Jemena Gas Networks (NSW) Ltd

2015-20 Access Arrangement Information

Appendix 6.3

JGN IT Strategy and Asset Management Plan
2014/15 to 2019/20

Public

30 June 2014

VERSION 1.4

11 JUNE 2014

JEMENA GAS NETWORKS

2014/15 to 2019/20

IT ASSET MANAGEMENT PLAN

GAS NETWORK PROGRAM PLANNING

JEMENA GAS NETWORK
IT ASSET MANAGEMENT PLAN

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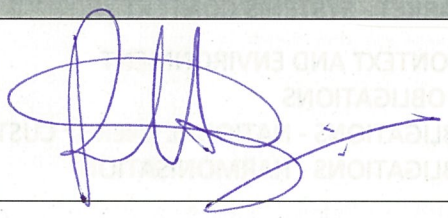
Paul Adams Managing Director (On behalf of JGN Board)	12/Jun/14	

CONTENTS/TABLES AND FIGURES INDEX

EXECUTIVE SUMMARY

Introduction

The purpose of this document is to provide a 6-year Jemena Gas Networks (JGN) IT Strategy and Asset Management Plan from 2014/15 to 2019/20 with a 20-year outlook to 2034/35 (AMP). JGN provides gas distribution services to the combined areas of Greater Sydney, Greater Wollongong and Greater Newcastle and 20 regional centres. The AMP incorporates the IT capital program of work and changes to IT Operations for the:

- Completion of the AA2010 current Access Arrangement period from 2010/11 to 2014/15.
- Access Arrangement period from 1 July 2015/16 to 30 June 2019/20.

Business Strategy and IT Alignment

The Jemena "IT Strategic Plan" forms part of the overall business strategy by defining the IT solutions and enabling technologies to:

- Deliver and enable business plans.
- Provide for energy market growth.
- Sustain the technology environment at low risk.
- Provide cost effective information delivery and operating technologies.

The Jemena IT Strategic Plan guides and informs the development of this Asset Management Plan that consists of the program of work for the management, delivery and operation of information systems from 2014/15-2019/20.

The primary strategic themes and aims guiding this AMP are to:

- Provide the capability to support National Energy Customer Framework obligations for customer relationship management and supporting data.
- Mitigate risk by replacement of legacy systems and obsolete technologies.
- Implement new capabilities to align the customer expectations of an Australian energy distribution business through the addition of a Geographic Information System, Data Warehouse and Field Mobility capabilities.
- Leverage proven technology solutions and up-to-date infrastructure technologies to optimise JGN's market services and business efficiency.
- Implement systems deferred from the AA2010 period due to prudent re-prioritisation.

Capital Program Categories

JGN's system and process capability is delivered via a range of Information Technologies and Business Solutions. This blend of solutions supports the unique NSW gas requirements and also seeks to leverage enterprise capabilities of Jemena where appropriate. The solutions can be broadly categorised into four sets of core IT capability and services provided to JGN, which are:

- Business Process Automation – to make provision of services to the NSW gas market efficient, reliable and cost effective.
- Information and Records Provision – to provide and maintain all information required to plan, develop and operate the business effectively and comply with energy and Government regulation.
- Connecting with Customers – to service the needs of market participants including retailers and end consumers through IT supported interaction and information provided through multiple channels.

- Productivity Tools – the provision of technology tools for the use of our workforce, partners and market participants to efficiently operate the energy services in a timely and cost effective manner.

The provision of IT services to support JGN is based on a shared services model with funding and resourcing of services split across the Jemena Group of companies. Jemena shares the following technologies and services across the group:

- All corporate applications systems providing functionality for:
  - Executive management information, decision support and reporting
  - Finance and accounting
  - Office systems
  - Program and project management
- All IT Infrastructure
- Maintenance and support is managed and controlled centrally under the IT Operations division with the support of vendors and partners

Jemena has common solutions but in some cases, delivered via separate instances of configured IT solutions for electricity, gas distribution and transmission gas. Jemena's target IT architecture includes the following products and solutions:

- SAP for asset management
- SAP for customer management
- SAP for mass market network billing
- Bespoke applications for market interfaces with customers and retailers, and for billing large consumers.
- Real Time Systems and SCADA with various technologies
- Mobility technologies
- SAP for human resources
- SAP business intelligence for reporting and analytics

Where a solution is exclusively used by the gas business all costs are fully allocated to JGN. The IT Assets and investment projects are categorised and described according to the following energy market services and business purpose:

1. Regulatory and Market Services
2. Corporate and Enterprise Systems
3. Customer Systems
4. Network Distribution Systems
5. Metering and Real Time Systems
6. Content Management, Records Management and Business Intelligence Systems
7. Geospatial Systems
8. Asset Construction and Mobility Systems
9. IT Infrastructure Services

AA2010 Asset Management Program Delivery Status

From the commencement of the AA2010 period on 1 July 2010 JGN has undertaken and completed the following major projects:

1. Replaced the legacy SAP systems that were more than 12 years old had fallen out of support and provided capability for enterprise management, asset profiling information as well as financial management and accounting.
2. Developed and implemented new capability to support NSW Transitional National Energy Customer Framework obligations. Impacted systems included the core gas management and customer management systems. Commenced the development of capability to support full National Energy Customer Framework obligations, as part of the GASS+ legacy systems replacement project commenced in 2013/14; this stage will be completed in 2015/16.
3. Relocated both Primary and Secondary Data Centres after exhausting all available capacity in those facilities for growth. The transition was fully completed in 2012/13 and now resides in 2 outsourced data centres under a new managed services agreement.
4. Replaced the core IT Infrastructure with new technologies to be more efficient and more cost effective, such as data storage, telephony and communications.
5. Planned upgrade and replacement program for desktop and laptop computers including deployment of a new Standard Operating Environment (SOE) and version upgrade for Microsoft Office suite to provide the required capabilities to operate effectively as client devices and maintain the PC fleet under support.
6. Re-platformed the Contracts and Billing System (CABS) and redeveloped the Emergency Load Management System (ELMS), merging them into one more efficient application sharing common data and with upgraded underlying technologies.
7. Conducted a number of systems consolidations, replacements and retirements enabled by new technologies.

The following major projects to be conducted in 2014/15 remain consistent with the AA2010 asset management plan submission and determination:

- GASS+ Replacement Project - Phase 1 of the project will largely be completed by the end of the current AA2010 period with some finalisation work to be completed in the early months of 2015/16.
- The Jemena JSAP Operations Alignment Project will be completed in 2014/15 to optimise and align to the more efficient business processes enabled by the new SAP solutions.
- Augment the current business intelligence technologies with new technologies and prepare for a data warehouse in the next period.
- Planned lifecycle growth and replacement projects for IT Infrastructure will take place at a cost of $1.3M for:
    - Data storage
    - Infrastructure services
    - Platforms and processing
    - End user services

The IT Capex in 2014/15 is a total of [c-i-c] of which the new SAP Gas Solution to replace the GASS+ legacy systems is [c-i-c]

AA2015 Period Program of Work and IT Capex

The AA2015 program of work plans to invest $120.88M of capex in information systems and technologies. This includes [c-i-c] of investments deferred from the previous AA2010 period due to the unplanned introduction of systems to support the national energy customer framework and new tariff pricing structures.

