

**ID01 Geographic Information Systems
Consolidation & Replacement
Preliminary Gate 2 Business Case
2020-25
January 2019**



Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Document Version

Version:	3.1
Date:	January 2019

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Contents

1 EXECUTIVE SUMMARY	5
1.1. BACKGROUND & BUSINESS PROBLEM	5
1.2. INVESTMENT OVERVIEW	6
1.3. OPTIONS ANALYSIS	6
1.4. FINANCIAL SUMMARY	6
1.4.1 <i>Energex Option Comparison</i>	6
1.4.2 <i>Ergon Energy Option Comparison</i>	6
1.4.3 <i>Energex Expenditure Summary (Option 1 – Preferred)</i>	7
1.4.4 <i>Ergon Energy Expenditure Summary (Option 1 – Preferred)</i>	7
1.5. INVESTMENT BENEFITS	7
1.6. INVESTMENT RISKS	7
1.7. CUSTOMER FOCUS	8
2. INVESTMENT OVERVIEW	9
2.1. BACKGROUND AND HISTORY	9
2.2. BUSINESS PROBLEM AND RATIONALE	10
2.3. INVESTMENT OBJECTIVES	10
3. STRATEGIC ALIGNMENT	12
3.1. ALIGNMENT TO ENERGY QUEENSLAND STRATEGIC OBJECTIVES	12
3.2. ALIGNMENT WITH NATIONAL ELECTRICITY RULES (NER)	13
3.3. ALIGNMENT WITH THE DIGITAL APPLICATION ASSET MANAGEMENT GUIDELINES	15
3.4. REGULATORY IMPLICATIONS	16
4. INVESTMENT SCOPE	17
4.1. FUNCTIONAL SCOPE	17
4.2. SOLUTION OVERVIEW	19
4.2.1 <i>Spatial Network Model Information</i>	19
4.2.2 <i>Current State (2018)</i>	21
4.2.3 <i>Target State (end of the proposed investment)</i>	23
4.3. ASSUMPTIONS	24
4.4. DEPENDENCIES	24
5. OPTIONS ANALYSIS	27
5.1. OPTION 1 – PROCEED WITH GIS CONSOLIDATION AND REPLACEMENT (PREFERRED)	27
5.2. OPTION 2 – INDEPENDENT ENERGEX AND ERGON ENERGY GIS REPLACEMENTS	27
5.3. OPTION 3 – DO MINIMAL	27
5.4. OPTION COMPARISON	28
6. PREFERRED OPTION	31
6.1. DELIVERY TIMELINE AND APPROACH	31
7. INVESTMENT BENEFITS OVERVIEW	32
7.1. FINANCIAL AND OTHER BENEFITS	32
8. FINANCIAL ANALYSIS	34
8.1. SCOPE OF COSTS	34
8.2. COST ASSUMPTIONS	35
8.3. FINANCIAL SUMMARY	36
8.3.1 <i>Energex Option Comparison</i>	36
8.3.2 <i>Ergon Energy Option Comparison</i>	36
8.3.3 <i>Energex Expenditure Summary (Option 1 – Preferred)</i>	36
8.3.4 <i>Ergon Energy Expenditure Summary (Option 1 – Preferred)</i>	36
8.4. NPV CALCULATION PARAMETERS	36
9. PROGRAM DELIVERY	37
9.1. PROGRAM GOVERNANCE & DELIVERY	37
9.2. STAKEHOLDER MANAGEMENT	39

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



9.2.1	Key Internal Stakeholders	39
9.2.2	Key External Stakeholders.....	39
10.	RISK ASSESSMENT	40
10.1.	ORGANISATIONAL RISK ASSESSMENT.....	40
10.2.	PRELIMINARY IMPLEMENTATION RISK ASSESSMENT	43
11.	CHANGE IMPACTS	44
11.1.	INVESTMENT SYSTEM IMPACTS	44
11.2.	PEOPLE & PROCESS IMPACTS	44
APPENDIX A – ASSET AND NETWORK INFORMATION MANAGEMENT BETWEEN EAM AND GIS		46
APPENDIX B – VALUE STREAM ANALYSIS.....		47
APPENDIX C – GLOSSARY		51

1 EXECUTIVE SUMMARY

1.1. Background & Business Problem

In both Energex and Ergon Energy, the Geographic Information System (GIS) is a key element of the asset management process. Between the Enterprise Asset Management solution (EAM) and the GIS, the core data for each asset within the physical and electrical network models are mastered, while supporting the major asset lifecycle processes of asset design, build and commissioning.

Energex's GIS solution is primarily based on a custom-built Network Facilities Management (NFM) system, supplemented with Esri spatial tools. NFM and Esri together master Energex' electricity and communications network models, asset ratings and the spatial network layout. NFM was developed and deployed in the 1990s and is highly customised for Energex's historical operating practices. It is not adaptable to business change and it relies on in-house skills and capability which are not sustainable in the medium to long term.

Ergon Energy uses the General Electric (GE) Smallworld GIS product together with Esri tools for spatial network modelling, visualisation and analytics. Smallworld was deployed into Ergon Energy in 2003 with a subsequent update to the "Version 4 Electric Office" product. GE has now shifted its development focus to the newer "Version 5" Smallworld product, which uses more modern and industry standard technologies based on Java. Transition to version 5 therefore represents a significant step for this mission critical business system.

Since the consolidation of Energex and Ergon Energy into Energy Queensland, the organisation has focussed on achieving efficiencies and best practice in asset and works management through state-wide business process alignment and interoperability. A first step in this transition has been the integration of the companies' asset management and operations teams under state-wide leadership. This is now being followed by implementation of common asset and works management processes and core systems through the "ERP EAM program".

The ERP EAM program will replace the companies' existing systems and processes for asset and works management, as well as corporate processes including finance, HR, payroll and procurement.

Through the ERP EAM program, Energy Queensland will operate on a single state-wide asset and works management system, with the companies' GISs mastering the spatial network model.

The electricity network environment continues to change rapidly. The growth in distributed energy resources (DER), energy storage, fluctuations in network demand, smart devices and new technologies, require agility in the modelling of the electricity and communications networks managed by Energex and Ergon Energy.

The GIS is the source-of-truth for the companies' "as designed" electricity network models. The GIS solutions and business processes must therefore be robust and resilient to change, in order to ensure the accuracy of this network information which underpins the companies' safe operation and control of the networks through the Distribution Management System (DMS).

Continued parallel operation of two aging GIS solutions through the coming regulatory control period represents a material risk to Energex and Ergon Energy's ability to maintain service delivery performance levels as the network becomes more complex. It would also neglect the opportunity for applying consistent work practices through state-wide business process alignment that will reduce safety related risks when employees work across both DNSPs.

The community's requirements are also growing for access to accurate and timely spatial data regarding the companies' assets, together with the necessity for strong security controls on information related to critical infrastructure. This "open data" provision of network information to interested stakeholders (including councils, developers, businesses and other customers) will support improved industry communication and community decision making.

1.2. Investment Overview

This investment proposal ensures the ongoing supportability, sustainability and security of core business processes which rely on the timely and accurate availability of network model and spatial information.

The scope proposes to consolidate and replace the companies' legacy GIS systems including the various disparate supplementary systems, databases and environments used by each business.

Through this business case proposal, the combined Energex and Ergon Energy workforce will transition to use of the unified GIS solution and state-wide business processes, enabling the 'interchange' of resources between the Energex and Ergon Energy network regions for optimal efficiency and safety.

1.3. Options Analysis

Three options are considered in this business case:

- Option 1 – Proceed with GIS consolidation and replacement (preferred)
- Option 2 – Independent Energex and Ergon Energy GIS replacements
- Option 3 – Do minimal

"Option 1 - Proceed with GIS consolidation and replacement" is the preferred option, as it ensures sustainability, supportability and security of the companies' core network model and spatial management practices, with the opportunity for state-wide process alignment and efficiency.

"Option 2 - Independent Energex and Ergon Energy GIS replacements" is viable, but requires duplication of costs across the two distributors, with less opportunity for process improvement.

"Option 3 – Do minimal" defers renewal of the companies' legacy GIS solutions. It therefore represents a material risk to the companies' continued delivery of their network operations and service delivery obligations.

1.4. Financial Summary¹

1.4.1 Energex Option Comparison



1.4.2 Ergon Energy Option Comparison



¹ Bracketed figures indicate negative values.

1.4.3 Energex Expenditure Summary (Option 1 – Preferred)



1.4.4 Ergon Energy Expenditure Summary (Option 1 – Preferred)



1.5. Investment Benefits

The preferred option delivers benefits including:

- Sustainment of the companies' core spatial network model management business processes
- Agility to meet the rapidly changing requirements for modelling and configuration of new electricity and communications network technologies
- Ensures that the companies continue to meet growing community "open data" expectations for access to accurate and timely spatial data regarding the companies' assets
- Incorporates the strong security controls required for information related to critical infrastructure and privacy of customer data

The investment is also a critical enabler of Energy Queensland's planned productivity improvements which result in a forecast 10% reduction in indirect costs and 3% improvement in program of work labour costs.

The consolidation and replacement of GIS capability supports this productivity improvement through benefits including:

- Simplified workflows
- Focus on accurate data capture at source, with reduced need for rework
- Reduced network model duplication and synchronisation
- Improved ability to overlay non-network information for analysis efficiency
- State-wide aggregation of asset management workload
- Continuous improvement in asset management processes with full rollout of ISO55000 practices and with state-wide insights and network intelligence

1.6. Investment Risks



Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



1.7. Customer Focus

The unified GIS provides a sustainable, supportable state-wide model and spatial view of Energex and Ergon Energy's electricity and communications networks for optimal operational performance, safety, security and reliability.

The GIS is the primary source of spatial information used to enable efficient and safe response to major weather events across the network service areas. Accurate and flexible systems provide decision makers with the information necessary to assess the extent of customer impact and to prioritise restoration activities.

In addition, the investment enables the "open data" provision of network information to interested stakeholders (including councils, developers, businesses and other customers) for improved communications and community decision making. This network information may be overlaid with community spatial data including mapping of distributed energy resources, storage and related details. In providing this information, Energex and Ergon Energy will also meet its obligations and community expectations for appropriate security of critical infrastructure information and privacy of customer data.

Through efficient management of accurate and consistent network information, Energy Queensland will best focus its resources on the efficient delivery of its obligations to the value of the community.

2. INVESTMENT OVERVIEW

2.1. Background and History

In both Energex and Ergon Energy, the Geographic Information System (GIS) is a key element of the asset management process. Between the Enterprise Asset Management solution (EAM) and the GIS, the core data for each asset within the physical and electrical network models are mastered, while supporting the major asset lifecycle processes of asset design, build and commissioning.

Energex's GIS solution is primarily based on a custom-built Network Facilities Management (NFM) system, supplemented with Esri spatial tools. NFM and Esri together master Energex' electricity and communications network models, asset ratings and the spatial network layout.

NFM is a complex "home grown" application operating on an Oracle database platform. It currently serves as both the asset database and the network connectivity model, with interfaces to over 100 other systems and tools. The application was developed and deployed in the 1990s and has become highly customised for Energex's historical operating practices. It is not adaptable to business change and is not aligned with ISO55000 for optimal asset lifecycle management. Maintenance of NFM relies on in-house skills and capability which are not sustainable in the medium to long term.

Ergon Energy uses the General Electric (GE) Smallworld GIS product together with Esri tools for spatial network modelling, visualisation and analytics. Smallworld was deployed into Ergon Energy in 2003 with a subsequent update to the "Version 4 Electric Office" product.

The current Smallworld implementation is tightly integrated with other Ergon Energy systems and tools through interfaces and data hubs including the "ECorp" database and the "GISEP" (GIS-ECorp) interface. All of this historical integration results in system inflexibility and maintenance complexity with multiple points of potential failure and inaccuracy through information duplication.

GE has now shifted its development focus to the newer "Version 5" Smallworld product, which uses more modern and industry standard technologies based on Java. Transition to version 5 therefore represents a significant step for this mission critical business system.

Since the consolidation of Energex and Ergon Energy into Energy Queensland, the organisation has focussed on achieving efficiencies and best practice in asset and works management through state-wide business process alignment and interoperability. A first step in this transition has been the integration of the companies' asset management and operations teams under state-wide leadership. This is now being followed by implementation of common asset and works management processes and core systems through the "ERP EAM program".

The ERP EAM program will replace the companies' existing systems and processes for asset and works management, as well as corporate processes including finance, HR, payroll and procurement.

Through the ERP EAM program, Energy Queensland will operate on a single state-wide asset and works management system, with the companies' GISs mastering the spatial network model.

The electricity network environment continues to change rapidly. The growth in distributed energy resources (DER), energy storage, fluctuations in network demand, smart devices and new technologies, require agility in the modelling of the electricity and communications networks managed by Energex and Ergon Energy.

The community's "open data" expectations are also growing for access to accurate and timely spatial data regarding the companies' assets, together with the necessity for strong security controls on information related to critical infrastructure.

The GIS is the source-of-truth for the companies' "as designed" electricity network models. The GIS solutions and business processes must therefore be robust and resilient to change, in order to ensure the accuracy of this network information which underpins the companies' safe operation and control of the networks through the Distribution Management System (DMS).

Continued parallel operation of two aging GIS solutions through the coming regulatory control period represents a material risk to Energex and Ergon Energy's ability to maintain service delivery performance levels as the network becomes more complex. It would also neglect the opportunity for applying consistent work practices through state-wide business process alignment that will reduce safety related risks when employees work across both DNSPs.

2.2. Business Problem and Rationale

The GIS is core to the effective management and operation of Energex and Ergon Energy's electricity and communications networks. The current systems are aging and require prudent investment to ensure ongoing supportability, sustainability and security.

