



Jemena Gas Networks (NSW) Ltd

IT Investment Brief – Data Foundations and Governance

Non-Recurrent – Compliance




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Glossary

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| ACCC | Australian Competition and Consumer Commission |
| AEMC | Australian Energy Market Commission |
| AER | Australian Energy Regulator |
| Capex | Capital Expenditure |
| Current regulatory period | The period covering 1 Jul 2020 to 30 Jun 2025 |
| CYxx | Calendar Year xx |
| FIRB | Foreign Investment Review Board |
| GIS | Geographical Information Systems |
| HR | Human Resources |
| ICT | Information and Communications Technology |
| IoT | Internet of Things |
| Jemena | Refers to the parent company of Jemena Gas Network |
| JGN | Jemena Gas Network |
| NERR | National Energy Retail Rules |
| Next regulatory period | The period covering 1 Jul 2025 to 30 Jun 2030 |
| NPV | Net Present Value |
| Opex | Operating Expenditure |
| PI | Personal Information |
| RIN | Regulatory Information Notice |
| RYxx | Regulatory year covering the 12 months to 30 June of year 20xx for years in the Next Regulatory Period. For example, RY25 covers 1 July 2024 to 30 June 2025 |
| SaaS | Software as a Service |
| SAP | SAP accounting and ERP software |
| SCADA | Supervisory Control and Data Acquisition |
| SOI | Sensitive Operational Information |
| Totex | Total Expenditure |

Data Foundations and Governance

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| Objective | This initiative aims to uplift Jemena Gas Network’s (JGN’s) data foundations and governance capabilities, delivering maximum value from JGN’s data to ensure compliance with various industry-specific regulations and standards related to security of our data. | | |
| Non-recurrent ICT sub-categorisation | <input type="checkbox"/> Maintaining existing services, functionalities, capability, and/or market benefits | <input checked="" type="checkbox"/> Complying with new/altered regulatory obligations/requirements | <input type="checkbox"/> New or expanded ICT capability, functions, and services |
| Background | <p>Australia’s energy market transition is characterised by a rapid shift towards sustainable and renewable sources aiming for net-zero by 2050, resulting in a rapidly evolving landscape. This transformation is not just limited to the physical infrastructure but extends the need to extract value from JGN’s current and new data sources through sophisticated analytics to glean actionable insights amidst the complexities of this evolving landscape.</p> <p>Furthermore, the convergence of regulatory changes related to data management standards and expectations, has further amplified the importance of robust data governance. This will not only ensure compliance but is also a key element in ensuring data quality for the analytics that will enable JGN’s role in a decarbonised future.</p> <p>Data related legal and regulatory obligations</p> <p>Policy and regulatory changes are increasing gas distribution management standards and expectations. For instance, JGN needs to satisfy several legal and regulatory expectations regarding the data it manages including:</p> <ul style="list-style-type: none"> • New obligations and reporting requirements for facilities subject to the Safeguard Mechanism (including the JGN network) under the <i>National Greenhouse and Energy Reporting Act 2007</i> (Cth) and relevant regulations, increasing the need for accurate and auditable data on greenhouse gas emissions. • The Australian Energy Market Commission (AEMC) has officially incorporated emissions reduction considerations into the national energy rules, solidifying a significant regulatory shift towards net zero, increasing the need for accurate and auditable data on greenhouse gas emissions. •  • In December 2022, the Privacy Act 1988 (Cth) (Privacy Act) was amended to significantly increase the maximum penalties for serious privacy breaches and to provide the regulator with more extensive powers, furthermore on 16 February 2023, the Attorney General released the Privacy Act Review Report which contains extensive recommendations to reform and broadens the application of the Privacy Act, increasing the need to better govern and safeguard personal identifiable information (PII). • The Australian Energy Regulator (AER) employs Regulatory Information Notices (RINs) to gather accurate data for regulatory decisions. If the RIN information is incorrect, it could lead to non-compliance with regulatory requirements. The AER relies on accurate data to make informed decisions increasing the need for accurate and auditable data. <p>We also anticipate other changes impacting the way in which we govern our data such as:</p> <ul style="list-style-type: none"> • Security of critical infrastructure regulatory framework that will require the Group to understand where business critical data is stored and how this is secured, increasing the need to uplift the data governance capability. <p>Good industry practice</p> <p>Utilities in Australia and around the world are investing in improving their data-related capabilities to take advantage of data collected and to overcome increasingly complex challenges. Recent examples include:</p> | | |