The key principles for determining the capital expenditure are that the investments must be prudent, provide for efficient energy services to the market and be cost effective.

All dollar values represented in this AMP are 2012/13 real costs.

The strategic initiatives that are reflected in the program of work are:

- The completion of the large scale and high complexity replacement of the GASS+ system distribution network system commenced in 2012/13.
- The implementation of a Geographic Information system deferred from the AA2010 period.
- Leverage prior investments in business intelligence technologies with establishment of a data warehouse capability.
- Produce a new distribution network data model for design purposes and decision support, and the introduction of the new data warehouse.
- Establishment of a full field mobility capability.
- Ongoing consolidation of systems to simplify systems provisioning, vendor management and drive further efficiency into business processes.
- Provision of solutions that are flexible and can be extended to support growth fluctuations in the customer space driven by changes in customer demographics, new connections and the scale of the distribution network.
- To provide for the extension of systems, remediation of systems and continuous change in the business environment as the energy market constantly changes.
- Ensure the sustainability of existing systems and infrastructure by managing lifecycle upgrades and replacement programs based on good industry practice.
- Planned migration to more efficient and cost effective solutions following the end of each current asset's life.

IT capital expenditure by category is summarised in Table 1

Table 1 – IT Capital Expenditure by Category Real $2012/13

Summary by Category		2015/16 $Ms	2016/17 $Ms	2017/18 $Ms	2018/19 $Ms	2019/20 $Ms	Total AA2015 $Ms
Regulatory & Market Services Systems	4.3%			[c-i-c]			$ 5.14
Corporate & Enterprise Systems	9.7%						$ 11.78
Customer Systems	7.5%						$ 9.04
Distribution Network Systems	24.7%						$ 29.81
Metering Systems	8.4%						$ 10.12
Content Management & Business Intelligence	8.2%						$ 9.90
Geospatial Systems	8.3%						$ 9.99
Asset Construction & Field Services	4.1%						$ 5.00
IT Infrastructure	24.9%						$ 30.10
Total	**100.0%**	**$ 35.08**	**$ 28.63**	**$ 30.56**	**$ 16.90**	**$ 9.71**	**$ 120.88**

Table 2 below replicates Table 1 in $2015/16 nominal dollars and provides the reconciliation back to the overall JGN capex program and model.

Table 2 – IT Capital Expenditure by Category Nominal $2015/16

Category Total		2015 AA Period					
	% Share of Total	2015/16	2016/17	2017/18	2018/19	2019/20	2019/20
Regulatory & Market Services Systems	4.3%			[c-i-c]			$ 5.63
Corporate & Enterprise Systems	9.7%						$ 12.83
Customer Systems	7.5%						$ 9.89
Distribution Network Systems	24.7%						$ 32.30
Metering Systems	8.4%						$ 11.03
Content Management & Business Intelligence	8.2%						$ 10.81
Geospatial Systems	8.3%						$ 10.86
Asset Construction & Field Services	4.1%						$ 5.44
IT Infrastructure	24.9%						$ 32.81
Total	**100.0%**						**$ 131.61**
Non-specific IT capex	0.0%						$ 0.56
Total	**0.0%**	**$ 37.91**	**$ 31.22**	**$ 33.52**	**$ 18.71**	**$ 10.82**	**$ 132.17**

The escalation factors applied to the JGN IT Capex real $2012/13 to calculate nominal $2015/16 are set out in Table 3 below.

Table 3 – Escalation Cost Factors

Category Total		2015 AA Period					
		2015/16	2016/17	2017/18	2018/19	2019/20	
Real cost escalators		1.350%	2.446%	3.490%	4.315%	5.327%	
Inflation to $2015		105.827%	105.827%	105.827%	105.827%	105.827%	

* Non-specific IT Capex in Table 1.1 consists of the IT Components of the JGN Scada property facilities shown in Table 1.3 below. The Scada data centre costs are for CCTV cameras for security monitoring of the facility.

Table 4 – Non Specific IT Capex

Category Total		2015 AA Period					
	% Share of Total	2015/16	2016/17	2017/18	2018/19	2019/20	Total AA2015
NSW property relocation		$ -	$ -	$ -	$ -	$ -	$ -
VIC property relocation				[c-i-c]			
Scada Security Infrastructure							
Horsley Pk refresh							
Data Centre monitoring							
Access Arrangement							
Total							

The major projects and investments summary listed in Table 2 represent 45% of all capital expenditure over the next AA period. The remaining 55% represents growth, system upgrades as well as extensions, remediation investments and a forecast of the funding required to support regulatory and business environment changes. The major projects represent a mix of replacement projects and the introduction of new capability for JGN. The purpose of establishing new system capabilities in JGN is to deliver services and efficiencies in accordance with current benchmarks set by Australian distribution energy businesses and to align JGN to good industry practice with regard to IT management. The proposed changes reflect customer and market expectations for measurement of good industry practice and efficiencies expected of contemporary energy services organisations. The major projects are as listed in table 5 below:

Table 5 – Project Investment Summary

Project	**Investment Description**
1. Complete GASS+ Replacement Project with SAP Gas Solution Legacy systems suite replacement	Systems Replacement
2. Geographic Information System	New capability
3. Field Mobility	New capability
4. Business Analytics and Data Warehouse Project	New capability
5. Real Time Data & Network Management Model	Improved capability & systems replacement
6. Meter Data Loggers Project	Replacement technology driven by NBN roll out
7. MVRS Upgrade & Technology Replacement	Systems replacement
8. Customer Relationship Management	New and improved services
9. Market Data Management	New capability and service improvement
10. IT Infrastructure - Asset Lifecycle Projects	Sustain the current capability
11. Data Storage - SAN Replacement	Systems replacement at end of life
12. Desktop/Laptop Standard Operating Environment Replacement	Lifecycle replacement end or fit for purpose
13. Microsoft Software Agreement Renewal	Lifecycle replacement end or fit for purpose
14. Provision for Growth	To meet market and business growth
15. Provision to Extend, Remediate and Change	Meet demand and plans for greater usage of existing IT systems Improve existing services to be more efficient Remediate systems to ensure sustainable performance standards Respond to continuous external changes made necessary by the market and business environment.

The major projects and investments by capex value are summarised in Table 6.