Specifically:

- Energex's NFM system was custom developed in the 1990s by internal engineering staff, based on Energex's network configuration and operating requirements of that era. It has grown over time into a highly complex system with extensive integration. The solution is inflexible to business and industry change. Its continued use represents a significant operational risk.

The ERP EAM program will decommission EAM related functions that NFM currently performs. However a large residual part of NFM system will remain – i.e. network model management and spatial layout.

For the complete decommissioning of NFM, it is essential to transition to a sustainable and supportable GIS solution.

- Ergon Energy's Smallworld-based system is more modern than that of Energex. However it was first implemented in 2003 with heavy integration and solution customisation to operate with the company's historical business practices and legacy systems. [REDACTED]

In the current regulatory control period, the solution has been updated to the "Version 4 Electric Office" Smallworld product. GE has now shifted its development focus to the newer "Version 5" Smallworld product, which uses more modern and industry standard technologies based on Java. Transition to version 5 therefore represents a significant step for this mission critical business system.

Ergon Energy and Energex's network "lines design" processes are currently inconsistent, with Ergon Energy's practices heavily focussed on use of the Smallworld tool. A related Energy Queensland investment (ID5 Design Tool Consolidation and Replacement) aims to consolidate and standardise the companies' design processes and tooling for sustainability and efficiency.

- Energy Queensland is focussed on achieving efficiencies and best practice in asset and works management through state-wide business process alignment and interoperability. The ERP EAM program will take substantial steps in that transformation, however full realisation of the benefits enabled by the ERP EAM program will only be achieved with single GIS spatial network model management practices and tooling.

2.3. Investment Objectives

This investment in GIS consolidation and replacement will deliver on the following objectives.

- Mitigate business risk and ensure the ongoing supportability, sustainability and security of core business processes through solution renewal, consistent with prudent ICT asset lifecycle management practices.
- Converge Energex and Ergon Energy onto a unified GIS spatial network model management system and business processes, integrated with the companies' EAM system and processes.
- Replace and decommission the disparate supplementary systems, databases and environments used by Energex and Ergon Energy in addition to the core GIS systems.

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



- Enable spatial analytics for improved network asset management and operational effectiveness, through provision of a consolidated, state-wide view of the network and community data sets.
- Meet the community's "open data" expectations for access to accurate and timely spatial data regarding the companies' assets.
- Ensure appropriate security controls are maintained regarding access to information related to critical infrastructure and privacy of customer data.
- Support business efficiency and improved productivity through rationalisation and streamlining of asset and works management processes, including network data quality management.

3. STRATEGIC ALIGNMENT

3.1. Alignment to Energy Queensland Strategic Objectives

This investment aligns with the Energy Queensland **Strategic Objectives** in the following ways:

Strategic Objective	How this investment contributes to the Strategic Objective of EQL	Impact
<p>1. Community and customer focused</p> <p>Maintain and deepen our communities’ trust by delivering on our promises, keeping the lights on and delivering an exceptional customer experience every time.</p>	<p>The investment enables the “open data” provision of network information to interested stakeholders (including councils, developers, businesses and other customers) for improved communications and community decision making. This network information may be overlaid with community spatial data including mapping of distributed energy resources, storage and related details.</p> <p>In providing this information, Energex and Ergon Energy will also meet its obligations and community expectations for appropriate security of critical infrastructure information and privacy of customer data.</p> <p>Through efficient management of accurate and consistent network information, Energy Queensland will best focus its resources on the efficient delivery of its obligations to the value of the community.</p>	<p>Medium</p>
<p>2. Operate safely as an efficient and effective organisation</p> <p>Continue to build a strong safety culture across the business and empower and develop our people while delivering safe, reliable and efficient operations.</p>	<p>The unified GIS provides a sustainable, supportable state-wide model and spatial view of Energex and Ergon Energy’s electricity and communications networks for optimal operational performance, safety, security and reliability.</p> <p>Asset and works data overlaid on geographical maps allows asset managers and operators to identify patterns that may otherwise be challenging to see. E.g. Storm zones, outage impacts, flooding risks and impacts.</p>	<p>High</p>
<p>3. Strengthen and grow from our core</p> <p>Leverage our portfolio business, strive for continuous improvement and work together to shape energy use and improve the utilisation of our assets.</p>	<p>Timely and accurate GIS spatial network model information enables Energy Queensland to continuously improve its asset management and operational practices and improves the customer experience.</p>	<p>High</p>
<p>4. Create value through innovation</p> <p>Be bold and creative, willing to try new ways of working and deliver new energy services that fulfil the unique needs of our communities and customers.</p>	<p>A GIS system places network data in a geographical context. The associated GIS visualisation and analytics tools provide new ways to extract and analyse asset and customer information effectively.</p>	<p>Medium</p>

3.2. Alignment with National Electricity Rules (NER)

The table below details the alignment of the proposed solution with the NER capital expenditure objectives as regulated by the AER.

NER Objective Alignment	Rationale
<p>6.5.7 (a) (2) The forecast capital expenditure complies with all applicable regulatory obligations or requirements associated with the provision of standard control services</p>	<p>This business case proposes the consolidation and replacement of Energex and Ergon Energy’s legacy GIS spatial network model management solutions for sustainability, supportability and security. Through this replacement platform there will exist a single source-of-truth for accurate network and operational data which Energex and Ergon Energy will use in maintaining network security, ensuring compliance with all regulated, legislative and policy obligations in delivery of standard control services.</p>
<p>6.5.7 (a) (3) The forecast capital expenditure maintains the quality, reliability and security of supply of standard control services</p>	<p>Through accurate and efficient network model management and information and business processes, Energex and Ergon Energy can maximise operational performance and efficiency in delivery of quality, reliable and secure standard control services.</p> <p>This specifically includes the ability to spatially map and model electricity and communications assets (including their connectivity and configuration) as well as community distributed energy resources, to support power flow analysis, outage impact assessment, power quality analysis, feeder and substation load forecasts to maintain and/or improve network reliability and security of supply.</p>
<p>6.5.7 (c) (1) (i) The forecast capital expenditure reasonably reflects the efficient costs of achieving the capital expenditure objectives</p>	<p>Costs for this investment have been forecast based on knowledge of recent and historical market procurements for equivalent capability and services, experience from previous investments, as well as through specialist advice and internal subject matter expertise.</p> <p>Energy Queensland undertakes competitive market procurement processes to ensure cost efficiency in project cost and operational expenditure.</p> <p>Energy Queensland also has a cloud services strategy which assesses each potential investment to ensure the optimal use of cloud and internal services with considerations of cost, risk, service requirements and other parameters.</p>
<p>6.5.7 (c) (1) (ii) The forecast capital expenditure reasonably reflects the costs that a prudent operator would require to achieve the capital expenditure objectives</p>	<p>The requirement for this investment is premised on industry typical ICT Asset Lifecycle Management principles to prudently and efficiently ensure the supportability, serviceability and security of Energex and Ergon Energy’s business systems.</p> <p>Currently this investment has been analysed to a “Preliminary Gate 2” level. Prior to investment, a Gate 3 business case will be prepared with further detail to be assessed in accordance with the established investment governance processes.</p>

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



NER Objective Alignment	Rationale
<p>6.5.7 (c) (1) (iii)</p> <p>The forecast capital expenditure reasonably reflects a realistic expectation of the demand forecast and cost inputs required to achieve the capital expenditure objective</p>	<p>Costs for this investment have been forecast based on knowledge of recent and historical market procurements for equivalent capability and services, experience from previous investments, as well as through specialist advice and internal subject matter expertise.</p> <p>Further detailed cost build up will take place in development of the Gate 3 business case.</p> <p>This detailed cost build up may be subject to further competitive market procurement processes, sourcing analysis and peer consultation.</p>

3.3. Alignment with the Digital Application Asset Management Guidelines

The table below indicates alignment of the solution with the Digital Application Asset Management Guidelines:

Digital Application Asset Management Guidelines Assessment	Rationale
<p>GIS systems are, in most cases, classified as Systems of Differentiation according to the PACE layer categorisation described in Energy Queensland’s Digital Application Asset Management Guidelines.</p> <p>These guidelines describe key defining criteria for Systems of Differentiation including that they:</p> <ul style="list-style-type: none"> • Support business processes which are understood and dynamic. • Utilise information that is core to the business and other information that is sourced externally or generated as part of the process. <p>On the above basis, the guidelines forecast that Systems of Differentiation should maintain currency, supportability and effectiveness through the following investment lifecycle.</p> <ul style="list-style-type: none"> • Minor Upgrade – 2 years after implementation • Major Upgrade – 5 years after implementation • Replacement – 7 years after implementation <p>The guidelines further describe that Upgrade and Replacement investments should consider the extent of “obsolescence” of the solution. E.g.</p> <ul style="list-style-type: none"> • Technical Obsolescence – The solution is still functional but not supportable. • Financial Obsolescence – The cost of maintaining the solution outweighs the value derived from it. • Asset Obsolescence – The asset has reached the end of its reasonable functional life as indicated through failure rates, inability to meet business requirements etc. 	<p>The GIS systems proposed for consolidation and renewal through this investment will meet the criteria for replacement identified in the guidelines.</p> <p>The proposed investment is planned to conclude in FY25.</p>

3.4. Regulatory Implications

Accurate and efficient spatial network model management is an essential enabler of Energex and Ergon Energy's compliance with legislative and regulatory obligations as distribution network service providers (DNSPs).

These obligations include:

- Obligations for the safe operation of the network, including as specified in the Electrical Safety Act and the Electrical Safety Codes of Practice.
- Network service obligations as specified in the Electricity Act and the National Electricity Rules.
- Environmental obligations, including as specified in the Environment Protection Act, the Environment Protection & Biodiversity Conservation Act and the Sustainable Planning Act, requiring timely and accurate information regarding the companies' active and historical works, incidents, sites and locations within geographic zones.
- Privacy obligations, including as specified in the Privacy Act, requiring strong controls and security on the accessibility of customer data, including spatial locations of customer connections and distributed energy resources, whilst ensuring appropriate availability of data upon valid request.
- Critical infrastructure obligations, including as specified in the Security Of Critical Infrastructure Act, with strong controls and security of data regarding the configuration and operation of the companies' networks, whilst also ensuring suitable availability for asset planning and management efficiency.

4. INVESTMENT SCOPE

4.1. Functional Scope

Energy Queensland comprises multiple business areas and functions as defined in the organisation’s Business Reference Model.

The proposed investment in GIS consolidation and replacement is essential for the ongoing efficient, sustainable support of many of Energy Queensland’s business areas and functions as listed below.

Business Area	Business Function	Business Reference Model Description
Network Information Management	Network Information Operational Management	A function to ensure the execution of plans developed by the Network Information Standards and Planning function. This is an operational function. Certain operational aspects of management of network information (e.g. GIS data, Information Quality Assurance etc) may be directly allocated to this function, others may be allocated to other functions across Network Asset Management or Service Delivery.
	Network Analytics and Forecasting	A function to: <ul style="list-style-type: none"> - Analyse current asset capability and capacity, - Forecast / predict future required network asset capability and capacity based on a variety of forecasts and environmental parameters (e.g. demand, climate, weather, demographics, regulatory etc), and - Simulations to identify gaps and risks that require intervention.
	Network Planning	A function to develop and compare network and non-network options for remediation of gaps and risks identified by the Network Analytics and Forecasting function, and subsequently compile optimised investment and change plans that mitigate risk to the appropriate levels such that the network, operated correctly, will meet forecast future requirements.
Network Forecasting and Planning	Network Reporting	A function to report on network performance, forecasts and investment plans. This includes the production of regulatory reports. This function is not represented explicitly in the organisation chart of Energex or Ergon Energy, but rather embedded in various functions across the Network Forecasting and Planning business capability.
	Lines Design	A function that produces detailed optimised lines designs including estimates, in accordance with specified system requirements and engineering and technology standards.
Network Design ²	Telecommunications Design	A function that produces detailed optimised telecommunications designs including estimates, in accordance with specified system requirements and engineering and technology standards. Telecommunications design also includes the design of appropriate system configuration / programming to achieve the intended purpose / behaviour.

² Network design is not specifically within the scope of this investment, however it is closely interrelated given that design is dependent on accurate network asset information, connectivity modelling, configuration and spatial layout. Ergon Energy’s current “lines design” process currently makes heavy use of Smallworld’s design capabilities. The investment “ID5 Design Tools Consolidation and Replacement” is therefore interdependent with this investment with delivery of both initiatives closely coordinated.

