Jemena Electricity Networks (Vic) Ltd

IT Investment Brief – GIS Lifecycle Upgrade

Non-recurrent – Maintain Services

Jemena
bringing energy to life

Page intentionally blank

Glossary

Capex	Capital Expenditure
Current regulatory period	The period covering 1 July 2021 to 30 June 2026
ICT	Information and Communications Technology
Jemena	Refers to the parent company of Jemena Electricity Network
JEN	Jemena Electricity Network
Next regulatory period	The period covering 1 July 2026 to 30 June 2031
NPV	Net Present Value
Opex	Operating Expenditure
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
Totex	Total Expenditure

GIS Lifecycle Upgrade

Objective	This initiative aims to undertake a major upgrade of Jemena Electricity Networks Vic Ltd. (JEN)'s Geographic Information System (GIS) to ensure ongoing system availability and reliability.		
Non-recurrent ICT sub-categorisation	☒ Maintaining existing services, functionalities, capability, and/or market benefits	☐ Complying with new/altered regulatory obligations/requirements	☐ New or expanded ICT capability, functions, and services
Background	JEN GIS [redacted] is a business-critical solution providing Geospatial data to internal and external systems for JEN. The GIS provides a holistic view of the distribution system and, with improving data quality through field-based data verification, it means that design, construction and maintenance works can be carried out more quickly and more safely. [redacted] **Impacted operations and systems** A large number of Jemena applications and teams (e.g. control room, field crews) rely on JEN GIS for operational work. [redacted] Key capabilities supported by this ecosystem include, but are not limited to vegetation management, public lighting reporting, asset locations and network information. The reduction in vendor support for the current implementation poses a significant risk to the organisation. This project seeks to minimise risk by upgrading the deployed version up to the best available, fully supported vendor version. [redacted]		
Customer Importance	An extensive customer engagement program was implemented with JEN residential customers, small and medium businesses, large commercial and industrial customers, stakeholders, and energy experts to shape the JEN 2026-31 Draft Plan. Key customer priorities on how we should prepare for a more sustainable energy future while meeting customer and community needs today includes affordability, a sustainable future, fairness and education. They also want: • Resilience and reliability - Customers want a reliable and resilient network that can withstand and recover from the impacts of more extreme weather events.		

	• Digitisation and automation - Customers want JEN to digitise and automate the grid to make it a smarter and more efficient network. • Accessible communication - Customers value efficient and accessible communication and want to easily access information on our service and the customer service team easily. Customers are demanding better information on works that they initiate, or which impact them. A large portion of the information that underpins this requirement is derived from the GIS system that contains information pertaining to outages, network planning, design through to build phases and 'Before You Dig Australia' services. To maintain current service levels, the GIS – that stores, analyses and reports on JEN's asset and geospatial information – must have a high level of integrity and availability that results from ongoing GIS lifecycle management. This is critical to enabling customer experiences as well as continuing to deliver a safe, reliable and effective distribution service.
Key Considerations	**System risk assessment** JEN's IT applications are subject to regular review to assess whether they remain fit for purpose as assessed against a range of criteria including performance, security, cost effectiveness, serviceability, end-of-life timeframes and overall risk. We also make decisions to replace these assets by considering the optimum time for upgrade or replacement based on historical and serviceability of the components and interdependent systems and processes. Based on this assessment, it has been deemed that the GIS lifecycle upgrade is required during the next period. **How we estimated costs** When determining costs and approach proposed for the GIS lifecycle upgrade, past experience has been applied, taking into consideration impacted systems. Costs cover the upgrade of core [redacted] and associated database, warehouse, testing and documentation. The impact on end users for this upgrade has been assessed as minor as it will be providing a moderately enhanced interface and user experience compared to the existing version. The internal GIS development team will be made available, augmented as required by third party support.
Options	JEN has considered three alternatives: (1) Do nothing – maintain current version and manage the risk – not recommended (2) Rearchitecting and replacement – not recommended (3) GIS lifecycle upgrade - recommended **Option 1: Do nothing – maintain current version and manage the risk** **Description** Systems would not be updated or refreshed. This will result in a significant risk to JEN's ability to operate its network safely, reliably and efficiently. JEN could attempt to put in place manual mitigations such as: • Isolation of systems to contain unsupported products which might pose a cyber-security challenge. • Minimise use of the systems and switch to alternative options and paper-based approaches to minimise the need to engage vendor support. • Develop additional custom functionality outside the applications to achieve the required outcomes. These all require significant manual resource and associated cost to achieve without a guarantee that our efforts would be successful, whilst also introducing business inefficiencies. **Benefits** By maintaining the current version, JEN would avoid incurring the costs and many of the risks outlined at Option 2 and 3 below.