Table 6 – IT Capex Expenditure by Major Investments

Major Projects	JGN Percent Share of Costs $Ms	AA2015 Share of IT Capex
Systems Solutions Projects Software + Additional Hardware		
Complete GASS+ Replacement Project with SAP Gas	[c-i-c]	
Geographic Information System		
Field Mobility		
Data Warehouse Project		
Real Time Data & Network Management Model		
Meter Data Loggers Project		
MVRS Upgrade & Technology Replacement		
Customer Relationship Management		
Market Data Management		
Sub-Total	**$ 46.17**	**38.2%**
IT Infrastructure - Asset Lifecycle Projects		
Data Storage - SAN Replacement	[c-i-c]	
Desktop/Laptop Standard Operating Environment Replacement		
Microsoft Software Agreement Renewal		
Sub-Total	**$ 7.32**	**6.1%**
Provision for Growth	**$ 6.88**	**5.7%**
Extend Remediate and Change	**$ 24.49**	**20.3%**
Total Major Projects	**$ 84.86**	**70.2%**
All Other Capex	**$ 36.02**	**29.8%**
Overall Total	**$ 120.88**	**100.0%**

IT Operations

The JGN AA2015 IT opex forecast is based on the current 2013/14 actual + forecast costs as the baseline cost plus step changes. JGN does not have any regulated step changes in IT Operations costs for the period from 2014/15 to 2019/20.

1 INTRODUCTION

1.1 PURPOSE

The purpose of this document is to provide a 6-year JGN IT Strategy and Asset Management Plan (AMP) from 2014/15 to 2019/20 with a 20-year outlook to 2035.

JGN is the principal gas distribution service provider in NSW. It owns more than 25,000 kilometres of natural gas distribution system, delivering approximately 100 petajoules of natural gas per annum to over one million homes, businesses and large industrial consumers in Sydney, Newcastle, Wollongong and the Central Coast, and over 20 country centres including those within the Central Tablelands, Central West, Southern Tablelands and Riverina regions of NSW. The AMP incorporates the IT capital program of work and changes to IT Operations for the:

- Completion of the current 2010/11 to 2014/15 Access Arrangement period.
- Access Arrangement period from 1 July 2015 to 30 June 2020.

The AMP excludes non-regulated IT assets and capital projects.

Jemena operates a shared IT service model for provision and delivery of IT Operations and supporting the IT Capital Program of Work. From 2010 Jemena IT (JIT) had engaged EB Services to provide support services for IT operations and shared capital projects. EB Services was formed by Jemena's parent company Singapore Power International in 2009/10 to share IT operational systems, systems development and costs for its subsidiaries Jemena and SP Ausnet. From 1 July 2014, EB Services will be closed down and the services to Jemena will be absorbed back into JIT.

1.2 PLANNING PRINCIPLES

For each asset group, the plan focuses on optimising the lifecycle costs for that asset group. This encompasses asset acquisition, creation, operation, maintenance, renewal and disposal. The plan makes provision for the number of assets and services required to meet all obligations in accordance with the defined business requirements, service levels, ensure capacity to meet future demand and that costs, risks and system performance is maintained throughout the asset lifecycle phases.

The AMP covers the 6-year period from 1 July 2014 to 30 June 2020 i.e. the completion of the current Access Arrangement and the future Access Arrangement Period from 1 July 2015 to 30 June 2020

1.3 IT CAPITAL PROGRAM DEVELOPMENT

The IT capital program is based on sustaining the current assets that are to be retained, replacing assets at the end of their useful or economic life and providing new systems capability.

This 6-year plan coincides with the JGN AA2015 prices reset submission to the Australian Energy Regulator which consists of the Australian Financial Years 2014/15 through to 2019/20.

Each asset category plan is developed to optimise the entire lifecycle management process including performance, cost to acquire, cost to operate and likely migration or upgrade path.

The asset categories have whole of life asset management plans with the following types of program work and capital investment.

- **New IT Capability**

  The acquisition, development and implementation of new system assets to meet a business purpose not currently enabled or supported by information technologies.

- **IT Asset Extensions, Remediation and Changes**

  The extension of applications involves the take up of unused functionality. This may be pre-existing capability or resulting from software upgrades available within implemented solutions or the take up of implemented functionality by more users.

  Remediation involves correcting or optimising the performance of software applications not performing to the required service standards. Remediation is mostly IT opex, however at times new investment is required to meet the performance standards and to mitigate risk.

  The service changes are for small-scale ongoing modifications to current systems as a result of changes in the business or technical environment needing to be reflected in the application systems.

- **IT Asset Growth**

  The provision for growth encompasses increased needs to meet:

  - Natural growth in IT Capacity, software licenses and new users for existing systems
  - Changes in capacity to provide for new systems ongoing growth

  The growth is driven by new customers and connections, network growth, increased energy demand and increased usage of current IT systems, information and data.

  JGN's weighted average growth has typically been about 2% per annum over the AA 2010-2013 period excluding the addition of new systems capability. This growth percentage translates as 1% growth in users, devices, and licenses due to economies of scale. The business and IT demand is growing faster than the JGN work force.

  Additionally, data and storage capacity growth is averaging 15% compound rate per annum as at 2013 resulting from greater use of information and data taking place as well as the cumulative effects of data retention reflecting a major IT industry trend.

- **IT Asset Upgrades**

  This type of expenditure is to perform upgrades on existing IT assets and does not involve any replacement of an asset.

  Software application assets are upgraded based on 3 to 5-year cycles depending on the assets and the policies of the vendors for the frequency of upgrades.

  Most IT Infrastructure assets are replacements rather than upgrades for three reasons:

  - The economic business case makes replacement more cost efficient.
  - Risks associated with performing an in-place upgrade often outweigh any benefits gained.
  - Systems are often an integrated combination of hardware and layered software where replacing the system as a whole becomes more desirable.

  Upgrade costs have been estimated at 10% of the original asset creation costs including acquisition, development and implementation.

- **IT Asset Replacement and Retirements**

  All IT is subject to end of asset life replacement or retirement. This typically occurs based on vendors declaring an end of support period where they will no longer offer to support a product, and alternative support is either not available or uneconomic. Equally, replacement or retirement can also be triggered where an economic justification can be made where the cost of retention is greater than the cost of replacement.

  In some instances assets may become redundant due to systems consolidation, new strategies and new technologies where the existing asset is shut down and disposed of without the need for replacement.

2 Background

2.1 IT SERVICES PROVISION

Jemena Business Solution capabilities are delivered via a range of Information Technologies and Business Solutions. This blend of solutions supports both the unique gas requirements and the enterprise requirement of Jemena. These solutions can be broadly categorised into four sets of core services which are:

- Business Process Automation
- Information and Records Provision
- Connecting with Customers
- Productivity Tools

The provision of IT services is based on a shared services model with funding and resourcing of services split across the Jemena Group of companies. The cost of service provision and solutions that are solely applicable to the gas business are fully allocated to JGN.

Several IT systems under management which are referenced in this section are unique to JGN while others are enterprise based solutions and used by multiple business divisions. A fully defined Cost Allocation Methodology is used to both define and apply costs in a fully transparent manner. A new IT cost allocation model was recently developed using 2012/13 actual financials, number of users, IT inventory and data demands at a more detailed level of granularity for IT measures and costs. The new model applies from 1 July 2013.