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Business Area	Business Function	Business Reference Model Description
Network Performance and Maintenance	Asset Analytics and Reporting	<p>A function to analyse and report on the current and future behaviour, condition and performance of network assets for the purpose of optimised decision making on activities for the management of the asset lifecycle.</p> <p>Analysis is undertaken on the basis of historical, current and third-party asset performance data, as well as various types of forecasts, using appropriate models.</p>
	Asset Strategy and Planning	<p>A function to define strategies and policies for network assets throughout their whole lifecycle, in alignment with regulatory, safety/security, financial and other enterprise requirements and objectives.</p> <p>This includes assessing changes in the environment, standards and regulations to understand their impact on existing assets and new asset requirements.</p>
	Asset Maintenance, Refurbishment and Retirement Planning	<p>A function to deliver plans for the maintenance, refurbishment and retirement of existing network assets, optimised to meet regulatory, safety, security and enterprise objectives in the most effective and efficient manner.</p> <p>This function makes decisions based on the outcomes of the Asset Analytics and Reporting function and is directed by the deliverables of the Asset Maintenance Strategy and Planning function.</p>
	Network Performance Management	<p>A function to analyse and forecast the network performance (e.g. in regard to power quality and reliability) and develop plans for remediation or prevention of problems where they occur / may occur.</p>
	Device Configuration and Lifecycle Planning	<p>A function to manage the configuration of secondary systems devices in accordance with their purpose, changing environmental parameter (e.g. seasonal / weather, changes in network utilisation and other operational requirements, version upgrades, security threats etc) and defined secondary system standards.</p> <p>Examples include the planning and management of:</p> <ul style="list-style-type: none"> - version upgrades for firmware, - changes of seasonal limit settings, - security patches, - password / key changes, and - device audits.
Asset PoW Planning, Governance and Reporting	Network Asset Works Planning	<p>A function to deliver plans for asset lifecycle related works, such as construction, maintenance, inspections and refurbishment.</p> <p>The development of these plans is based on outputs of the Network Performance and Maintenance business capability (existing assets), as well as the Network Forecasting and Planning business capability (new assets, asset augmentation, non-network alternatives).</p> <p>The function of Works Program Management will integrate these plans into and manage through the overall PoW.</p>
Environment Health and Safety (EHS) Management	EHS Impact Assessment	<p>A function that determines health, safety and environmental impacts across the organisation by evaluation of multiple factors and audits.</p>

Business Area	Business Function	Business Reference Model Description
Non-Network Asset Management	Non-Network Asset Obtainment, Installation and Planning	A function that develops plans and programs for delivery and lifecycle maintenance of non-network assets (e.g. fleet, property, ICT etc).
	Non-Network Asset Design & Construction / Acquisition	A function that manages procurement and/or design and construction of non-network assets (e.g. fleet, property, ICT etc).

4.2. Solution Overview

4.2.1 Spatial Network Model Information

The Asset and Network Information Model is the complete set of information mastered across the EAM and GIS that describes the nature, installation and use of a piece of equipment (network asset). In the context of this analysis, this encompasses the following aspects of asset and network information:

- Static equipment data,
- Asset templates,
- Installation,
- Connectivity,
- Spatial locations,
- Assembly and construction details,
- Electrical information (e.g. ratings), and
- Lifecycle stages of Design, Build and Commission

The current state, wherein Asset and Network Information is mastered in multiple systems, is complex with different solutions in place between Energex and Ergon Energy. The rollout of a unified EAM solution is the first major step to simplifying and aligning the companies' asset and works management practices. The following table describes the current state for each information type.

Information Type	Current State Assessment
(Power) Asset and Network Information Model	<p>Currently, the GIS solutions of both companies' master connectivity and electrical information. In addition, they also record the majority of the information about the construction itself, although most of that information is actually not spatial.</p> <p>Other asset data is distributed across different systems, dependent on asset class. This reflects the fragmented systems design and business processes in both companies. The rollout of the unified EAM is expected to consolidate most of these source systems and associated processes.</p> 

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Information Type	Current State Assessment
<p>Unified Asset Identifiers</p>	<p>The Asset Identifier is a piece of static data that should be mastered consistently, for all assets, in the EAM.</p> <p>There are currently differences in the Asset Identifier generation process in Energex and Ergon Energy. [REDACTED]</p>
<p>Non-network Asset Classes</p>	<p>Telecommunication assets' physical and spatial parameters are managed in the GIS systems today. For logical modelling of cable networks, specialised telecommunications applications are also used.</p> <p>Other asset classes that also need to be considered in the spatial target state include:</p> <ul style="list-style-type: none"> • Street lights and unmetered supply (Energex / Ergon Energy owned or third party owned) • Other non-network assets (e.g. property)
<p>Geographic and other Spatial Models</p>	<p>Various other geographic models and layers are also mastered in the GIS solutions. These can be internally managed or externally derived.</p> <p>Examples include:</p> <ul style="list-style-type: none"> • base maps, • spatial imagery, • the cadastre, • cultural and heritage zones, • vegetation maps.
<p>History and Versioning</p>	<p>The capabilities for management of network history and design versions differ between Energex and Ergon Energy current state systems.</p> <p><u>Energex</u></p> <p>History and versioning in the Energex current state is implemented in NFM versioning for asset and attribute data but historical spatial locations or routes are not stored.</p> <p>There are various extracts of spatial data into GIS datasets (shape files etc) which hold a point-in-time view of the data but this does not give a complete history of spatial data for the network. Future spatial data for the network and cadastral lots can be uploaded to the GIS but this is not enforced by the process.</p> <p><u>Ergon Energy</u></p> <p>A visual and textual record of change is recorded, including:</p> <ul style="list-style-type: none"> • Design Actions (install, remove, relocate, upgrade, replace, update) • State Transition (design, approvals, energise) • Design Details (Name, Work Request, Work Order, Dates)

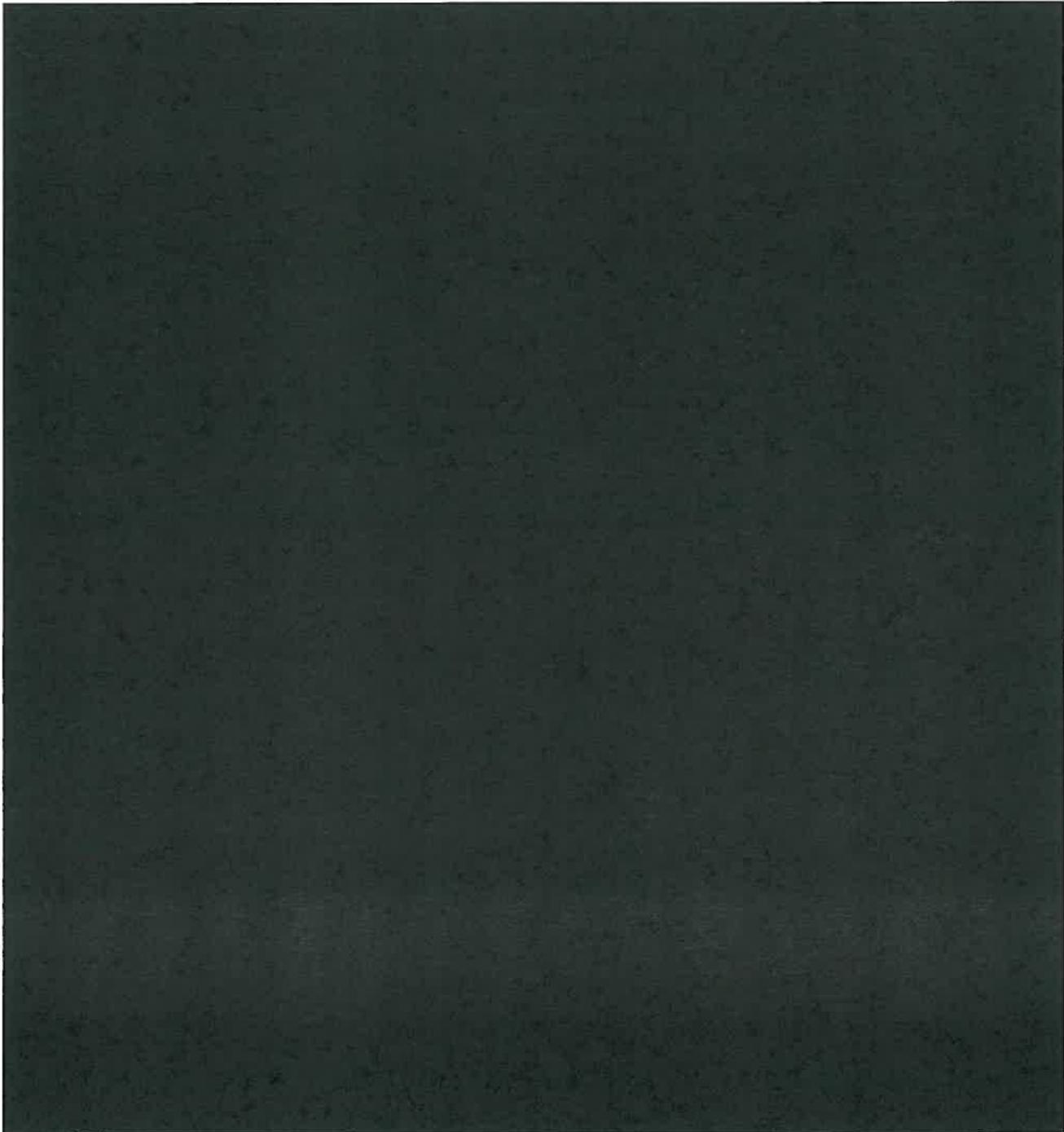
Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



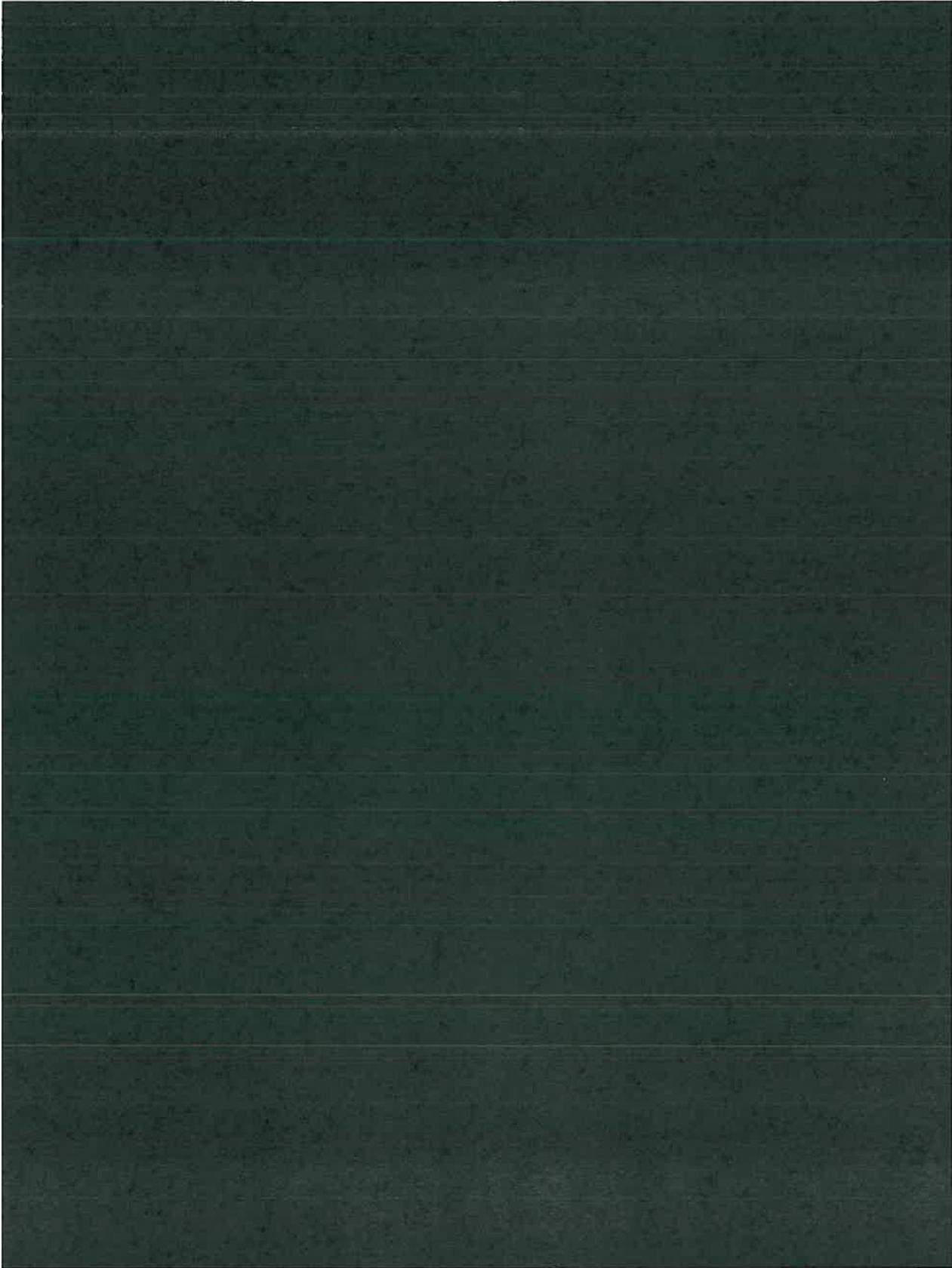
Information Type	Current State Assessment
	Future network states can be recorded as Planned Asset Layers.
Validation Rules	<p>Both GIS solutions enable the development, mastering and execution of validation rules for network model and attribute changes.</p> <p>These rules are important for ensuring data quality. However, various data quality issues exist through the ability to disable network validation rules.</p>