- AGIG's \$8 million data architecture, reporting and governance program¹ which aims to improve efficiency and improve service outcomes for customers and deliver benefits to regulatory reporting through a reduction in potential errors.
- Ausgrid's \$30 million data and analytics program with the objectives to provide data in the right channels and format to empower customers, enhance internal capabilities to meet the changing needs of the community and undertake scenario-based optimisation to improve operational efficiency and safety outcomes.²
- AusNet's \$40 million³ information management program to extend the information management platform to enable access to timely, accurate data (across all core systems, assets and processes) to enable more advance data analytics and reporting to support better decision making across the gas business.
- ATCO Gas' data and analytics program⁴ which enables opportunities to introduce capability to increase productivity, improve forecasting accuracy, understanding of asset performance and proactive maintenance and predict gas leakage through a combination of internal systems and external satellite data.

Ausgrid's and AusNet's programs have been approved by the AER. ATCO Gas's program is currently being considered by the Economic Regulation Authority of Western Australia.

Data foundation and governance defined

We define 'data foundation' as data sourcing, integration, ingestion, and processing of data from disparate systems, enabling the seamless integration of core data. Combining data foundations with robust data governance toolsets yields a comprehensive solution that addresses critical aspects of data management. Data foundations serves as the backbone of good data management, providing a centralised repository for data storage, integration, and management; It ensures data quality, consistency, and accessibility, laying a solid groundwork for effective data utilisation to extract value from bringing multiple data sources together through sophisticated analytics.

Integrating data governance toolsets with these data foundations enhances capabilities by enforcing data policies, standards and controls. This ensures regulatory compliance, data security, and privacy protection while promoting transparency and accountability in data handling processes.

Together, this integrated approach fosters a data-driven culture, ensures compliance with relevant regulatory requirements, enables informed decision-making and maximises the value derived from JGN's data assets.

The current approach to managing our data

Over the 2020-25 period JGN piloted a light-weight Enterprise Asset Management (EAM) analytics platform which provides information on JGN's existing assets including return on investment and the complex relationships between asset age, characteristics, and maintenance activities. The EAM platform was not built to scale as it was a proof of concept and is limited in terms of its data foundation capabilities including data storage, integration and data management.

JGN currently does not have a dedicated toolset for data governance and currently manages this function in various distributed systems and spreadsheets, resulting in reactive measures when data quality issues are encountered instead of proactively managing and governing JGN data as an asset.

The EAM pilot underscores the necessity for data foundations that is tailored to our specific needs and sources data in near real-time with integrations to our various systems such as our GIS and core ERP. Combining this with data governance toolsets will deliver a data catalogue allowing more effective data discovery, through a single integrated data dictionary view and associated metadata aligned to consistent data standards and definitions across the business delivering maximum value from JGN's data.

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| Customer Importance | It is critical for customers that JGN invests in data foundations and governance because it enables JGN to provide better services and solutions that meet customers' needs and expectations. This new data |
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¹ Total program costs across all of AGIG's businesses.

² Ausgrid 2023, Attachment 5.9.f Data & analytics program. Available [here](#).

³ Total program costs across all AusNet businesses. \$16.06 million allocated to AusNet's electricity business.

⁴ The total cost of the program is not public.