JGN is one of the major distribution assets owned and operated by Jemena. JIT manages the provision of all IT capability, operations and program delivery. IT services are provided via a combination of internal and external parties, in summary external service provision supports:

- Large projects that are primarily delivered using external systems integrators selected by market tender.
- Small scale projects which are subject to competition and delivered by a blend of in-house staff, external IT solutions development organisations and contractors.
- Legacy maintenance agreements and services will be moved to standard support agreements based on adoption of new technologies.
- Communications links and services currently outsourced to Telstra.

2.2 IT ASSETS DESCRIPTION

2.2.1 ASSET CATEGORIES AND EXPENDITURE TYPES

The Information Technologies are described by category that reflects the business purpose of those systems. The categories are:

1. **Regulatory Requirements and Market Operation Services.**

   The regulatory and market services encompass information systems functions and facilities required to meet regulatory obligations and to comply with all non-energy government regulations.

   JGN provides a range of service to the gas energy market via demand, supply and load management systems and for the short term trading market.

2. **Corporate and Enterprise Systems**

   The corporate and enterprise systems encompass the corporate and back office functions of JGN. The enterprise systems cover IT solutions used by the entire business including office systems, intranet and general reference information. The functions include finance and accounting, treasury, human resources, payroll, occupational health and safety and office administration.

3. **Customer Systems**

   The customer systems encompass all interaction with JGN's customers including the end consumer of energy. The Customer systems consist of those systems required to engage with and service end customers, retailers, providers and transmission businesses.

4. **Network Distribution Systems**

   The distribution network systems for the purposes of this asset class are those systems that manage the network as a physical asset and to distribute gas. The systems manage the gas from the point of advice by the retailer to provide the service, to receiving the energy from the transmission businesses and through to the end consumer.

5. **Metering and Real Time Systems**

   The metering systems encompass all functions relating to the provision of gas meters, their operation, maintenance and support and include meter data.

   Jemena's IT division provides technology platforms and communication for real time systems including SCADA. The SCADA solutions are managed by the network management and operations division.

6. **Content Management, Records Management and Business Intelligence Systems**

   The content management, records and business intelligence systems asset class encompass all systems that manage, enable and support the business needs through information retrieval, reporting and decision support tools.

7. **Geospatial Systems**

   The geospatial asset class encompasses all systems solutions that provide geographic location information, mapping, asset images, aerial images, geological images, geographic related asset data and integration with external parties. Those parties include Government departments, service providers, sub-contractors and construction partners.

8. **Asset Construction and Mobility Systems**

   The asset construction systems assets encompass program, portfolio and project management solutions. The field services assets are those software applications and mobility technologies used by managers, supervisors and workers in the field for planning, construction and for works management including maintenance, inspections, outages and materials management.

9. **IT Infrastructure Management**

   The IT infrastructure category encompasses all hardware technology platforms, communications, operating environments and data systems needs to operate the application solutions. IT Infrastructure has been broken down into sub-categories of:

   - Data Storage and Management
   - Infrastructure Services
   - Platforms and Processing
   - End User Services

- Security Services
- Systems Management and Operations
- Communications and IT Network Services
- Facilities and Data Centres
- Commercial Agreements
- Service Management and Help Desk
- Data Centres
- Systems Capacity Growth

3 ENERGY MARKET - SYSTEMS CONTEXT

3.1 BUSINESS CONTEXT AND ENVIRONMENT

The Jemena gas distribution business has obligations across a range of statutory and regulatory instruments, including State Law, gas market rules and market procedures. Jemena's JCARS system is used to record obligations, and is used as the authoritative source for listing of all obligations and responsible persons across Jemena. Obligations are predominately met by the use of GASS+ and its related ecosystems.

IT services are required to achieve regulatory outcomes and ensure that Jemena Gas remains compliant with its wide range of obligations, these obligations are categorised as:

- Technical Obligations
- Market Obligations - NECF
- Market Obligations - Harmonisation

3.2 TECHNICAL OBLIGATIONS

As a gas distribution business, JGN relies on its physical assets in the field to be routinely maintained and updated to ensure the safe and efficient supply of gas to its customers. JGN has an Asset Management Plan, updated annually, that outlines the short and long term objectives and strategy for the maintenance of field assets. The Asset Management Plan is developed by the Technical Asset Management team using the existing Asset Management policies and guidelines.

3.3 MARKET OBLIGATIONS - NATIONAL ENERGY CUSTOMER FRAMEWORK

The National Energy Customer Framework (NECF) is the next major stage in the national energy reform process, as agreed by the Council of Australian Governments (COAG) under the Australian Energy Market Agreement (AEMA). The NECF aligns the jurisdiction-based regulatory frameworks in relation to the sale and supply of energy, with a focus on providing a regulatory framework for the relationship between energy customers and the energy retailers and distributors that supply them.

Jemena Gas has a two-phased approach with the first phase Transitional solution to meet the obligation with substitutes on 1 July 2013 and the second phase of Full NECF compliance by 1 July 2015 to be aligned with the commencement of the next Access Arrangement.