4.2.2 Current State (2018)

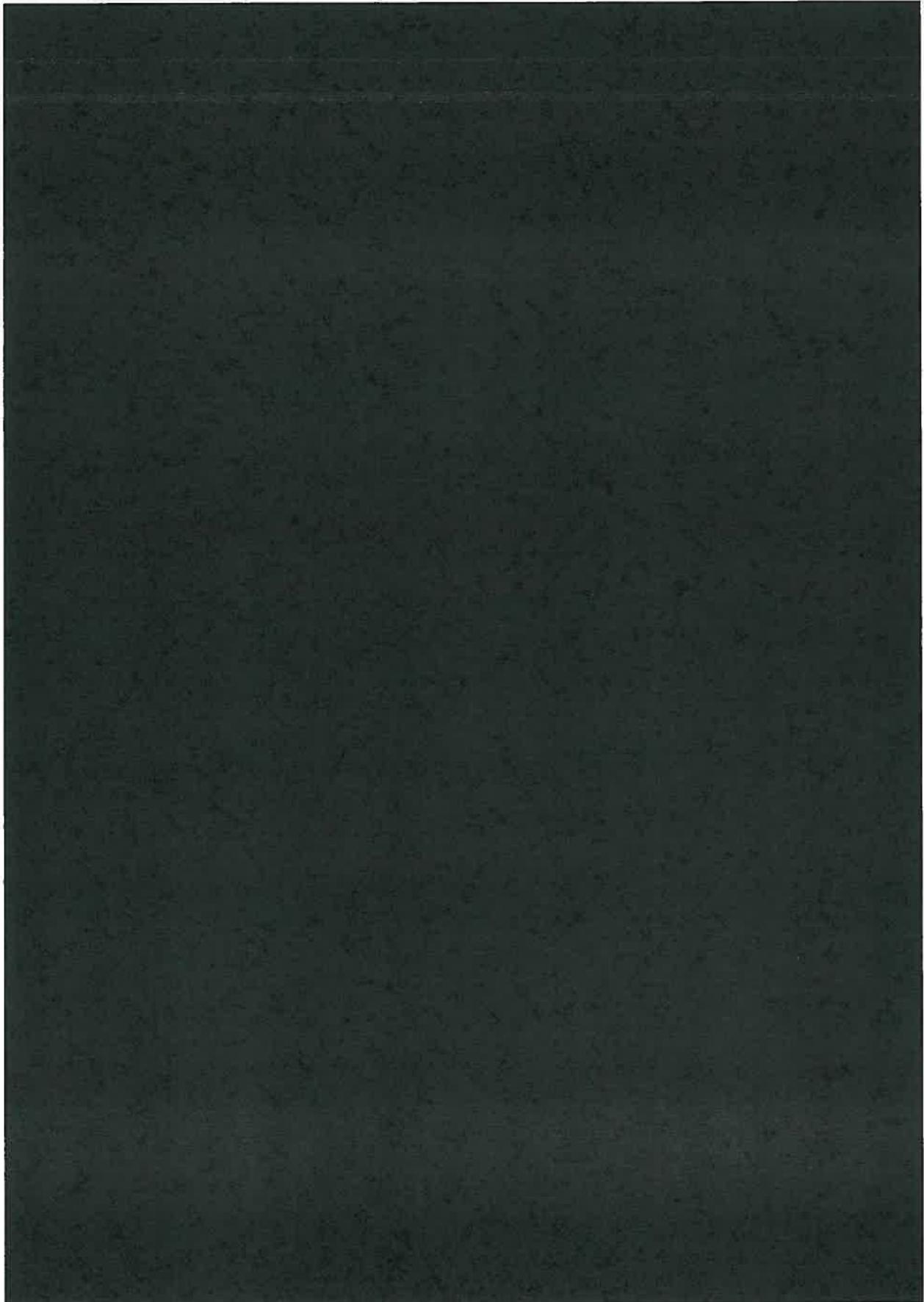


Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



4.2.3 Target State (end of the proposed investment)



Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



4.3. Assumptions

This business case is based on the following assumptions.

- The initiative will be delivered following completion of the ERP EAM program, which will have transitioned the mastering of data related to “physical assets” (e.g. serial numbers, years of manufacture etc) from legacy systems (NFM and Ellipse) to the unified EAM.
- The scope, inclusions, exclusions, costs and impacts of the initiative will be further detailed through the Gate 3 business case prior to investment. This may be subject to competitive procurement processes as appropriate to ensure cost efficiency of delivery.
- In development of the Gate 3 business case, and subject to procurement processes, a decision will be made regarding the target Unified GIS software product. This decision will be made with due regard to existing investments, relative costs, solution capability, supportability, security and risk.

4.4. Dependencies

This investment is dependent on the following programs, projects or business activities:

Program/Project	Dependency	Effect
ERP EAM Program	<p>The ERP EAM Program will migrate the companies’ asset and works processes and data mastering from the existing Ellipse platform and repositories to the new unified ERP EAM solution.</p> <p>The program will also deploy unified spatial visualisation and analytics.</p>	<p>The ERP EAM program delivers new asset and works management processes that are defined by the ERP EAM system functionality and operational best practice.</p> <p>These processes will inform the design of the unified GIS related processes. The completion of the ERP EAM Program is necessary to avoid rework.</p>
ID5 Design Tools Consolidation and Replacement	<p>The ID5 Design Tools Consolidation and Replacement initiative will transition Energen and Ergon Energy’s various design tools and processes (including lines design) to a sustainable unified platform.</p>	<p>Transition of lines design tooling and processes must occur in close coordination with GIS Consolidation and Replacement as they are closely integrated and mutually dependent.</p>

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Program/Project	Dependency	Effect
ID2 Network Operations Systems Consolidation and Replacement	<p>ID2 Network Operations Systems Consolidation and Replacement will consolidate, replace, standardise and simplify the companies' network operational systems including:</p> <ul style="list-style-type: none"> • Switching management systems, • Outage Management Systems, • SCADA network configuration management systems, and • Protection configuration management systems. <p>The electricity network model, which is mastered in the GIS defines the topology, connectivity and configuration of the network, in support of network control, switching management and outage management processes.</p> <p>The GIS also masters the communications network model and records protection equipment deployment.</p> <p>As such, the unified GIS should be designed to support efficient network model input to the DMS solution.</p>	<p>GIS Consolidation and Replacement could proceed prior to ID2 Network Operations Systems Consolidation and Replacement. However this would incur greater cost through the need for subsequent re-integration (or manual business processes).</p>

Other programs or projects dependent on this investment:

Program/Project	Dependency	Effect
ID6 Distribution Load Forecasting Consolidation and Replacement	<p>ID6 Distribution Load Forecasting Consolidation and Replacement will consolidate, replace, standardise and simplify the companies' existing forecasting tools and processes.</p> <p>These processes are dependent on high quality network asset data, including specifications, ratings, demand profiles, connectivity, weather / climate data and spatial analysis.</p> <p>As such, the initiative should be designed in coordination with the unified GIS design, or more ideally, following implementation of the unified GIS.</p>	<p>ID6 Distribution Load Forecasting Consolidation and Replacement could proceed prior to GIS Consolidation and Replacement. However this would incur greater cost through the need for integration with the two legacy GIS Solutions rather than the planned unified GIS Solution (or manual business processes).</p> <p>It would also then require rework when the unified GIS is subsequently implemented.</p>

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Program/Project	Dependency	Effect
ID15 Network Planning Tools Consolidation and Replacement	<p>ID15 Network Planning Tools Consolidation and Replacement will consolidate, replace, standardise and simplify the companies' existing forecasting tools and processes.</p> <p>These processes are dependent on high quality network asset data, including specifications, ratings, demand profiles, connectivity, weather / climate data and spatial analysis.</p> <p>As such, the initiative should be designed in coordination with the unified GIS design, or more ideally, following implementation of the unified GIS.</p>	<p>ID15 Network Planning Tools Consolidation and Replacement could proceed prior to GIS Consolidation and Replacement. However this would incur greater cost through the need for integration with the two legacy GIS Solutions rather than the planned unified GIS Solution (or manual business processes).</p> <p>It would also then require rework when the unified GIS is subsequently implemented.</p>

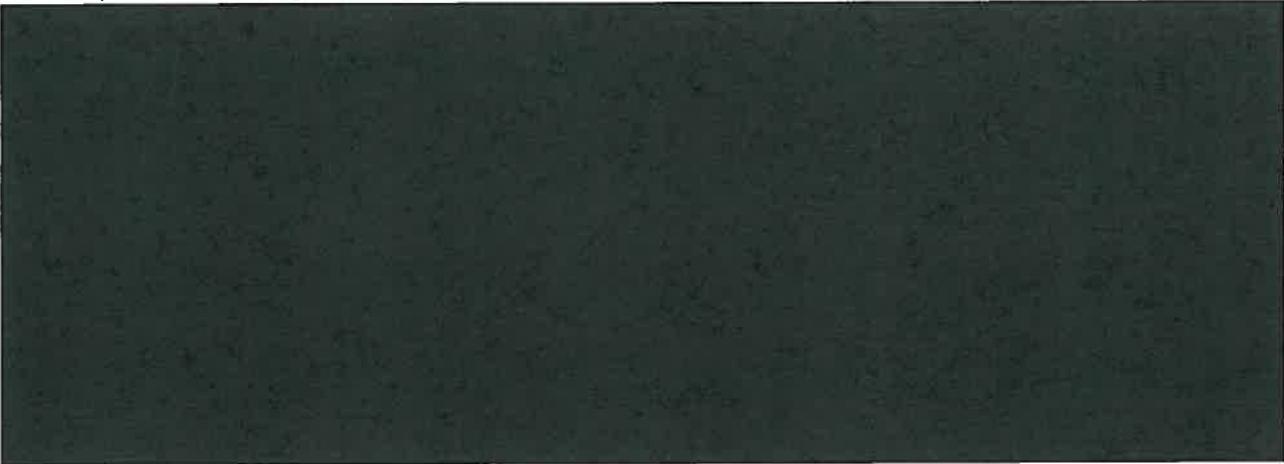
5. OPTIONS ANALYSIS

This section considers the following options analysis:

- Option 1 – Proceed with GIS consolidation and replacement (preferred)
- Option 2 – Independent Energex and Ergon Energy GIS replacements
- Option 3 – Do minimal

5.1. Option 1 – Proceed with GIS consolidation and replacement (preferred)

This option will consolidate and replace Energex and Ergon Energy's existing GIS solutions onto a sustainable unified platform with aligned state-wide business processes and practices.



The initiative will also transition Energex's spatial visualisation and analytics to the unified platform established through the ERP EAM program. This becomes possible (and necessary) upon migration away from NFM. (Ergon's spatial visualisation and analytics will have already transitioned to the new platform as part of the ERP EAM program).

In development of the Gate 3 business case, and subject to procurement processes, a decision will be made regarding the target Unified GIS software product. This decision will be made with due regard to existing investments, relative costs, solution capability, supportability, security and risk.

5.2. Option 2 – Independent Energex and Ergon Energy GIS replacements

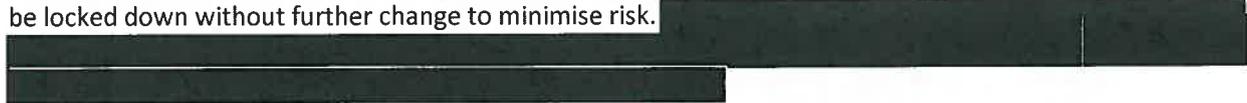
This option would replace or renew Ergon Energy and Energex's existing GIS solutions for sustainability and supportability.

For Ergon Energy, this would involve transition from Smallworld v4 to Smallworld v5, along with renewal of the existing GISEP and Landbase applications.

For Energex, a direct replacement of NFM is not possible given its highly customised and aged in-house design. Instead therefore, replacement would involve implementation of a target-state GIS (as per Option 1) for Energex only, but without the benefits of state-wide business process alignment and scale across Energy Queensland.

5.3. Option 3 – Do minimal

No significant investments in Energex or Ergon Energy's GIS solutions would occur in the FY21-25 regulatory control period, with replacements deferred until the FY26-30 period. The existing platforms would therefore be locked down without further change to minimise risk.



Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



5.4. Option Comparison

Each option has been assessed against the key criteria contained in the table below.

Assessment Criteria	Option 1 – Proceed with GIS consolidation and replacement (preferred)	Option 2 - Independent Energex and Ergon Energy GIS replacements	Option 3 - Do minimal
Advantages	<p>Consistent with the business case objectives, this option:</p> <ul style="list-style-type: none"> Mitigates business risk and ensures the ongoing supportability, sustainability and security of core business processes through solution renewal, consistent with prudent ICT asset lifecycle management practices. Converges Energex and Ergon Energy onto a unified GIS spatial network model management system and business processes, integrated with the companies' EAM. Replaces and decommissions the disparate supplementary systems, databases and environments used by Energex and Ergon Energy in addition to the core GIS systems. Enables spatial analytics for improved network asset management and operational effectiveness, through provision of a consolidated, state-wide view of the network and community data sets. Meets the community's "open data" expectations for access to accurate and timely spatial data regarding the companies' assets. Ensures appropriate security controls are maintained regarding access to information related to critical infrastructure and privacy of customer data. Enables business efficiency and productivity through rationalisation and streamlining of asset and works management processes, including network data quality management. 	<p>Partly consistent with the business case objectives, this option:</p> <ul style="list-style-type: none"> Mitigates business risk and ensures the ongoing supportability, sustainability and security of core business processes through solution renewal, consistent with prudent ICT asset lifecycle management practices. Ensures appropriate security controls are maintained regarding access to information related to critical infrastructure and privacy of customer data. 	<p>This option does not effectively achieve any of the objectives of the business case.</p> <p>It does however represent the lowest near-term expenditure on the GIS spatial network model management by deferring replacement investment into the FY26-30 period.</p>

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Assessment Criteria	Option 1 – Proceed with GIS consolidation and replacement (preferred)	Option 2 – Independent EnergeX and Ergon Energy GIS replacements	Option 3 - Do minimal
<p>Disadvantages</p>	<p>This option meets all the objectives of the business case.</p>	<p>This option does not meet the following objectives of the business case:</p> <ul style="list-style-type: none"> Does not replace and decommission the disparate supplementary systems, databases and environments used by EnergeX and Ergon Energy in addition to the core GIS systems. Does not converge EnergeX and Ergon Energy onto a unified GIS spatial network model management system and business processes, integrated with the companies' EAM system and processes. Does not enable spatial analytics for improved network asset management and operational effectiveness, through provision of a consolidated, state-wide view of network and community data sets. Does not meet the community's "open data" expectations for access to accurate and timely spatial data regarding the companies' assets. Does not enable business efficiency and improved productivity through rationalisation and streamlining of asset and works management processes, including network data quality management. <p>Furthermore, this option involves material investment in the parallel EnergeX and Ergon Energy solutions which has the following additional disadvantages:</p> <ul style="list-style-type: none"> Like-for-like replacement of EnergeX's NFM-based solution is not feasible. Therefore, the EnergeX project will be of similar scale and complexity to Option 1 without the benefits of state-wide business process alignment across Energy Queensland. 	<p>This option does not meet any of the business case objectives and puts the core network operations of EnergeX and Ergon Energy at significant risk. This is therefore an unacceptable option.</p>