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| | <p>capability will better deliver data that is accurate, consistent, secure, accessible, and aligned with the customer needs and regulatory obligations.</p> <p>By delivering high quality, managed data sources we can support customers by delivering insights aimed at:</p> <ul style="list-style-type: none"> • Reduced costs (and in turn reduced prices) from an enhanced ability to optimise operations, asset management strategies in the context of a highly uncertain and dynamic operating environment. • A lower cost pathway to net-zero, which may not be achieved without supporting data and analytics to improve emissions measurement, reporting as well as identification and evaluation of potential emissions reduction activities. • Lower cost and more accurate regulatory reporting to the regulatory and market participants (consistent with the goals of the recent Renewable Gas Reforms). • Improved evaluation of connection applications resulting allowing us to better balance affordability, fairness and access/choice to gas. • Improved security over the Personal Identifiable Information (PII) collected, stored, and used by the JGN network, in line with the Privacy Act <p>Investing in data capability is critical for JGN to source and manage its data more effectively, leading to more accurate data to deliver enhanced customer services, improved decision-making, and swift response to the changing markets and regulatory environment.</p> |
| <p>Key Considerations</p> | <p>Our strategic data foundations and governance objective is an approach that emphasises source ingestion, automation, prioritisation and governance of our data.</p> <p>We have considered various strategic factors:</p> <ul style="list-style-type: none"> • It is necessary to act as soon as possible and within the 2025-30 period to enable JGN to respond promptly to the changing market and regulatory environment and avoid non-compliance to regulatory obligations as set out in the Background section. • Through the investment proposed in this initiative brief, JGN will be positioned to build out the data foundation and governance capability that will uplift our data-related capabilities as well as support a broad range of current and future business needs that are dependent on high quality data. • It is appropriate to invest in this initiative in the context of the current market. Should the initiative proceed, we anticipate broad, local availability of necessary labour and expertise in the technology sector to implement the capabilities in JGN’s business and network, as the market in Australia for implementing these capabilities is mature. <p>Key dependency for Network Management Advanced Analytics</p> <p>It will be important to consider impacts on other proposed initiatives that are dependent on this initiative if insufficient funding is approved. For example, the proposed initiative to deliver a set of integrated analytics platforms for JGN⁵ requires data from various sources (via the data foundation platform outlined in this brief) and for that data be of a high quality (via data governance). For instance, it will provide the platform to combine data obtained from direct emissions measurement together with customer and asset data to develop improved asset management strategies and operational practices. If these are not in place, the ability to make complex asset investment and optimisation decisions via the advanced analytics platforms will be impacted.</p> <p>Specifically, the scope of this brief is critical to advanced analytics as outlined below:</p> <ul style="list-style-type: none"> • Establish and maintain a thorough inventory of organisational data assets through a dedicated data sourcing and foundation platform that can ingest, process, store, and enable an analysis of data from multiple internal and external sources, with various velocities. This will deliver increased availability and access to data needed to make complex asset investment and optimisation decisions. • Implement consistent data standards to manage the quality, integrity, and transparency of the data that is used for analytics that will drive network decisions. |
| <p>Options</p> | <p>JGN has considered three alternatives to deliver the capability articulated above:</p> <p>(1) Do nothing</p> |

⁵ Refer to document “JGN - RIN - 4.3.5 - ICT Investment Brief - Network Management Advanced Analytics”

- (2) Invest in uplifting EAM data foundation capabilities and increase resources dedicated to the effective management of data.
- (3) Investment in establishing data foundation and data governance platform build

Option 1: Do nothing

Description

This option requires that no action be taken and would result in no enhancement to the way in which we manage our data; there would be no changes to data-related governance processes, toolsets or systems.

Benefits

By doing nothing, JGN would avoid incurring the investment costs associated with improving data governance.

Risks

In the absence of necessary investment to support the uplift of JGN's data foundation and governance capability, there may be the following risks:

- Compliance - Failure to invest in this initiative will impact JGN's ability to maintain compliance with its regulatory obligations as set out in the background section. This risk will further exacerbate as reforms continue across the regulatory landscape.
- Customer privacy - It also has the potential to result in serious harm to our customers as a result of not proactively managing our data, resulting in a potential data breach that could lead to identity fraud and personal safety risks. Such incidents can also severely damage JGN's reputation, leading to customer trust erosion.
- Service delivery - The management of data is currently distributed across the business. This means there is a lack of centralised control over data and quality standards resulting in inconsistencies, discrepancies, and variations in data quality. As a result of the distributed management of data, more extensive efforts and resources are being required to manage and correct data inaccuracies, diverting valuable resources away from customer-centric and business critical initiatives such as to rapidly respond to the changes in how customers use energy, customers' attitude towards gas, and the impact of net-zero commitments on our customer. JGN's focus on delivering exceptional customer experiences and maximising customer value may be compromised as a result.
- Customer experience - Inaccurate data, flowing through various processes, can also have a detrimental impact on customer experiences. Challenges in providing accurate information to customers when providing services including incorrect billing information, and erroneous service preferences lead to customer dissatisfaction. Furthermore, inaccurate life support information or outdated contact details can lead to safety and emergency issues that erode their trust in JGN's capabilities.

Summary

This option is not recommended as we do not consider it reflects good industry practice given the risks outlined above. Furthermore, it does not provide the lowest sustainable costs.

Option 2: Invest in uplifting EAM data foundation capabilities and increase resources dedicated to the effective management of data.