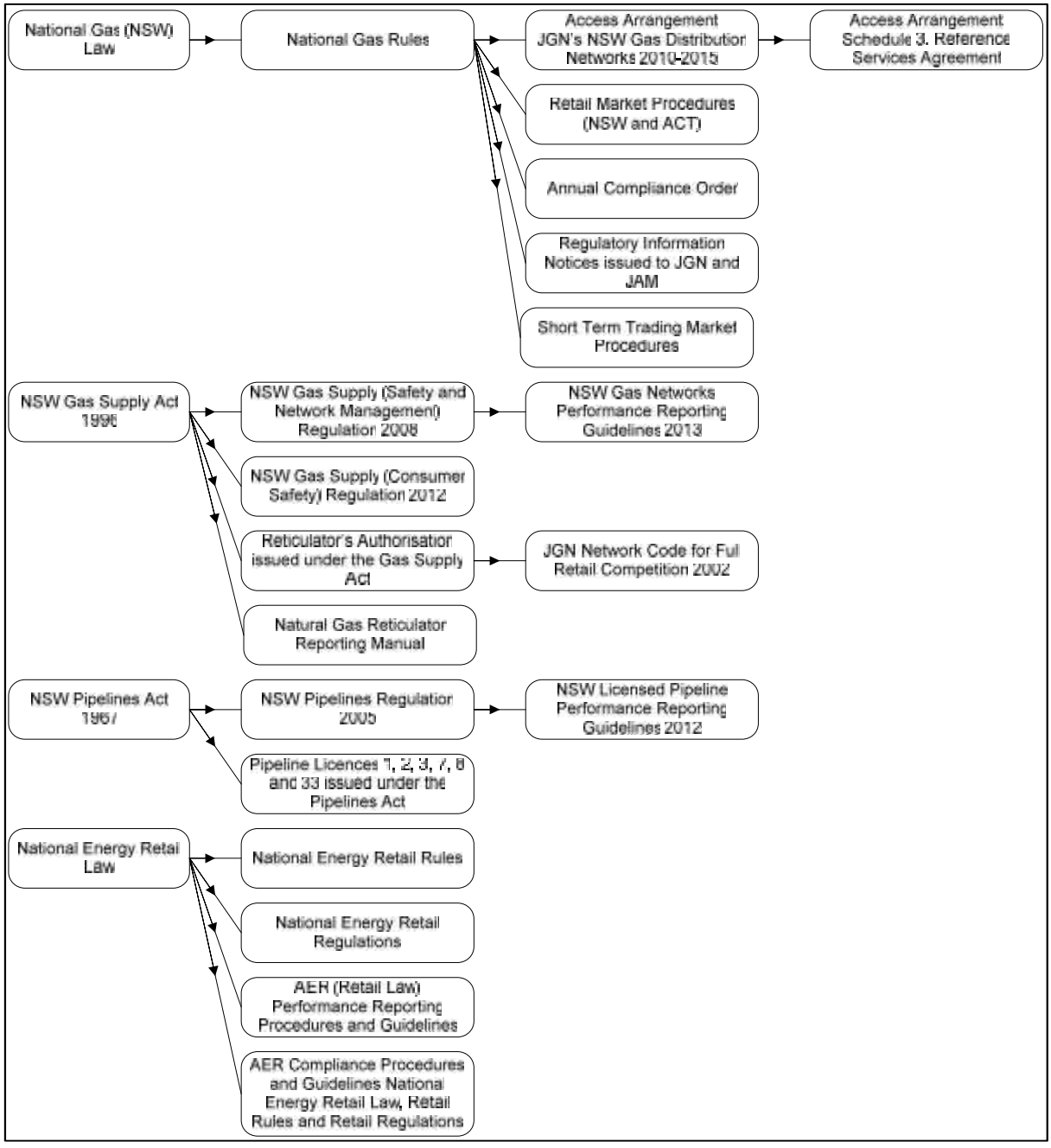
A number of changes have been made to systems supporting JGN and are common with ActewAGL Distribution to meet these obligations including:

- New B2B interfaces to allow retailers to perform bulk updates of customer contact details.
- Manual and B2B interfaces to allow retailers to update customer classification (residential or business).
- Manual and B2B interfaces to allow JGN and ACTEW/AGL to notify retailers of updates to the consumption threshold.
- Support for tracking gas 'life support' customers.
- Support for a market wide consistent approach to customer engagement such as complaints, enquiries, and compliments.

The market obligations hierarchy is represented in the Figure 7 - JGN Obligations Hierarchy

JGN Market Obligations Hierarchy

Figure 7 - JGN Obligations Hierarchy



3.4 Market Obligations - Harmonisation

The formation of the Australian Energy Market Operator (AEMO) in 2006 saw the integration of all previously state based market procedures into a single National procedure set, encompassing all former jurisdictional differences.

Following the integration, AEMO commenced a project to investigate the viability of harmonising gas Business to Business (B2B) and Business to Market (B2M) procedures across all jurisdictions, taking into consideration current Retail Market Procedures implemented in ACT, NSW, South Australia and Victoria.

The impact areas of aligning JGN to the National B2B were recently documented by AEMO in the GRCF-NA industry working group, where a hybrid arrangement was decided upon by a majority of industry participants, apart from JGN.

As the hybrid specification was insufficiently detailed to enable meaningful costing of harmonisation, AEMO instructed JGN to instead produce cost estimates for migration to South Australian B2B and B2M procedures in order (in AEMO's view) to approximate the cost of migrating JGN to the hybrid arrangements decided within the GRCF-NA in order to support a cost/benefit study. The costs fall under "AEMO National Procedure Harmonisation". The following summary identifies the key implications of aligning JGN with the South Australian proxy of the hybrid GRCF-NA arrangements.

Harmonisation Summary:

- Utilising VIC / SA hub.
- Adopting NSW/ACT error correction process.
- Adopting SA Change of User (COU) process.
- Developing COU on move-in hybrid between NSW and SA.
- NSW/ACT Meter data notification content.

Retain existing state based procedures (form and responsibility):

- Interval data management.
- Gas balancing / STTM.
- Centralised hot water.
- Connection Process (recognition of different physical market needs).
- Emergency Load Management (load shedding).

Resolve outstanding issues involving:

- Network supply points.
- Service order matching responsibility (i.e. suppressing duplicates).
- Specific hybrid interface specifications.
- Specific service level expectations (and applicability).

At the time of preparing the JGN IT AMP market harmonisation workshops are being conducted by AEMO and market participants. The objective of this exercise is to develop a cost model and proposal for the augmentation of the market rules to harmonise the NSW gas market rules with the current SA gas market rules.

4 STRATEGY

4.1 JEMENA GAS NETWORK'S BUSINESS STRATEGY

The strategy for the period 2014/15-2019/20 focuses on initially establishing a foundation for the future operation of the organisation through a major business transformation program which can be built on to achieve the vision to be a world class owner and manager of energy delivery assets and further extended to capitalise on new opportunities that arise. Key IT implications and expectations of JGN business plans are summarised below:

- Respond to changing regulation, pricing and other compliance needs like NECF.
- Implement new capability that brings JGN up to the level of most Australian Energy Distribution businesses with the addition of Geographic Information Systems, Data Warehouse and Field Mobility.
- Complete the replacement of legacy systems and technologies for the distribution network and metering systems with contemporary and proven systems.
- Continue the successful simplification of the operating model by enabling the next stages with improved information, new systems and technologies.
- Leverage social technology platforms to expand communication mediums during emergency management events.
- Deploy Field workforce mobility solutions to improve outage, asset and works management.

4.2 STRATEGIC BUSINESS OBJECTIVES

The Jemena business plan identifies the following strategic objectives;

- Safety – embed a world class safety culture.
- Employees – be a high performing and engaged workplace that attracts, develops and retains industry leaders.
- Customers – deliver customer focused operational excellence.
- Asset Management – have highly efficient operations, be an influential market leader with strong customer, regulatory, stakeholder and community relationships, and achieve regulatory outcomes aligned to the business plan.
- Return on Investment – deliver financial performance that is superior to industry peers.

4.3 IT Strategic Objectives

IT manages the IT Assets and associated technology risks to provide a systems environment that supports the Jemena business and meets regulatory requirements. Jemena IT has four core objectives to support the delivery of the IT strategy represented in the Figure 8 – IT Core Objectives.

Figure 8 – IT Core Objectives

Reduce complexity	Increase efficiency	Provide delivery certainty	Focus on the customer
• Application rationalisation • Standardisation of the IT environment	• Drive further increases in efficiency of IT services • Optimise vendor partnerships	• Common project management methodology • Deliver to regulatory plans • Reliable systems	• Use innovative technologies and capabilities to enhance customer experience

4.4 IT Alignment to Business Objectives

The IT Strategy aligns to the business strategy by providing the solutions and enabling technologies to support business plans and energy market growth while providing sustainable low risk information and operating technologies.