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Assessment Criteria	Option 1 – Proceed with GIS consolidation and replacement (preferred)	Option 2 - Independent Energex and Ergon Energy GIS replacements	Option 3 - Do minimal
<p>Key Identified Risks</p>	<ul style="list-style-type: none"> As the “preferred option”, a specific implementation risk assessment is detailed in section 10.2. 	<ul style="list-style-type: none"> Ergon Energy’s existing business processes are closely integrated with the previously custom designed Smallworld solution. Transition to Smallworld 5 may necessitate additional Ergon-centric business process design at significant cost, and which is potentially at odds with the companies’ plans for state-wide process efficiency. Like-for-like replacement of Energex’s NFM-based solution is not feasible. Therefore, the Energex project will endure the complexities of transition to the target state solution (Option 1) alone. 	 <p>See section 10.1 for a more specific organisational risk assessment.</p>

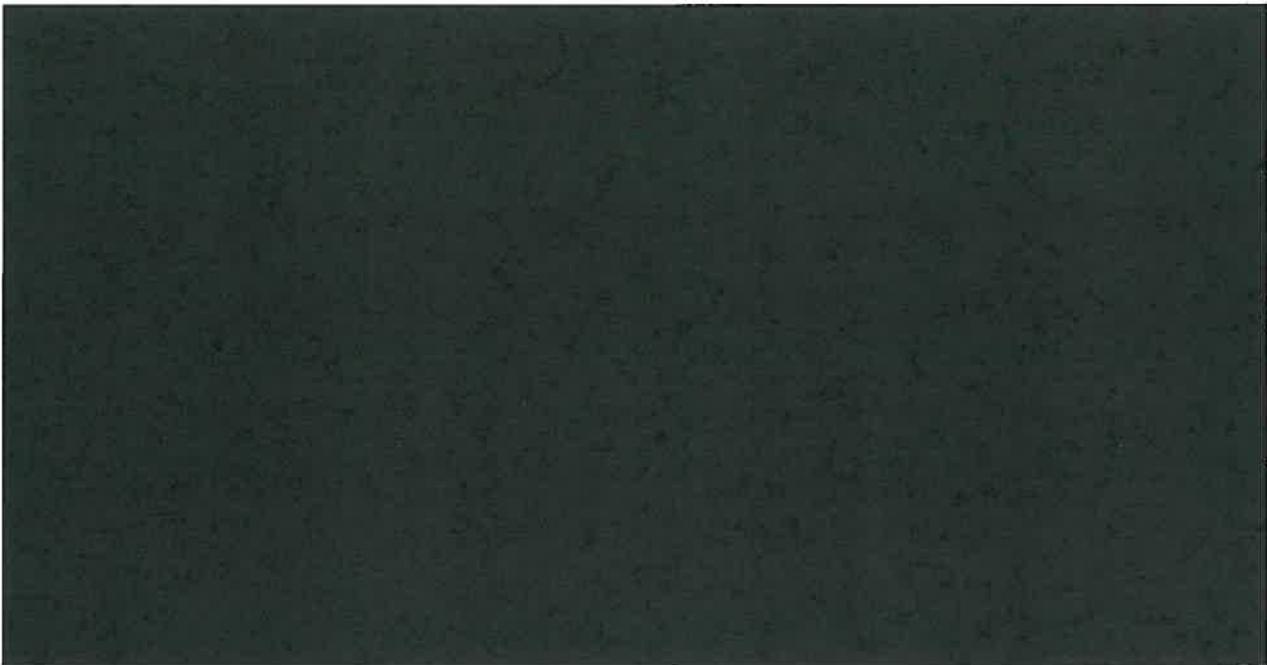
6. PREFERRED OPTION

“Option 1 - Proceed with GIS consolidation and replacement” is the preferred option, as it ensures sustainability, supportability and security of the companies’ core network model and spatial management practices, with the opportunity for state-wide process alignment and efficiency.

“Option 2 - Independent Energex and Ergon Energy GIS replacements” is viable but requires full duplication of costs across the two distributors, with less opportunity for process improvement.

“Option 3 - Do minimal” defers renewal of the companies’ legacy GIS solutions. It therefore represents a material risk to the companies’ continued delivery of their network operations and management service obligations.

6.1. Delivery Timeline and Approach



Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



7. INVESTMENT BENEFITS OVERVIEW

This section outlines the benefits associated with the investment. This business case has currently been analysed to a “Preliminary Gate 2” level. As such, the benefits will be further detailed, tested, and verified in preparation of the Gate 3 business case prior to investment.

This initiative is primarily an ICT Asset Replacement of legacy systems, required to ensure the ongoing sustainability, supportability and security of business critical capability. Energy Queensland will leverage the opportunity associated with this ICT replacement to also enable planned productivity improvements, resulting in a forecast 10% reduction in indirect costs and a 3% improvement in program of works labour costs. The benefits listed below represent contributions to the overall Energy Queensland productivity improvement targets.

7.1. Financial and Other Benefits

Area	Benefits Identified	Value
Financial Benefits		
Network Data	<p>Network data management productivity improvement through:</p> <ul style="list-style-type: none"> • simplified workflows; • focus on accurate data capture at source, with reduced need for rework; and • reduced network model duplication and synchronisation. 	
Asset Management	<p>Network asset investment planning and decision-making improvement through:</p> <ul style="list-style-type: none"> • more accurate network data with spatial analysis capability; • spatial overlays of environmental, climate, demographic, social and other data sets; and • improved interconnection of network data with operational performance data (DMS) and fixed asset data (ERP EAM). <p>Network asset lifecycle management improvement through:</p> <ul style="list-style-type: none"> • improved GIS spatial network model management solution capability; • improved ability to overlay non-network information for analysis efficiency; and • state-wide aggregation of asset management workload, continuous improvement in asset management processes with full rollout of ISO55000 practices and with state-wide insights and network intelligence. 	
Other Benefits		
ICT Asset Management	<p>Sustainment of the companies’ GIS spatial network model management capability for ongoing supportability, serviceability and security.</p> <p>Failure or extended outage of the current solutions would have significant operational, financial and reputational impacts.</p>	Sustainment
Safety & Security	<p>Continuous improvement in safety risk mitigation through accurate network data and consistent state-wide work practices enabling safe staff interoperability between Energex and Ergon Energy regions.</p>	Safety
	<p>Ensures appropriate security controls are maintained regarding access to information related to critical infrastructure and privacy of customer data.</p>	Security

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Area	Benefits Identified	Value
Stakeholder	Meets the community's "open data" expectations for access to accurate and timely spatial data regarding the companies' assets.	Community
Agility	Agility in responding to ongoing regulatory, compliance and technology changes, building upon the companies' information intelligence architecture.	Compliance

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



8. FINANCIAL ANALYSIS

8.1. Scope of Costs

The table below summarises the potential cost inclusions to deliver the outcomes described in this business case.

Phase	Description / Rationale
All Phases	Project management
	Project support
	Internal corporate logistics / overheads
	Communications and engagement
	Review and assurance (excluding normal Internal Audit functions)
Planning & Procurement Phase	Tender facilitation, probity management and legals
	Gate 3 business case development
	Development of planning deliverables (e.g. PMP, Stakeholder and Communications Plan etc)
	Software licences, hardware purchases, cloud services procurement
Design Phase	Software, infrastructure and information design
	Data profiling and migration design
	Solution architecture
	Integration design
	Business process design
	Organisational change design and change management planning
Build, Integrate, Test and Deploy Phase	Data migration and ETL (Extract, Transform, Load) build
	Data migration execution (incl. Trial Migrations, Dress Rehearsals, Verification etc)
	Software, infrastructure and environment configuration
	Integration build
	Business process design and organisational change implementation
	Testing (incl. information consistency, capacity, performance and load, security etc)
	Training
	Production deployment
Warranty Phase	Post implementation operational support
	Transition to business-as-usual (BAU) support
	Post implementation review

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



8.2. Cost Assumptions

The table below summarises the key cost assumptions for the initiative.

#	Assumption	Description / Rationale
1	Project phasing and deployment	<p>The initiative will be delivered over a 2¼ year elapsed period with an up-front design phase followed by multiple deployments. The deployment plan will be structured with consideration of:</p> <ul style="list-style-type: none"> • Alignment with other dependent initiatives. • Sequencing to maximise business performance benefit. • Intention to progressively transition the Energex and Ergon Energy datasets to the new common target state, recognising the disparate starting points of the two companies.
2	Use of market services	The initiative will be delivered through a team comprising internal subject matter experts and external solution delivery specialists, to ensure project cost efficiency and mitigation of project risk.
3	Energex and Ergon Energy costs	The project costs for Energex and Ergon Energy are consistent with the effort and complexity of transitioning each company from their respective current state to the common target state.
4	Option 2 (Independent Energex and Ergon Energy GIS replacements)	[REDACTED]
5	Option 3 (Do minimal)	[REDACTED]

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



8.3. Financial Summary³

8.3.1 Energex Option Comparison



8.3.2 Ergon Energy Option Comparison



8.3.3 Energex Expenditure Summary (Option 1 – Preferred)



8.3.4 Ergon Energy Expenditure Summary (Option 1 – Preferred)



8.4. NPV Calculation Parameters

The above NPV and financial calculations are based on the following parameters.

- The Energy Queensland Net Present Value (NPV) model has been used to calculate the NPV calculations for this business case.
- The financial analysis period has been based over a 10 year period after a 2 year phased implementation period.
- 5.40% Regulated Rate of Return/WACC is applied with present values discounted to FY17/18.

³ Bracketed figures indicate negative values.

9. PROGRAM DELIVERY

9.1. Program Governance & Delivery

The governance and delivery model depicted in Figure 3 (below) is planned to be used for delivery of the initiative.

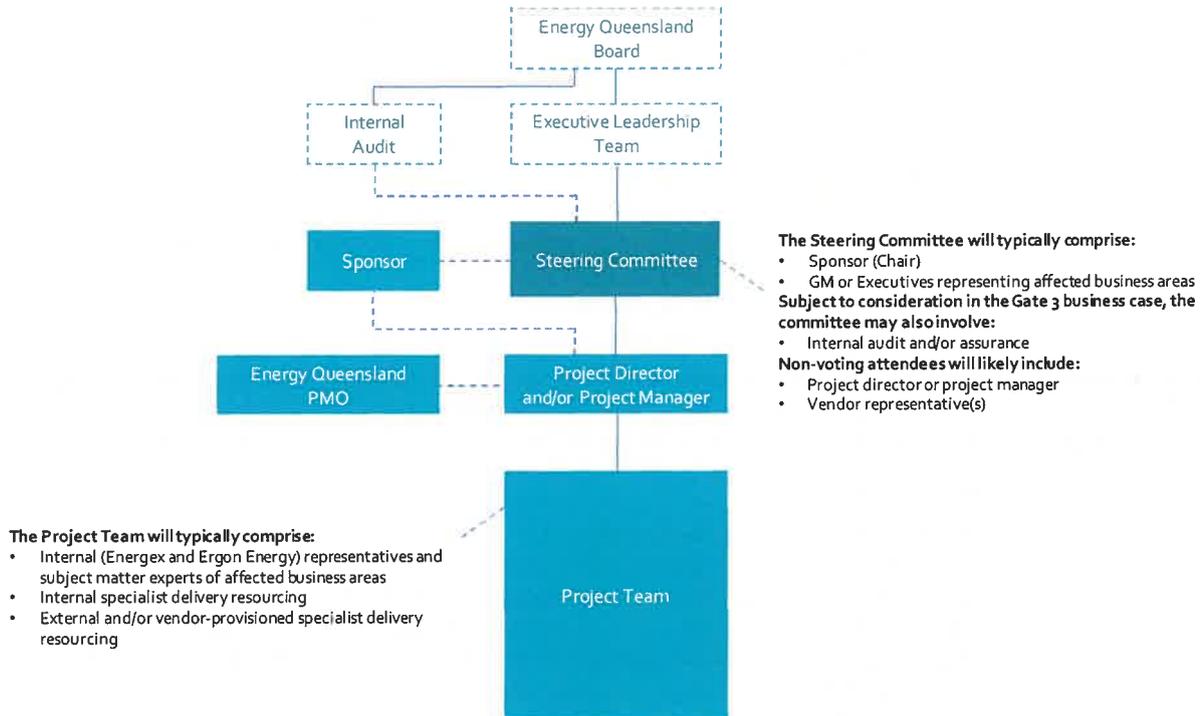


Figure 3 Governance and delivery model

Role	Key Accountabilities
Steering Committee	<p>Provides a single point of accountability for delivery of the initiative in accordance with the business case, as well as decision making aligned with strategic directions of the company. The committee governs the initiative with appropriate balance between delivered outcomes (time, fitness for purpose, cost), risk, business impact and enabled business value.</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Attend and be an active participant in committee meetings • Foster positive communications outside of the committee regarding the initiative • Be the voice of the initiative, including communications where appropriate to the Group Executive, Energy Queensland Board and other key stakeholders • Review and approve/reject any request for change (change requests) to the agreed scope, budget, schedule or deliverables. • Ensure all approved change requests align with the program objectives • Ensure program quality outcomes are balanced with other competing priorities • Review each completed phase (or defined stages or gates) and provide go/no-go direction after consideration of quality, risk, cost and schedule • Undertake a Post Implementation Review (PIR) • Ensure the appropriate independent auditing and review of the program is undertaken at the logical stage gates of the program