Description

We would leverage JGN's current SAP application components to address some of the current EAM platform limitations as outlined in the Background section above. This will not address data storage, ingestion and management requirements for distributed data sets outside of SAP's data stores.

An increase in the headcount of resources that are dedicated to the effective management of data and data quality process improvements will be required under this option to maintain JGN's ability to maintain compliance with its regulatory obligations as set out in the background section. We estimate that we would require up to 5 dedicated data stewards one for each data domain containing JGN data including Asset, Customer, Finance, HR, and Operations.

Benefits

Key benefits of this option include:

- Quicker implementation, as there is a simpler overall architecture and fewer dependencies on other systems.
- JGN can potentially leverage in-house skills developed around SAP for the development of the data foundation platform.

Risks

By focussing investment into our SAP application components to address some of the current EAM platform limitations to source data and continuing to govern the data by relying solely on people introduces some risks and challenges including:

- Limited data scope - There would be less flexibility on the hosting and management of the data by basing the solution on SAP application components as this will not address the requirements to utilise the data sets outside of the SAP data stores and potentially locks JGN in a proprietary software suite.
- [REDACTED]
- Human error - Relying solely on manual efforts from data specialists to manage data will constrain JGN's ability to maintain consistent governance protocols without the support of data governance toolsets. For instance, the manual handling of data quality issues management and access permissions controls can be prone to errors, leading to potentially flawed asset investment and optimisation decisions, data breaches, or unauthorised access incidents that automated data governance toolsets could better mitigate.
- Knowledge silos - Depending solely on individuals for data management will not easily break down the current knowledge silos and operational gaps, particularly when there is staff turnover. The loss of institutional knowledge and expertise can impede the continuity of effective data governance practices.
- Time intensive - Compliance with regulatory requirements becomes resource-intensive in the absence of a systematic approach. Demonstrating compliance and conducting audits manually may require considerable time and effort, diverting resources from other critical business functions.
- Poor decision-making ability - The insights obtained from our data for decision making may fall short of their potential due to poor data management practices resulting in poor data quality.

Costs

The estimated costs for this option are outlined in the table below, based on a market scan of salaries for data specialists and on discussions with technology partners in June 2023.

| \$2023 | RY26 | RY27 | RY28 | RY29 | RY30 |
|---------------------|------|------------|------------|------------|------------|
| Total capex | | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| Non-recurrent opex | | [REDACTED] | | | |
| Recurrent-step opex | | | [REDACTED] | [REDACTED] | [REDACTED] |
| Total opex | | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| Totex | | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |

This is an Enterprise-wide initiative; Costs have been allocated in accordance with Jemena Group Cost Allocation Methodology.

The forecast non-recurrent capex is [REDACTED], non-recurrent opex [REDACTED], recurrent opex [REDACTED] and the total expenditure for this solution over the period is [REDACTED].

Summary

This option is not recommended as we do not consider it reflects good industry practice given the risks outlined above. Furthermore, it does not provide the lowest sustainable cost.

Option 3: Establish a Data Foundation and contemporary Data Governance solution.**Description**

JGN will implement a suitable data foundation platform coupled with contemporary and effective data governance toolsets to uplift its current data management capabilities including data sourcing, ingestion, and processing of data from disparate systems.

By combining a data foundation platform with robust data governance toolsets, it will deliver a symbiotic relationship where the data foundation layer will provide the necessary infrastructure and data sources for robust and efficient decision-making processes, and the data governance toolsets will help maintain a data inventory for ensuring data quality and integrity.

This option will see us investing in a foundation platform to be established for data ingestion and processing, enabling the seamless integration of core data (such as SAP, GIS, etc.), sensor data, coming from our SCADA platforms, IoT ecosystems, and vendor proprietary platforms and external data. It will also require us to adopt a contemporary data governance toolset and design these tools to work as a unified data platform.

There are several purpose-built data warehousing and governance tools available in the market, providing a wide range of critical functions and capabilities that will help JGN implement and support the practice of data ingestion and quality assurance that is aligned with the JGN strategy to increase the use of technology and digitisation.

JGN has performed an initial market scan covering several market leaders to assess the functional capabilities and potential pricing against our requirements.

