2	Rating (kW)
Site Load Profile Information – *Jemena will require a separate document detailing the below.*	
1	Forecast annual coincident maximum demand load up take at least over the next 10 years (summer and winter)
2	Forecast annual coincident minimum demand at least over the next 10 years (summer and winter)
3	Estimated annual energy consumption (please specify the basis of calculation)
4	Load profile to show how the electricity usage fluctuates over 24 hr period during typical summer and winter day

5	Load scenarios (e.g. base, low or high) to further demonstrate load forecasts
Supporting Documentation	
1	Site plan
	This should include the following (but not limited to):
	1. Site building locations and orientation.
	2. Customer connection point / connect facility (i.e. Mains switch board).
	3. Allocated space for Jemena Asset (i.e. Zone substation or switch yard).
2	Single Line Diagram
	(demonstrating the number of feeders requirement from Jemena to your site / facilities.)

JEN applies its Connection Policy to calculate contributions

In calculating customer contributions, JEN follows its AER-approved Connection Policy, which is available on its website.[61] Features of JEN's approach, which are specific to major connection customers and worth highlighting, include:

- Applying a high diversity factor for major connection customers when calculating Incremental Cost Shared Network (ICSN).
- When calculating incremental revenue, JEN uses a year-by-year forecast of demand. The forecast is based on one provided by the customer but adjusted to reflect JEN's risk and experience with similar installations.

JEN uses the risk provisions in its Connection Policy to protect existing customers' interests

JEN prudently uses the security provisions in sections 6.2 of its AER-approved connection policy to protect customers from risk that the forecast incremental revenue does not transpire either in the assumed annual scale or for the duration expected when calculation the connection contribution.

In cases where JEN revises down a customer's nominated demand forecasts when calculating IR and the customer disagrees, JEN will be willing to adopt the customer's forecast if the customer agrees to the option of paying a security fee or bank guarantee.

JEN's connection agreements with major connections prudently manage this risk. Examples can be seen in the confidential connection agreements provided in Appendix F, which include the following features:

- The assumed demand ramp up rate per year
- The minimum demand amount payable per year
- Security fees or bank guarantees
- Early termination provisions.

61 JEN, 2021-26 Connection Policy, 29 January 2021.

5.2 Countervailing customer power ensures expenditure is efficient

The process of negotiating connections with informed customers gives confidence that our connection costs are prudent and efficient

JEN's major connection customers are very large, well-resourced and sophisticated procurers of energy services. As a recent survey of JEN's major connection customers shows[62], half of them report hiring expert advisors to support their electricity connection process, and the other half (most of whom are data centre owner operators) have, in JEN's experience, deep electrical engineering and procurement experience in-house.

The connection process in Figure 5.1 affords major connection customers multiple opportunities to test out options and costings thereof, iterate those for their feedback or refined connection request specifications, and contestably tender certain works. These customers also have access to dispute resolution and, to date, none of JEN's major connection customers have triggered these dispute provisions.

Together, the nature of the major connections, the degree of countervailing customer power and the process JEN conducts mean that the AER can be satisfied that JEN's costs are prudent and efficient.

Customers requesting major connections are informed and well-resourced procurers of energy

Data centres owners are sophisticated procurers of energy, whom usually have extensive experience evaluating and negotiating connection agreements. In JEN's observation, the first few data centre connection requests were led or involved expertise brought in from outside of Australia, but increasingly now JEN is dealing with established local presence.

For example, [redacted] hired technical, commercial, legal, and building consultants, who were all involved in negotiations with JEN. Requests tend to result in multiple offers and iterations for each connection. Case studies on the offer processes with [redacted] are provided in Table 5.2 and Table 5.3.

Table 5.2: Case study on [redacted] offer process

Customer	**2.** [redacted]
Date of first inquiry	[redacted]
Date agreement signed	[redacted]
JEN Team Members Involved	[redacted]
Meeting Frequency	[redacted]
Technical Options Considered	[redacted]

62 Surveying Major Connections, farrierswier, October 2024 (see Attachment E-01)

Pricing Options Considered	[redacted]
Where we are today	[redacted]

Table 5.3: Case study on [redacted] offer process

Customer	[redacted]
Date of first inquiry	[redacted]
Date agreements signed	[redacted]
JEN Team Members Involved	[redacted]
Meeting Frequency	[redacted]
Technical Options Considered	[redacted]
Pricing Options Considered	[redacted]
Where we are today	[redacted]

Landscape of strong competitive tension

While JEN continues to experience high conversion rates, as described in section 3.2.2, [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