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Role	Key Accountabilities
Sponsor	<p>The Sponsor is accountable for delivering the business value enabled by the initiative and meeting the objectives set through the business case.</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Oversee development of the business case • Oversee development of the project management plan (PMP) working closely with the Project Director • Monitor and advise on delivery outcomes working closely with the Project Director and/or Project Manager • Ensure that any proposed changes of scope, cost or delivery timeline are checked against possible impacts to program benefits • Approve Change Requests within delegated authority levels • Ensure Change Requests have been endorsed by all impacted parties (Business Change, Design, Delivery, Finance, BAU) • Brief Executives and Board on program progress • Ensure that the benefits realisation plan is realistic and achievable
Project Director and/or Project Manager	<p>The Project Director and/or Project Manager has responsibility for the delivery of the overall initiative while maintaining the balance of competing priorities and alignment with initiative objectives as specified in the business case and as directed by the Steering Committee.</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Deliver the overall initiative outcomes • Agree delivery strategies with the Sponsor and the Steering Committee • Develop the PMP and oversee specification of all initiative deliverables including assessment of interdependencies and appropriate sequencing across the initiative • Manage development of the communications plan and ongoing communications with guidance and feedback from key stakeholders • Manage mobilisation of the initiative, including resource provision and procurement • Oversee technical delivery of solution design, development, implementation, integration, testing and data conversion • Oversee the delivery of training, deployment, organisational change management and business process re-engineering • Resolve all issues concerning project plans, schedules, budgets, risks and issues as they relate to the initiative • Manage cross-project dependencies, scope and resourcing issues • Ensures audit feedback is actioned in a timely, verifiable manner and validated
Program Management Office	<p>The Program Management Office is a centralised Energy Queensland business function which provides coordination, standards, administrative support and end-to-end reporting for Energex and Ergon Energy's business transformational and ICT initiatives.</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Provide a central repository and framework for all program and project issues and risks • Co-ordinate and manage all project plans under guidance from the Project Managers and/or Project Directors • Overall program / project risk mitigation management • Overall program / project issue management • Program financial tracking and reporting • Deliverables monitoring • Program key performance monitoring and reporting

Role	Key Accountabilities
Project Team Members	<p>The Project Team undertakes the core delivery of the project under direction of the Project Director and/or Project Manager. The team typically comprises internal representatives and subject matter experts of affected business areas as well as internal and vendor-provisioned delivery resourcing.</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Develop and deliver assigned project deliverables • Identify issues and record, monitor and report status • Manage issues with appropriate actions • Escalate issues as required • Attend reference groups and other forums as required

9.2. Stakeholder Management

The following tables summarise the key internal and external stakeholders for the investment. A detailed stakeholder management plan will be developed as part of delivery planning for the initiative.

9.2.1 Key Internal Stakeholders

Stakeholder	Interest
Executive Leadership Team (ELT) and Board	<ul style="list-style-type: none"> • Asset management performance effectiveness and risk/issue mitigation.
Executive General Manager Asset Safety and Performance	<ul style="list-style-type: none"> • Accountability for prudent and efficient network Asset Management.
Asset Management groups	<ul style="list-style-type: none"> • Availability of accuracy and timely spatial network models and information, for efficient monitoring and management of assets and prudent asset investment planning.
Energex and Ergon Energy Operational Control Centres	<ul style="list-style-type: none"> • Accurate and timely updating of the network model in support of safe network control and operation.
Lines designers	<ul style="list-style-type: none"> • Seamless, efficient, integration of lines design tools and processes with the GIS.
Field workforce	<ul style="list-style-type: none"> • Access to accurate spatial network asset information in the field. • State-wide consistency of network models and processes, for safe working across the Energex / Ergon Energy regional boundaries.

9.2.2 Key External Stakeholders

Stakeholder	Interest
Community	<ul style="list-style-type: none"> • "Open data" provision of network information to interested community stakeholders (including councils, developers, businesses and other customers) for improved communications and community decision making. • This network information may be overlaid with community spatial data including mapping of distributed energy resources, storage and related details. • In providing this information, Energex and Ergon Energy will also meet its obligations and community expectations for appropriate security of critical infrastructure information and privacy of customer data.

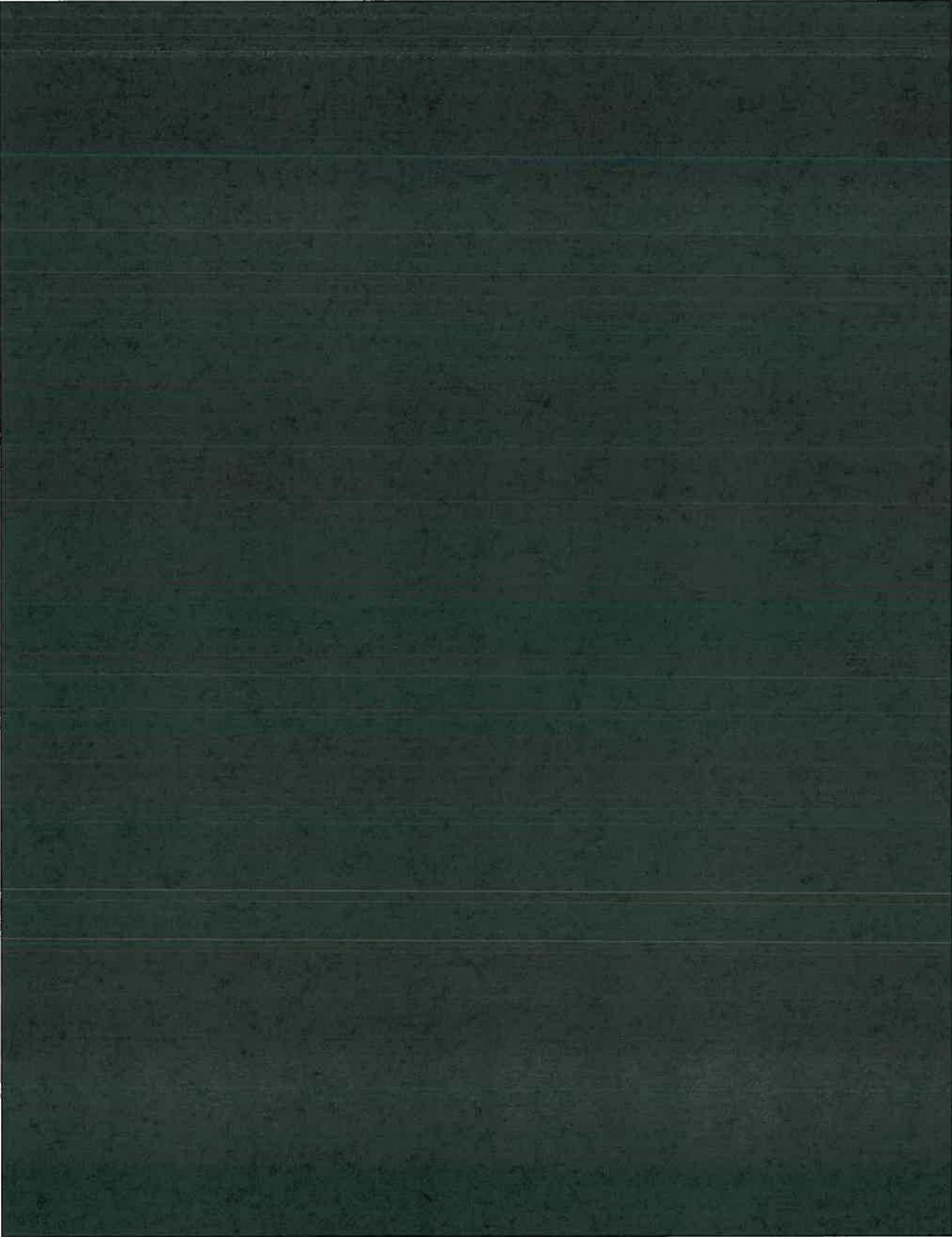
Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



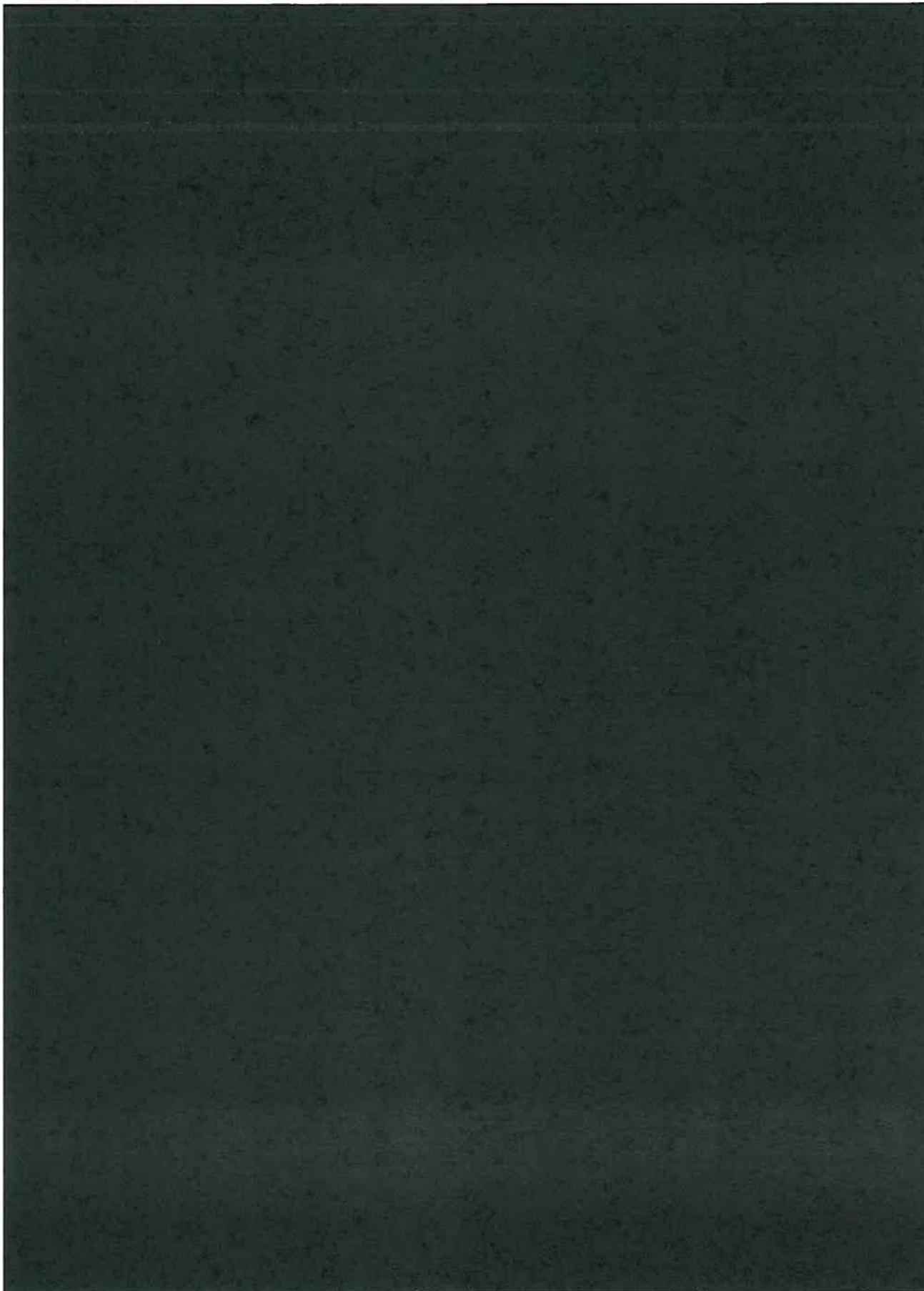
10. RISK ASSESSMENT

10.1. Organisational Risk Assessment



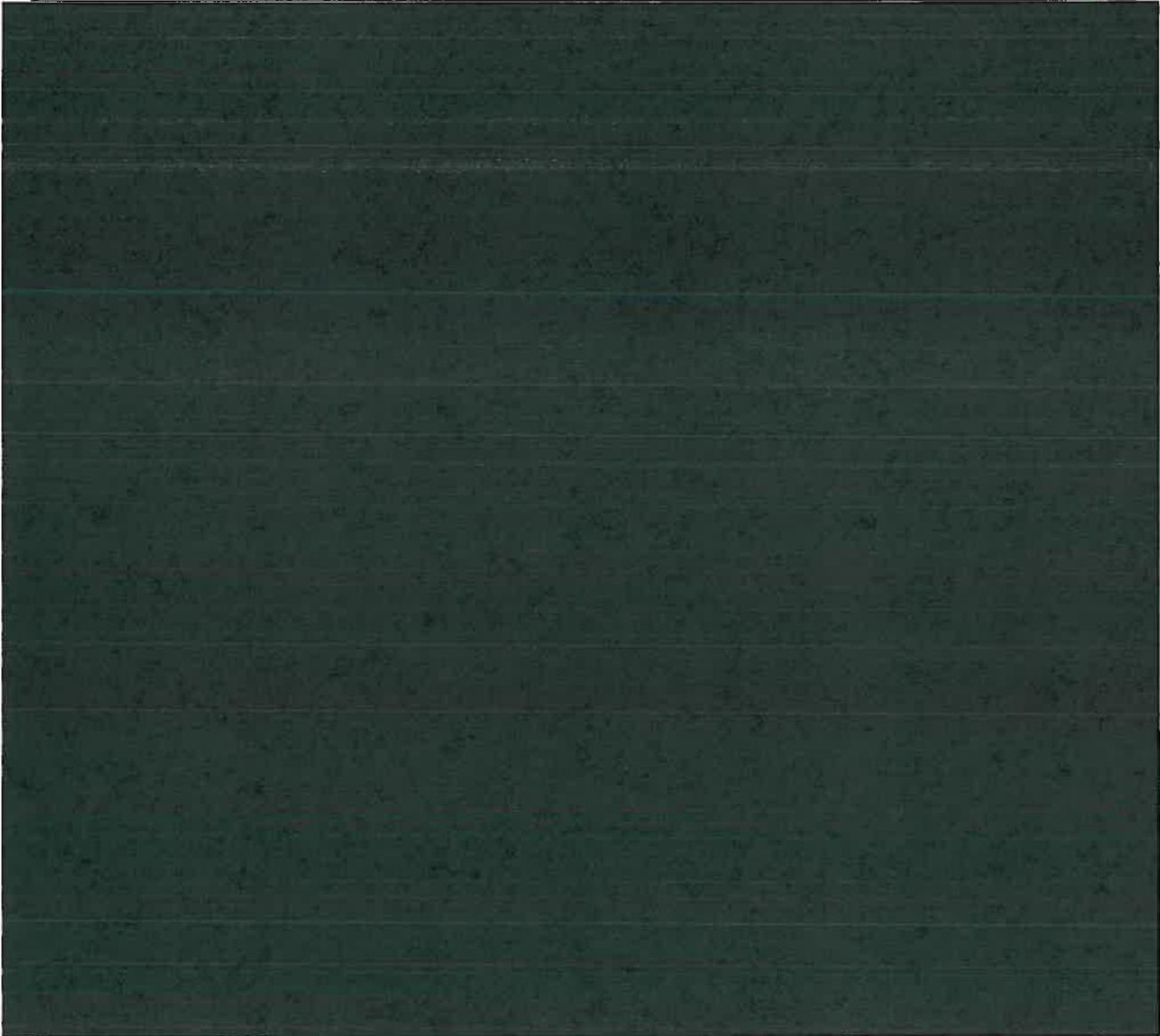
Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