Risks

The JEN GIS is the single source of truth for the network model and system performance and availability of that model is fundamental to the effectiveness and capabilities of downstream systems [redacted]

Whilst GE will provide reduced support, over time, as the GIS becomes more and more out of date compared with current versions, it will become more and more difficult to address system performance and availability issues.

Furthermore, an outdated GIS version will lack new features, functionalities, or integrations that streamline operations and enhance productivity. This inefficiency can result in wasted time and resources.

As technology evolves, an outdated GIS version will become incompatible with newer software, data formats, or hardware platforms, limiting interoperability and hinder collaboration with external stakeholders.

Unsupported GIS software versions will lack crucial security patches and updates, making them vulnerable to cyber threats and data breaches, compromising the confidentiality, integrity, and availability of sensitive spatial information.

Summary

This option 1 (Do nothing) is not recommended as we do not consider it reflects good industry practice given the risks outlined above.

Option 2: Re-architecting and replacement

Description

A market review would be conducted to identify alternate technology solutions to replace existing systems, potentially resulting in the use of different applications and IT architecture to those currently employed. A competitive tender process would occur to secure a fit for purpose technology followed by a significant IT program of work to integrate this new technology into Jemena's IT architecture and operations. It is Jemena's observations that replacing whole systems within a new eco-system is considerably more costly than upgrading and maintaining systems, and therefore, this option is unlikely to be viable.

Benefits

The key benefit of this approach is that the resultant system would have full vendor support and all the functionality that comes with that including security patches, bug fixes, documentation updates and corrections.

Risks

Moving to a different suite of applications would require a materially larger investment, significant business process changes to implement and an overall increase in risk to operations with a transition. This approach would effectively require overhauling the current asset and GIS systems we have in place, including changes to integrated systems and processes.

Costs

A market comparison was conducted in 2017 to determine the most appropriate GIS solution and architecture for Jemena's gas distribution business (JGN). The cost of implementing a new GIS system for gas distribution was [redacted] (this excluded business process redevelopment, change management and training costs). Given the JEN GIS has more complex integrations with [redacted]

[redacted] is more customised and has more object types and attributes, we expect the cost for JEN would be significantly more than this.

Summary

This option is considered infeasible given the inherent costs and risks and is therefore not pursued as a viable option for assessment.

Option 3: GIS lifecycle upgrade - recommended

Description

The objective of this option is to mitigate against the disruption to business operations with potential to affect distribution services and associated impacts on customers by proactively managing the lifecycle risks associated with JEN's GIS.

The primary objectives of this JEN GIS Lifecycle Upgrade project are:

[redacted]

Benefits

This upgrade approach would result in us continuing to use the same software platform [redacted] as we currently have in place and maintaining a broadly similar IT architecture which leverages our inherent expertise and capabilities with existing systems.

As such, it reduces implementation risk given the upgrade to existing systems does not involve the installation of new technologies and requires minimal business process change.

Upgrading to the new version ensures Jemena's GIS remains current, reliable, secure and fit for purpose.

Risks

The key risk associated with upgrading to a latest version is internal staff availability however we mitigate this risk by planning ahead to ensure relevant subject matter experts and developers are available. Where this isn't possible, we will leverage external vendor support.

Costs

This option will incur non-recurrent capex costs of $3,556,000 over the 2026-31 period to upgrade JEN's GIS.

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.

$2024	Capex	Opex	Totex	NPV	Residual Risk
Option 1	Not applicable	Not applicable	Not applicable	Not applicable	Moderate
Option 2	Est $7,000,000+	Not applicable	Est $7,000,000+	Not applicable	High
Option 3	$3,556,000	Not applicable	$3,556,000	Not applicable	Low

What We Are Recommending	JEN proposes to proceed with Option 3: GIS Lifecycle Upgrade JEN considers that it best reflects good industry practice and provides the most efficient cost.
Dependencies on other Investment Briefs	Note applicable.
Relationship to ICT Capital Forecast	The supporting modelling for this investment brief is contained in the following model**: JEN – IT Investment Brief – GIS Lifecycle Upgrade – Costs and Benefits Analysis Model**