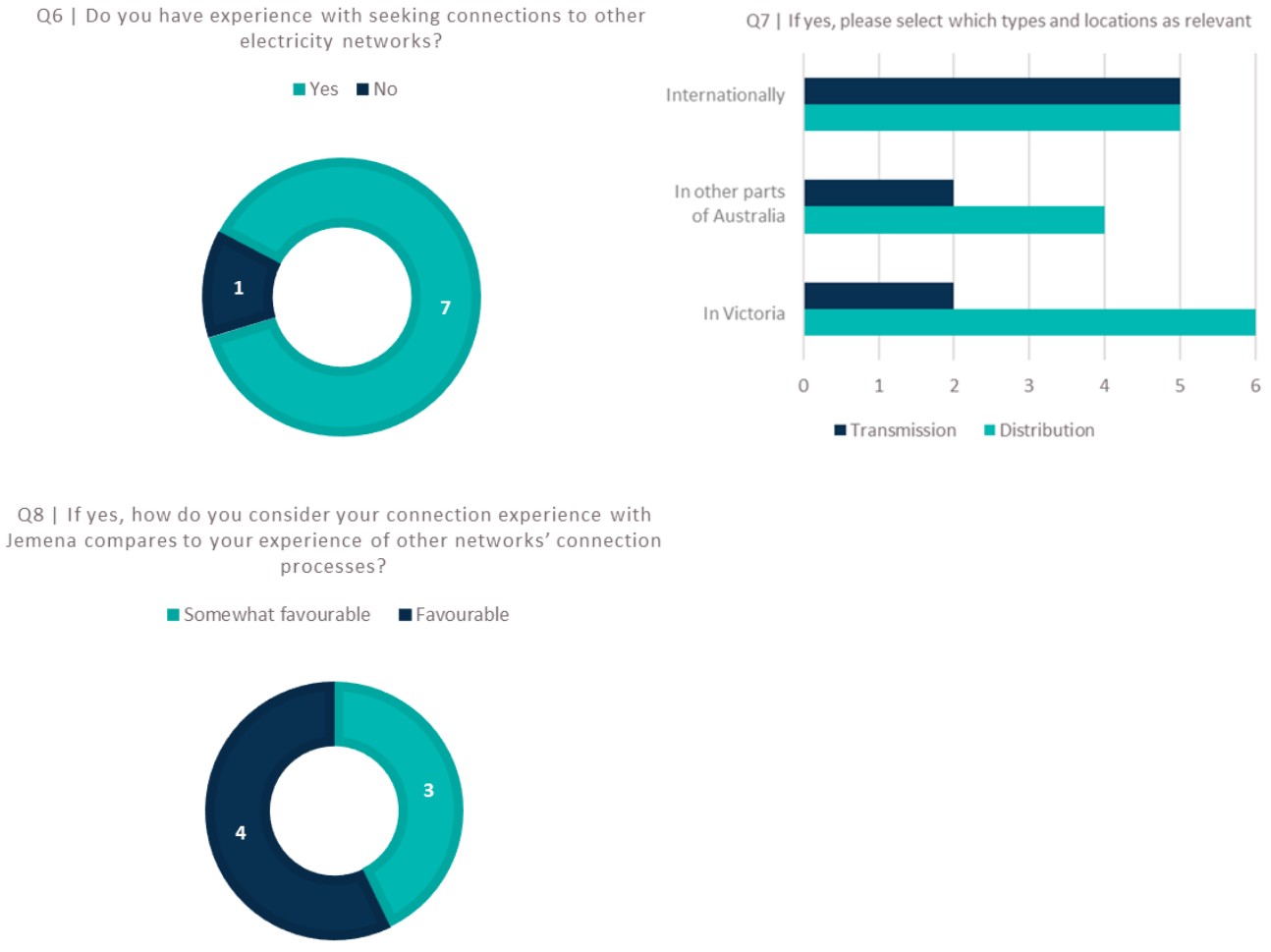
63 On 30 April 2024, Powercor Australia Limited (ACN 064 651 109) applied for a licence to transmit electricity under section 18 of the Electricity Industry Act 2000 (Vic).

64 See AusNet Transmission Group Pty Ltd - submission and attached Baringa Report, 14 June 2024.

65 See ESC, Licence and Record of Decision, 18 September 2024.

[redacted]

Figure 5.4: Survey responses relevant to network comparison by customers requesting major connections



Source: Surveying Major Connections, farrierswier, October 2024 (see Attachment E-01)

The rules permit JEN to invest to the levels requested by connecting customers

The NER are written to acknowledge the important role of the needs of customers' seeking major connection in determining how much DNSPs can spend and recover. The connection capex costs JEN incurs should rightly reflect its major connection customers' nominated needs rather than necessarily lowest possible costs.