10.2. Preliminary Implementation Risk Assessment

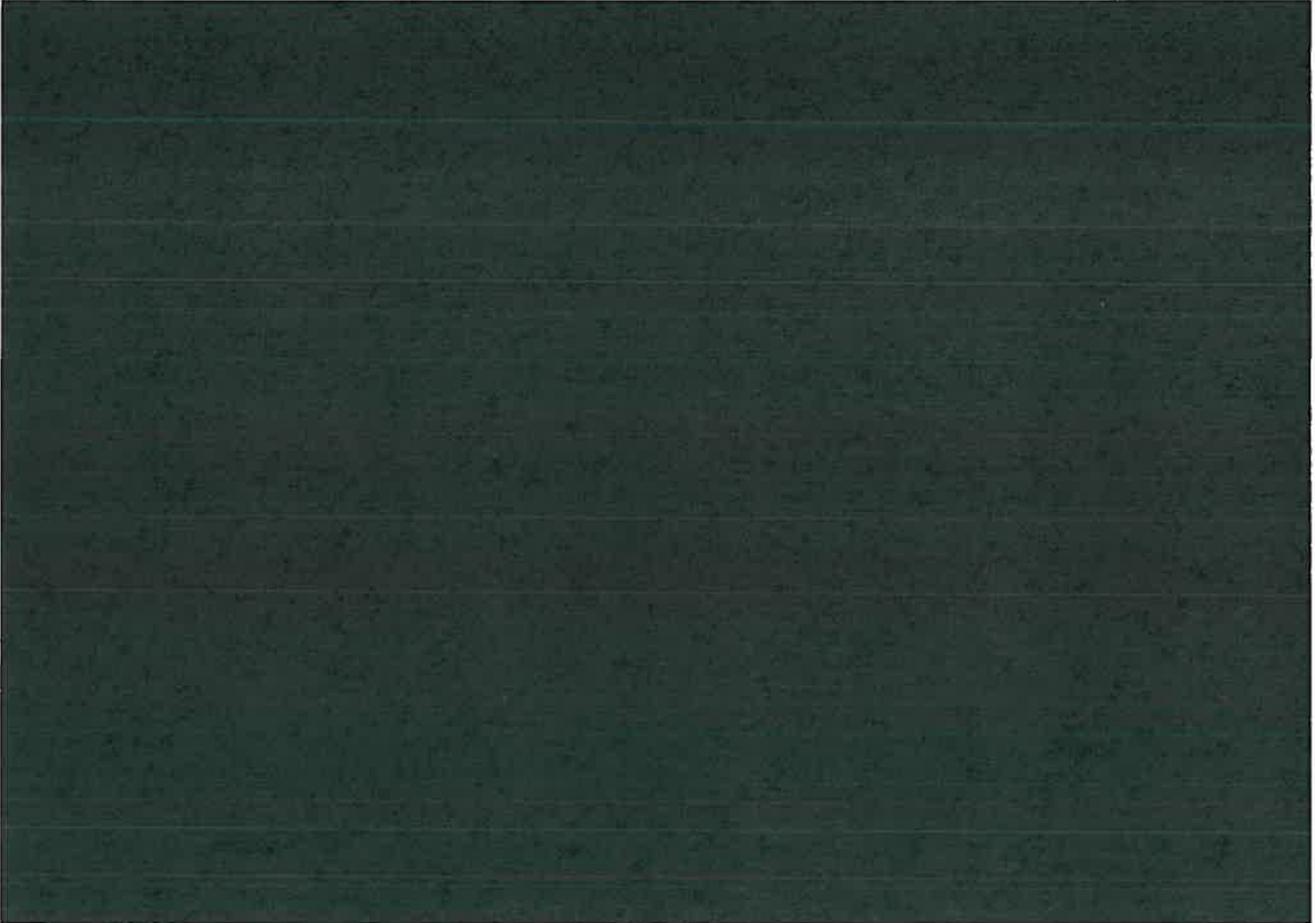
This section provides a preliminary assessment of the key implementation risks of the preferred investment option.

Risk Description	Inherent Risk	Planned Mitigation	Residual Risk
<p>Risk 1. NFM, GISEP and Landbase migration complexities</p> <p>NFM, GISEP and Landbase are complex in-house systems, datastores and integration hubs which support key asset management and operational functions across the Energy Queensland networks. Their unusual collections of functionality mean the like-for-like replacement is not viable, therefore transition to the target state must be planned in detail and tightly coordinated.</p>	High	<p>Leverage learnings from previous projects which decommissioned earlier aspects of these systems, datastores and integrations.</p> <p>Undertake detailed planning and testing.</p> <p>Deploy the new solution outside of storm season to mitigate roll out risks.</p>	Moderate
<p>Risk 2. Energex / Ergon Energy alignment complexity</p> <p>Alignment of asset management practices and process of Energex and Ergon Energy will be highly complex.</p>	High	<p>Work methodically to align work practices and procedures for state-wide efficiency and best practice.</p> <p>Invest in change management and training.</p> <p>Acknowledge the necessity for staged transition and continuous improvement in process design.</p>	Moderate
<p>Risk 3. Resource capacity and availability</p> <p>The initiative requires mobilisation of a skilled delivery team comprising internal subject matter experts and external solution delivery specialists.</p> <p>The required internal subject matter experts may be limited in capacity due to other initiatives and organisational change.</p> <p>Availability of required external solution delivery specialists is dependent on the capacity of the market.</p>	Moderate	<p>Continue to perform prudent program management planning to minimise internal resourcing conflicts, ensuring adequate capacity is committed to each initiative prior to delivery.</p> <p>Also prior to delivery, verify the availability of external solution delivery expertise through market procurement processes.</p>	Low

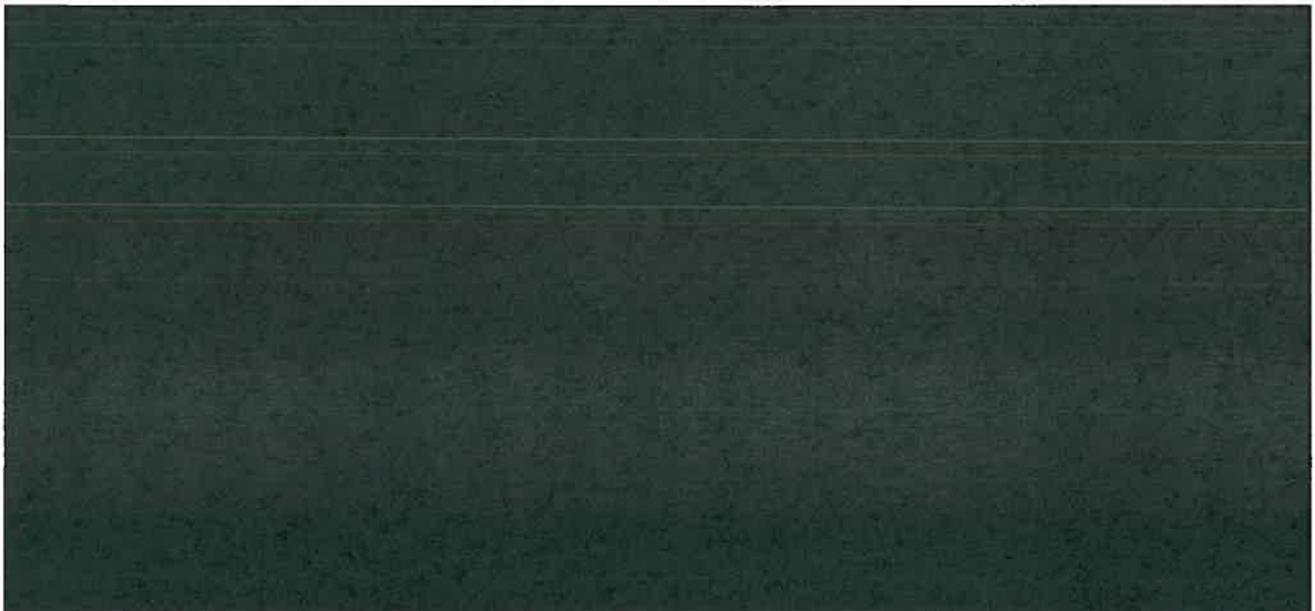
11. CHANGE IMPACTS

This section details the potential impacts across the Energy Queensland environment during and after the implementation of this investment.