The primary aims of the AA2015 period are to:

- Provide the capability for the new AER requirements for customer relationship management and supporting data.
- Complete the replacement of legacy systems and technologies for the distribution network and metering systems with contemporary and proven systems.
- Provide new and extended system capability to support improved Governance and Risk Management.
- Implement new capability that brings JGN up to the level of most Australian energy distribution businesses with the addition of Geographic Information Systems, Data Warehouse and Field Mobility.
- Use the recently implemented, replacement and new solutions with up to date infrastructure technologies to optimise JGN's market services and business efficiency.
- Continue the successful systems consolidation and replacement program that enables the next stages of improved information, processes and automation.
- Implement systems deferred from the AA2010 period due to the time, work effort and funding needed for new AER requirements post determination.

4.5 Guiding Principles

Jemena IT strategy focuses on strategic initiatives and operations that align and deliver to business plans, strategic objectives and regulatory submissions. IT investment decisions, development strategies for systems solutions, Infrastructure and services and operations are thus guided by a set of strategic principles

that are developed in accordance with the IT objectives and establishment of a future technology landscape for Jemena. Jemena IT applies the following principles:

- Standardise on contemporary, tier 1 hardware platforms with minimal customisation.
- Reduce the number of enterprise applications by at least 30% and simplify the integration environment.
- Pursue and leverage opportunities to reduce complexity and unnecessary or redundant services through retirement of unused capability.
- Use innovative technologies and capabilities to enhance customer experiences.
- Operate as an integrated business and leverage capabilities.
- All IT project investment decision making is subjected to robust cost benefit analysis and is aligned with Jemena business objectives.

4.6 IT Strategic Plan

JIT enables the business to be an industry best practice asset management organisation focusing on:

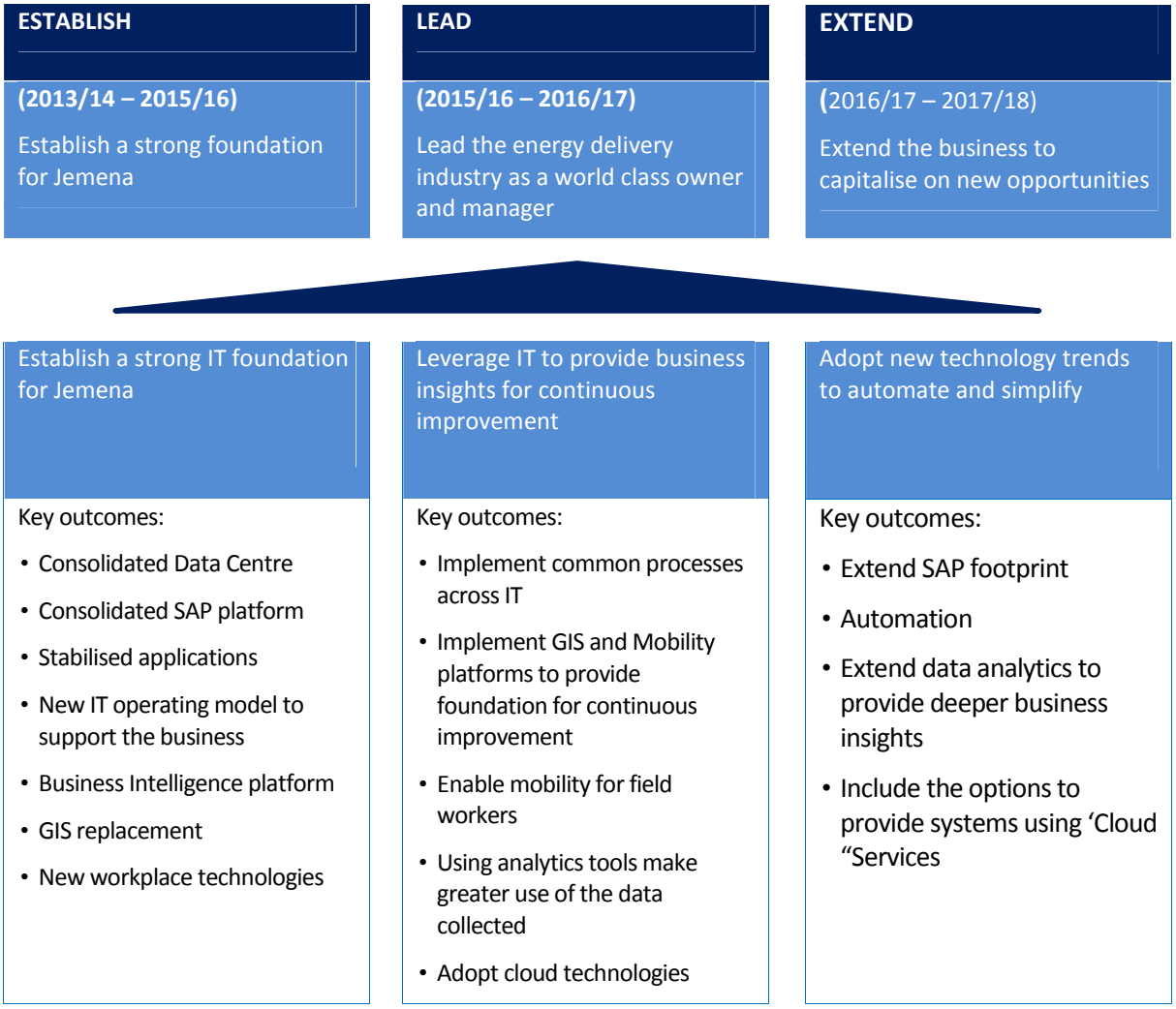
- Efficient services to meet obligations –managing exceptions rather than business as usual activities.
- Process centric – understand the end to end service and effectiveness.
- Customer centric –enabled through solutions to suit customer needs and deliver on obligations (e.g. new connections).

The IT plan delivers key outcomes that aligns and supports Jemena's business plan across the three phases of Establish, Lead and Extend. The IT Plan will deliver:

- New foundational capabilities like GIS, field mobility, Governance and Risk management, Data Warehousing, Program and Portfolio Management, Employee Management, Skills and Learning Management and Customer Relationship Management.
- Information consolidation and convergence through establishment of information models, taxonomies and deployment of data warehousing and BI capabilities.
- Process models and system architectures in a dedicated ARIS repository, ensuring alignment of processes to IT services and systems and management of intellectual property.
- Reduced risk and ensure currency of technology through lifecycle upgrades, maintenance and enhancements.
- Required capabilities and enhancements to manage regulatory compliance, NECF and other changes.
- A platform to enable IT/OT convergence to further drive operational efficiencies.
- New and advanced capabilities through review and adoption of market trends like data analytics, predictive analysis, "Cloud" infrastructure, SaaS (Software as a Service), "BYOD" (Bring Your Own Device) and Mobility.