Benefits

Key benefits of this option include:

- Centralised repository of all core data - Combining a data foundation platform with robust data governance toolsets yields a comprehensive solution that addresses critical aspects of data management. The data foundation platform serves as the backbone, providing a centralised repository for data ingestion, storage, integration, and management. It ensures data quality, consistency, and accessibility, laying a solid groundwork for effective data utilisation to extract value from bringing multiple data sources together through sophisticated analytics
- Embedded data controls - Integrating data governance toolsets with the data foundation platform enhances the platform's capabilities by enforcing data policies, standards and controls. This ensures regulatory compliance, data security, and privacy protection while promoting transparency and accountability in data handling processes.
- Supporting customers - Trusted data quality and good data management enabled by having a data foundation and governance capabilities, will support JGN in being better prepared and proactive in supporting and working with customers on the Energy Transition and detailing available energy options for them in the future Forecasting and Decision making (i.e. Improved Asset replacement / Mains refurbishment, etc.).
- Improved decision making - Having good data foundation and governance capabilities will minimise the time spent in finding data, cleansing data and enhancing data so that more time can be spent extracting value from our data and making decisions based on data insights. This option will help to foster a data-driven culture that maximises the value derived from JGN's data assets through informed decision-making on high quality data.
- Data traceability - These capabilities also allow for better data discovery and up-to-date metadata informing users on the intended use, data security, data definitions, and more.

Risks

There are some key risks associated with this option as listed below:

- Reliance on external vendors or partners for certain aspects may not deliver outcomes as expected. This may result in delays in the initiative's implementation and benefits being realised, and unexpected costs. Project governance will be implemented throughout implementation to mitigate this risk.
- Sourcing the vast amounts of data accumulated by JGN, may present a challenge. Failing to prioritise and focus on the most important data sources can lead to inefficient resource allocation and suboptimal results. A data strategy will underpin implementation to mitigate this risk.

- Modern data governance toolsets use a federated approach where business stakeholders are primarily responsible for the use of the tool. Resistance to change and lack of knowledge may lead to low user adoption. If employees do not fully embrace the new tools and processes, it could limit the effectiveness of the required data management. Change management and training will be critical in mitigating this risk.

Costs

| \$2023 | RY26 | RY27 | RY28 | RY29 | RY30 |
|---------------------|------|------------|------------|------------|------------|
| Total capex | | | | | |
| Non-recurrent opex | | ██████████ | ██████████ | ██████████ | ██████████ |
| Recurrent-step opex | | | ██████████ | ██████████ | ██████████ |
| Total opex | | ██████████ | ██████████ | ██████████ | ██████████ |
| Totex | | ██████████ | ██████████ | ██████████ | ██████████ |

The forecast non-recurrent opex solution over the period is ██████████

Summary

This option is recommended as we consider it reflects good industry practice given the benefits and risks outlined above. Furthermore, it provides the lowest sustainable cost.

Options Summary

The table below summarises the quantitative and qualitative differences between the analysed options.

| | Capex (\$2023) | Project opex (\$2023) | Ongoing opex (\$2023) | NPV | Residual Risk |
|----------|----------------|-----------------------|-----------------------|----------------|---------------|
| Option 1 | Not applicable | Not applicable | Not applicable | Not applicable | High |
| Option 2 | ██████████ | ██████████ | ██████████ | ██████████ | Moderate |
| Option 3 | █ | ██████████ | ██████████ | ██████████ | Low |

What We Are Recommending

JGN proposes to proceed with option 3 as this option is the lowest cost approach to reducing risks related to non-compliance with data related regulatory obligations, such as regulatory reporting and accurate information provision. It will ensure that JGN has access to high-quality data consistent with the expectations of governments, regulators, customers and stakeholders. JGN also considers that it best reflects good industry practice and provides the lowest sustainable cost.

It will also enable other benefits related to improving process efficiency and decision-making.

While option 1 is a lower cost outcome it does not address the risks around non-compliance with regulatory obligations. Nor does it strengthen JGN’s decision-making processes.

Option 2 is not recommended as this option is higher cost, provides less flexibility, has limited scope and locks JGN in a proprietary software suite that may not deliver future capabilities required in a changing external environment.

Dependencies on other Investment Briefs

Data foundation and data governance are key dependencies for the following Investment Briefs for the 2025 - 2030 period;

- Network Management Advanced Analytics
- Asset Invest Planning
- Works Management Extend Phase
- Enhancement to Geospatial Systems

Relationship to ICT Capital Forecast

The supporting modelling for this investment brief is contained in following investment framework model: **JGN - RIN - 4.3.5 - ICT Investment Brief – Data Foundations and Governance – Costs and Benefits Analysis Model**