Where customers are negotiating their connection terms and paying contributions, they are entitled to seek service levels that may not be consistent with lowest cost of connection (e.g. for reliability or timeliness preferences). Consistent with this, clause 5A.E.1(c)(4) provides that:

> *if augmentation of the distribution system is necessary in order to provide a connection service under a negotiated connection contract, connection charges for the service may, subject to*

any agreement to the contrary, include a reasonable capital contribution towards the cost of augmentation of the distribution system to the extent necessary to provide the service and to any further extent that a prudent service provider would consider necessary to provide efficiently for forecast load growth

5.3 JEN has accurately forecasted past major connections expenditure

JEN's foreseen major connection projects have proceeded as expected

Five foreseen major connection projects were included in JEN's 2020 original proposal and the AER's allowance. All five projects have proceeded and the current expected capex for each of these major connections relative to the allowances are set out in Table 5.5. It shows that the expected gross capex aligns closely with the allowances for most projects. However, [redacted] the Footscray Hospital are projected to exceed their allowances due to unforeseen complexities in the technical specification of the projects.

Table 5.5: Expected actual versus allowed gross capex for 2021–26 major connection projects included in JEN's original proposal

Major connection	Status	Gross capex allowance[66] ($ June 2021, millions)	Expected gross capex actuals[67] ($ June 2021, millions)
YarraBend development stages 2 and 5	Delivered one of the two feeders, the second to be delivered in the next 12-24 months once YarraBend needs the capacity.		
North East Link project for tunnel construction and operation	Construction phase supply was commissioned in May 2024. JEN is currently preparing the offer for operational supply, which will be delivered before July 2026.		
Moonee Valley Racecourse redevelopment	One feeder was commissioned end 2023. JEN is in discussions on developments that will trigger delivery of a second feeder.		
Footscray Hospital	Is in the final stages of delivery, commissioning is expected in 2024		
[redacted]	[redacted]		
Total			

66 Direct, escalated, excluding overheads

67 Direct, escalated, excluding overheads

JEN's forecasts of demand have been reasonably accurate and are getting better

When calculating customer contributions for major connections (as per its Connection Policy), JEN uses a year-by-year forecast of demand for each customer. In JEN's experience, forecasts provided by the customer are often overly optimistic and need to be revised to a slower growth trajectory.[redacted]

Figure 5.5: [redacted]

[redacted]

5.4 JEN manages the need for transmission network capacity

JEN prudently manages the consequences of major connections on its required transmission connection capacity

In planning for major connections, in addition to the impact within the JEN network, current and emerging limitations at JEN's transmission connection assets (e.g. terminal stations) supplying the data centre growth areas are considered for a low, base and high demand forecast scenario. The base demand forecast scenario is used by JEN in the annual Transmission Connection Planning Report (**TCPR**) which JEN prepares jointly with the other Victorian DNSP in accordance with our obligations under clause 19.3 of the ESC's EDCoP.

The TCPR, prepared annually by the Victorian DNSPs, provides a high-level indication of the expected balance between capacity and demand at each terminal station and the intervention actions that may be required over the ten-year forecast period. JEN's underlying terminal station demand forecasts are based on AEMO's step-change inputs and assumptions, and a base scenario for new major connection demand including data centre growth is used as an input into the TCPR.

JEN keeps network and market participants informed of these developments. To support this:

- Joint planning discussions with relevant Victorian DNSPs are undertaken periodically.

[68] Per s5.4.3 of the AER's *Connection charge guidelines for electricity customers Under Chapter 5A of the National Electricity Rules Final version 3.0*, April 2023, "A distribution network service provider's consumption and demand estimates should be based on an assessment of the connection applicant's particular circumstances. However, a distribution network service provider may also consider actual consumption and demand information from existing connection services with similar characteristics". Adopting this approach allows us to incorporate more accurate forecasts into future data centre connection offers.

- JEN will be initiating the RIT-T process for identified limitations at Keilor Terminal Station and Brooklyn Terminal Station, which will identify the best investment option to address the limitation. This will be consistent with the publication of the TCPR.
- Further RIT-Ts are expected to be initiated for South Morang Terminal Station and Thomastown Terminal Station as new data centre connection enquires progress with higher certainty within the connection process.

A lead time up to three years may be required for augmentation of a terminal station or around five years for the construction of a new terminal station, from the commencement of a RIT-T.

To address the long lead times, JEN is initiating the RIT-T process as soon as it becomes aware of a need for these.

JEN also engages with other Victorian planning bodies to ensure the currency of their capacity planning

JEN provides inputs into the planning activities of the following relevant Victorian authorities:

- The Victorian annual planning report (**VAPR**), prepared annually by AEMO, assesses the adequacy of the existing Victorian Declared Shared Network (**VDSN**) to meet network performance requirements and proposes solutions to those limitations in its Transmission Development Plan for Victoria.
- The Electricity Statement of Opportunities (**ESOO**), prepared annually by AEMO, highlights the opportunities for market participants, investors, governments and other jurisdictional bodies to invest in new assets and systems to maintain a reliable supply of electricity in the NEM. The forecast demand only included JEN's committed major connections and data centre projects at the time of its preparation early this year, which is now out of date due to the scale of subsequent unforeseen connection requests.
- In 2025, VicGrid will take on the Victoria Transmission Planning role and will develop a 25-year strategy plan for Victorian transmission and renewable energy zone development called the Victorian Transmission Plan (**VTP**).