The IT plan delivers key outcomes that align and support Jemena's business plan across the three phases of establish, lead and extend. The IT strategic planning phases are represented in the Figure 9 – IT Plan Phases.

Figure 9 – IT Plan Phases



Establish

Over the past several years, IT has focused on building a strong technology foundation to support the Jemena business centred around:

- SAP as a core platform,
- De-cluttering through harmonising applications across assets, and
- Consolidation of data centres and uplift and modernisation of Infrastructure capability.

Work already undertaken has resulted in a stabilisation of applications and a significant decrease in the number of incidents effecting business operations.

Lead

The intent of the Strategic plan is to build on the foundation that has been established and leverage new functionality and data available to provide insights into the business.

Embedding common processes resulting from the business transformation will begin to deliver process efficiencies. Metrics related to new processes can be collected and monitored for ongoing opportunities for continuous improvements.

As the business operating model changes are implemented and the move to a new location occurs there is an opportunity to build a workplace for the future that engages employees through the use of a mobility enabled platform and collaboration tools to improve efficiencies for Jemena employees.

Extend

The next stage of the IT plan extends the established leader position with new technology trends to automate and simplify processes further.

The investment in SAP can be further leveraged with particular focus on building new capability for customer relationship management and potential to leverage the data components of the platform.

The process centric focused business model and gathering metrics will identify areas where opportunities exist to further refine and automate end to end processes. This will enable Jemena to focus on managing exceptions rather than business as usual type

Extending data analytics to provider deeper business insights will be an ongoing process where availability of additional data feeds and consolidation of OT and IT data can be brought together for proactive complex analytics in order to improve asset maintenance and management.

4.6.1 IT Assets Strategy

The core strategies for JGN for the AA2015 have been defined and are underpinned by the regulatory requirement of delivering prudent and efficient capital investments. These strategies are:

- Comply with current and new regulations by providing enabling systems solutions.
- Complete the replacement of the GASS+ application suite used for network distribution, customer management and network asset management with the SAP Gas solution.
- Continue the journey that brings JGN up to the capability of Australian energy distribution services providers by implementing and using contemporary IT systems solutions and applications.
- Continue the enhancements and replacement of current systems solutions as a key enabler of ongoing business improvements in services to the Australian energy market and end consumers of energy.
- Manage risk and avoid cost increases by conducting a rolling systems upgrade and replacement program to have all systems supported by vendors.
- Continue to consolidate multiple and overlapping systems by replacement to achieve fewer systems, less complex delivery and maintenance resulting in a lower business and IT cost to serve overall and per unit of service.
- Replace ageing metering systems and associated technologies including communications that includes the shutdown of the New South Wales analog radio network and moving to newer 3G and 4G Telco networks.
- Take advantage of proven new services and technologies tested by energy market benefits, business cases, competitive market tender and affordability.

- Mature the systems solutions to best practice standards for energy business and systems as defined by leading and recognised research organisations.

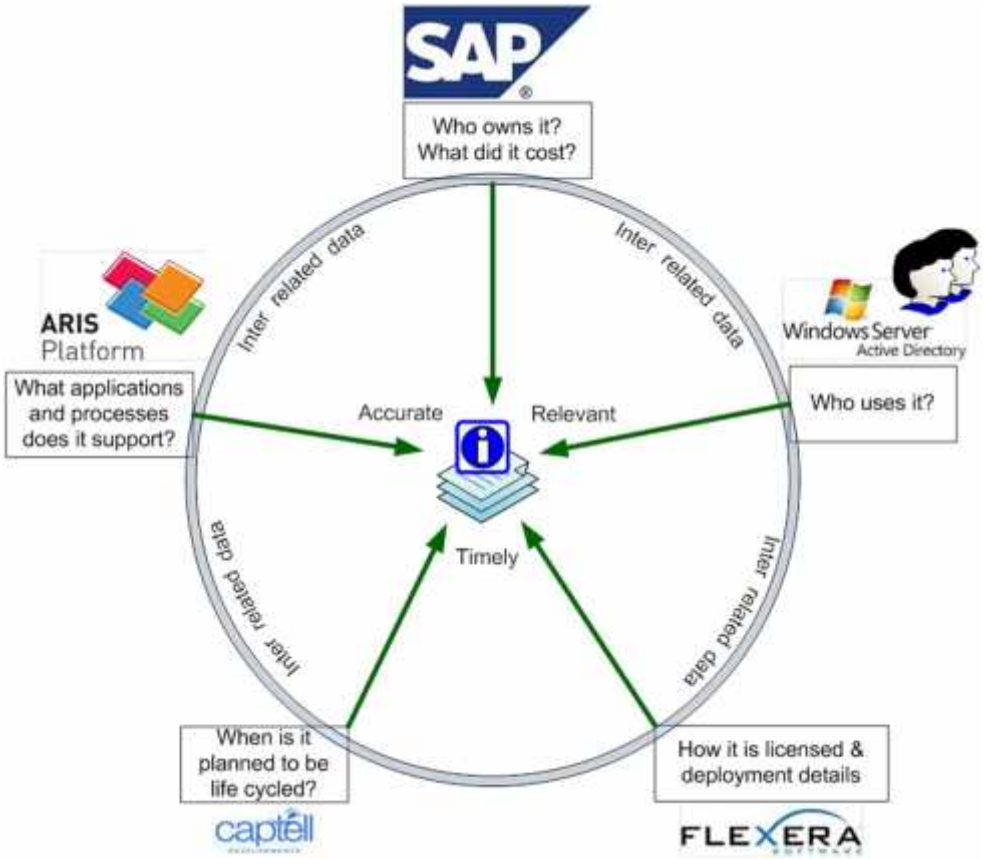
JGN will continue to improve BAU process to support regulatory and delivery forecasting building on the major achievements enabled by replacement and new IT systems.

Infrastructure and applications will continue to be managed through well-defined and updated Infrastructure Roadmap, Lifecycle Management Framework and business unit cost allocations.

Jemena requires reliable and timely forecasting and planning for IT infrastructure spend to ensure accurate and traceable regulatory submissions. The infrastructure roadmap will be reviewed and updated on an annual basis to underpin this. The creation and implementation of a Lifecycle Management Framework allows for clear understanding of upcoming capital allocation for infrastructure for the respective regulatory submissions.

Figure 10 – Assessment Cycle demonstrates the activities, tools and considerations made in determining an IT assets assessment throughout its lifecycle using the example of the SAP solutions.

Figure 10 - Assessment Cycle



4.6.2 IT Operations Strategy

Jemena has committed to becoming a process centric organisation. This, from an IT systems perspective, means that all business processes are mapped to IT services that support them. The benefits of this approach will be recognised via:

- Predictive change modelling with the ability to perform top down and bottom up reviews.