11.1. Investment System Impacts



11.2. People & Process Impacts



Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement

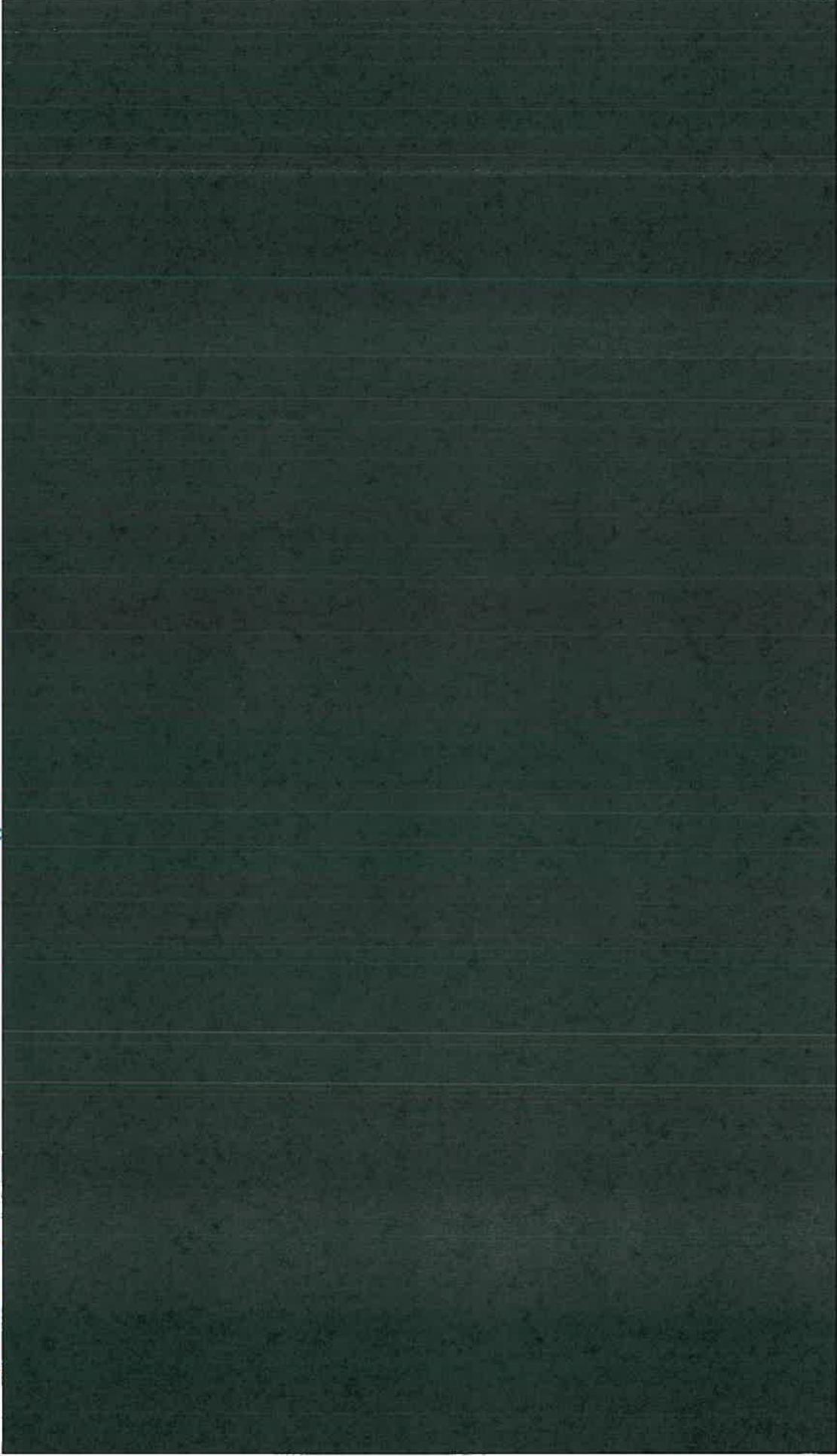


Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



APPENDIX A – Asset and Network Information Management between EAM and GIS



Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement

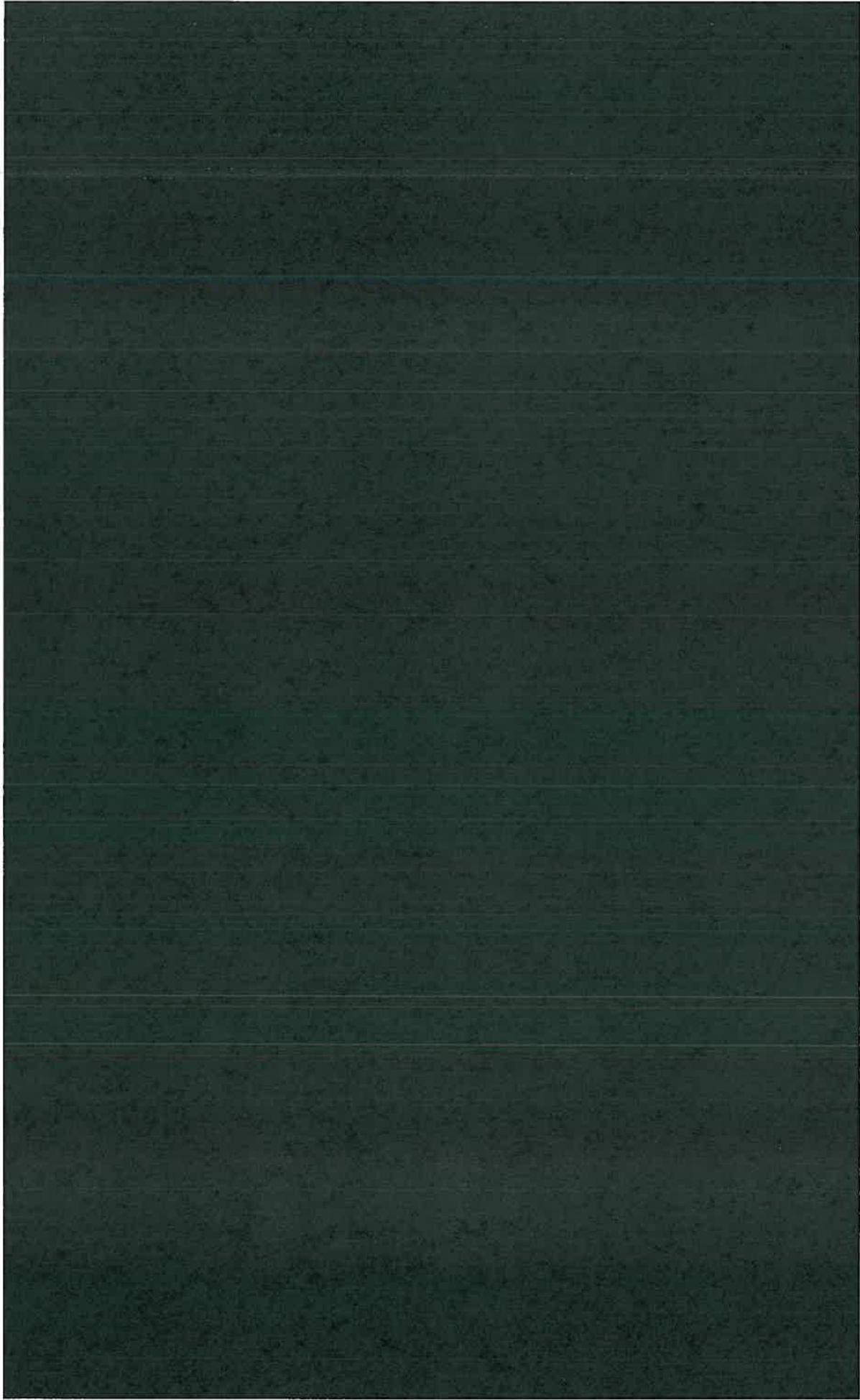


APPENDIX B – Value Stream Analysis



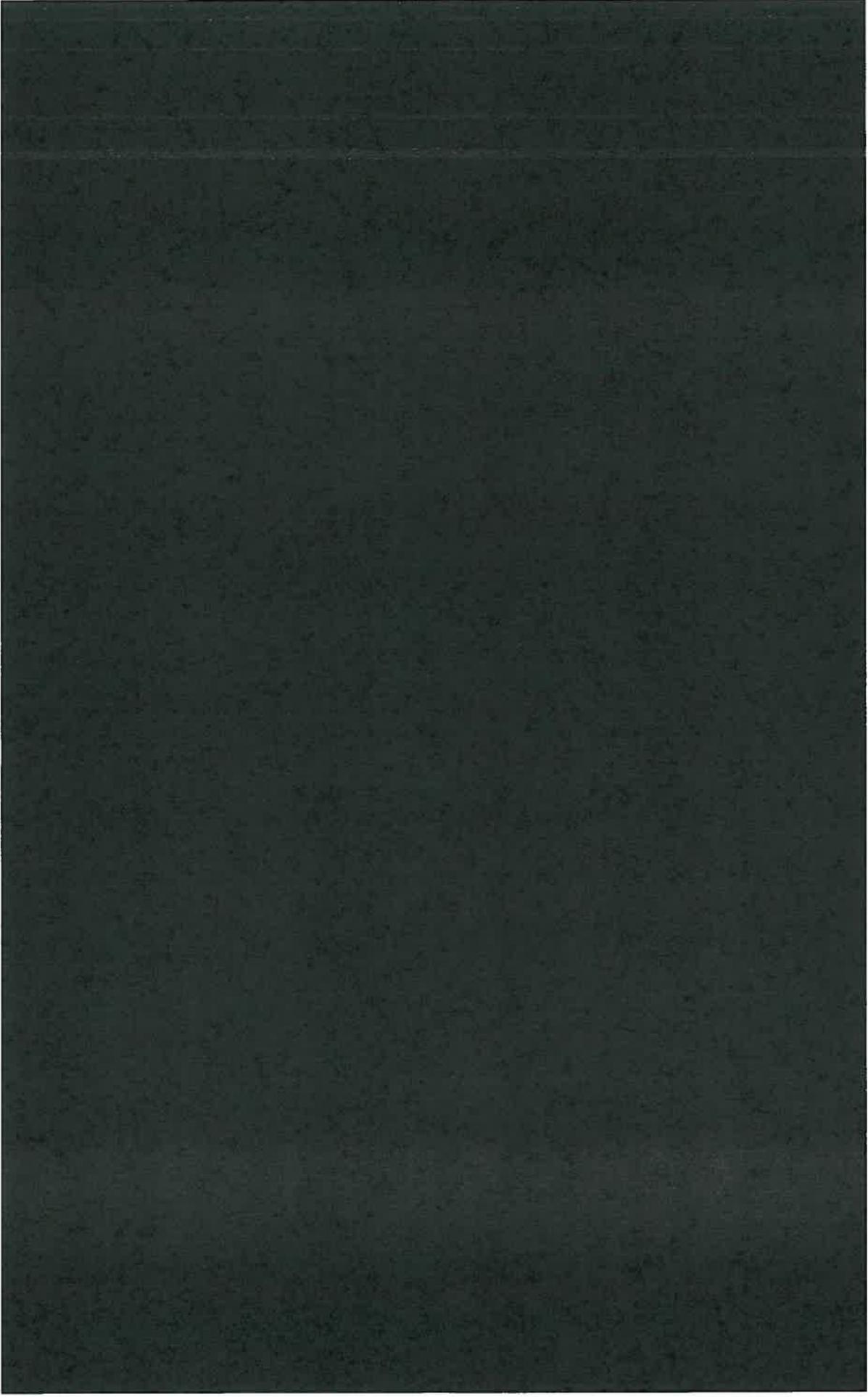
Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



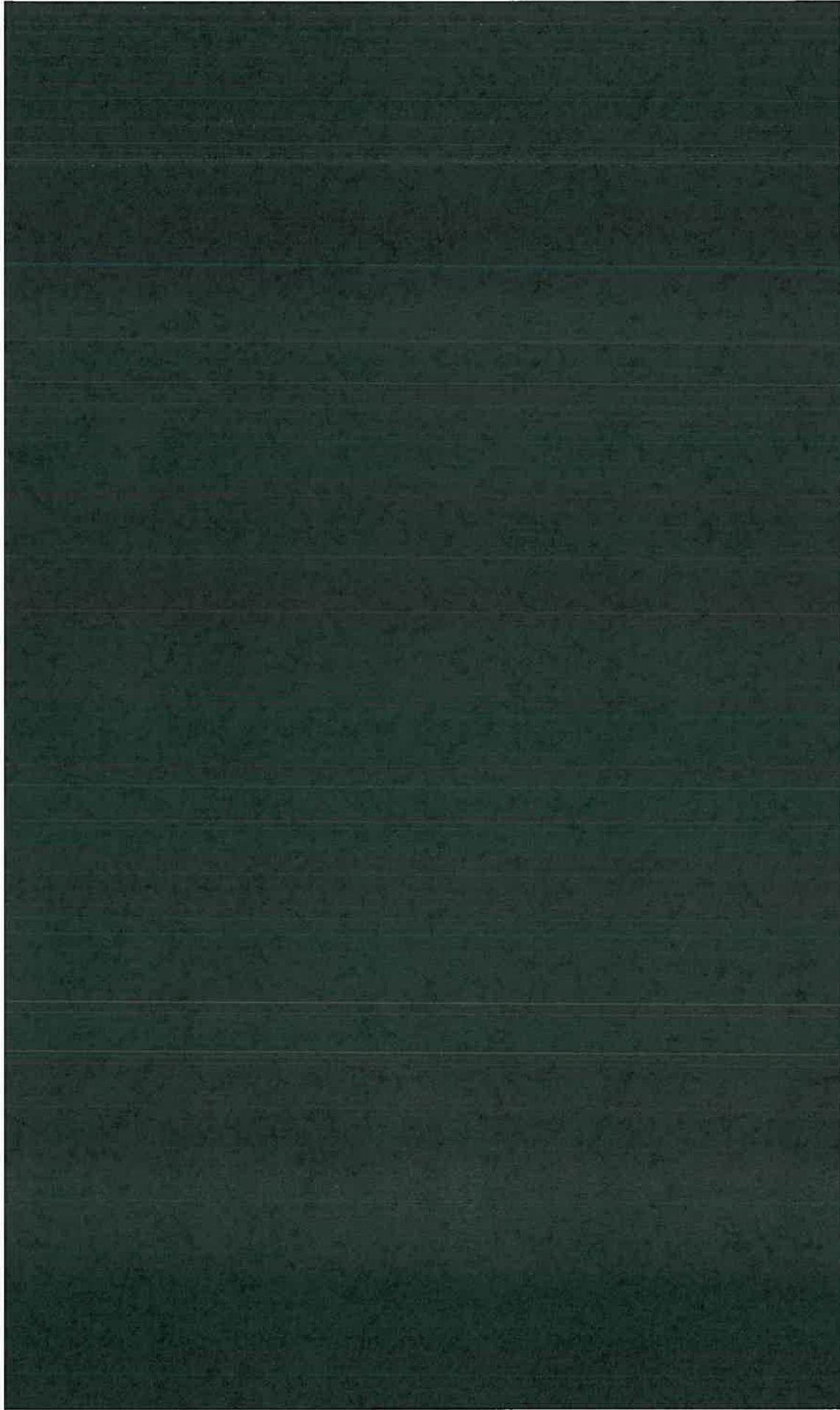
Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



APPENDIX C – Glossary

This section describes key terms and acronyms used in this document.

Term	Definition
ACS	Alternative Control Services
CapEx	Capital Expenditure
DER	Distributed Energy Resources (e.g. PV, wind generation, battery storage etc)
DMS	Distribution Management System
DNSP	Distribution Network Service Provider (i.e. the Energex and Ergon Energy distribution businesses)
EAM	Enterprise Asset Management system supporting functions including Asset and Works Management
ELT	Energy Queensland’s Executive Leadership Team
ERAT and ERAT2	Energex’s custom built in-house equipment specification and ratings systems (tightly integrated with NFM)
ERP	Enterprise Resource Planning system supporting functions including Finance, Human Resource Management, Payroll and Procurement
Esri	Supplier of spatial mapping and visualisation tool currently used in Energex and Ergon Energy
ETL	Extract Transform Load (data migration and integration technology)
GE	General Electric. Supplier of Ergon Energy’s Smallworld v4 GIS
GIS	The Energy Queensland Geographic Information and Network Model Management Systems
GISEP & ECorp	Ergon Energy integration data hubs, comprising duplicated ERP, EAM, Smallworld and PEACE data for business process integration and synchronisation.
HR	Human Resources
HV	High Voltage
ICT	Information Communication Technology
Landbase	Ergon Energy spatial database which currently masters third party data layers including the cadastre, sourced from agencies including the Department of Natural Resource, Mines & Energy, NBN, Powerlink and others.
LV	Low Voltage
NER	National Electricity Rules
NFM	Network Facilities Management. Energex’s custom built in-house network asset and model management system
NPV	Net Present Value
NRT	Near Real Time
OpEx	Operating Expenditure

Preliminary Gate 2 Business Case

ID01 GIS Consolidation & Replacement



Term	Definition
PV	Photo Voltaic DER
SCS	Standard Control Services
Smallworld	Ergon Energy's GE-supplied GIS
WACC	Weighted Average Cost of Capital