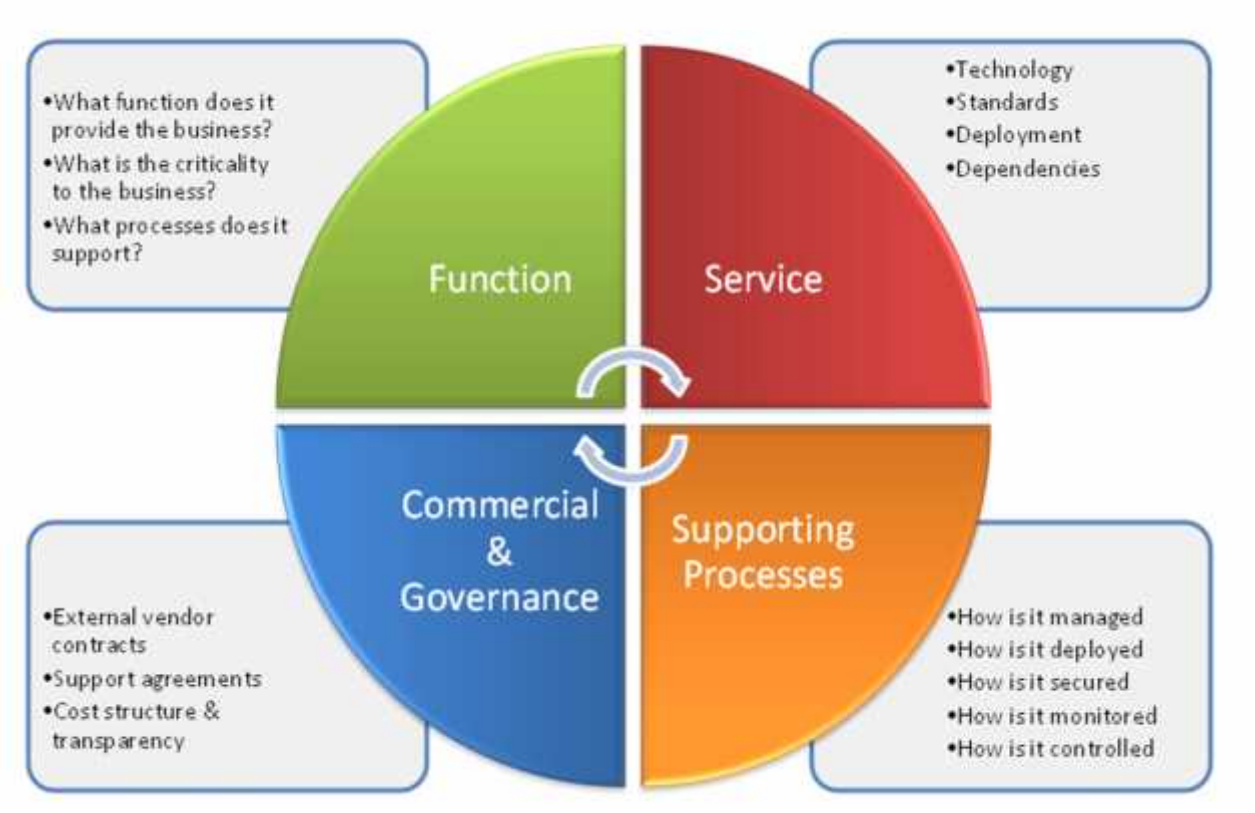
- A single authoritative source of truth and change management for Infrastructure, Architecture, Services, Applications and Business Processes.
- The capture of Intellectual Property maintained in a dedicated ARIS repository.
- Further benefits flowing from change impact assessments, risk analysis, design implications or project delivery dependencies and greater agility during implementation of change with less risk.
- A Technical Reference Model (TRM) to support the infrastructure meta-model for the Enterprise Architecture tool. TRM will describe infrastructure services and functions provided along with the current standards followed.

JIT maintains Services, Software Applications and Infrastructure Services agreements based on a set of services standards and recurrent IT activities. This process is to be enhanced by creating a Services Catalogue, documenting Capital and Operational costs of infrastructure services over a 5-year lifecycle by service.

- JGN continuously focuses on pursuit of operational efficiencies and scrutinising project evaluation decisions. A primary step in achieving both these outcomes is the constant drive towards cost transparency. Understanding where IT infrastructure costs lie and how they relate to business is fundamental to cost transparency, and is an iterative process as services and technologies change.
- To aid assigning IT costs to applications, the Infrastructure Service Catalogue will be reviewed and updated, documenting Capital and Operational costs of infrastructure services over a 5-year lifecycle, and used in conjunction with the Enterprise Architecture tool that maps applications to infrastructure, direct IT asset costs can be attributed to applications or used as inputs into cost / benefit analysis for project decisions.

The maintenance cycle components, planning required and considerations are represented in the Figure 11 – Maintain Cycle

Figure 11 - Maintain Cycle



4.6.3 Strategic Application Solutions

Jemena currently uses the following strategic products that have originally been selected by competitive tender.

- SAP - Enterprise Resource Planning Solutions
- Microsoft – Office application and productivity tools, systems development tools and document management systems

The strategic products are mature systems solutions of best practice standards and widely used in energy businesses as demonstrated in research and benchmarking defined by leading research organisations such as Gartner.

4.6.4 IT Systems Current State

The JGN IT strategy for the current AA2010 period has focused on simplifying the operating model, rationalisation of applications and reducing complexity and costs. These have been achieved in conjunction with delivery of major programs such as the SAP strategic solutions replacing legacy systems and establishing foundational capabilities to support the business. Key highlights and achievements to date are:

- SAP implementation and modernisation
- Material improvements in IT Opex progressively from 2009/10 through to 2013/14.
- Simplification of the applications and technology landscape underway with more than 40 applications expected to be decommissioned in 2014/15.

The current state IT architecture described in Figure 12 – Current State Logical Architecture provides an illustration of the complexity of the separate solutions and the diversified applications implemented during the past 25 years.

Figure 12 - Current State Logical Architecture

[c-i-c]

4.6.5 FUTURE STATE IT ARCHITECTURE 2019/20

Figure 13 – Future State Logical Architecture represents the planned future state of systems applications to be used by JGN as at the end of the AA2015 period in 2019/20. Comparing the future state solutions to the current state demonstrates the consolidation of systems based on the SAP software applications.

Figure 13 - Future State Logical Architecture

[c-i-c]

4.6.6 IT Infrastructure Strategy

The infrastructure strategy focuses on major strategic infrastructure initiatives and their relationship to business goals and objectives described in respective business plans, regulatory submissions and Information Technology Strategy.

The scope of the infrastructure strategy is on the planning, implementation, operations and management of IT infrastructure services.

The following strategic principles are being used to provide guidance for the infrastructure strategy over the next several years:

- Convergence of IT and Operational Technology (OT) infrastructure from a procurement, process and technology perspective.
- Standardisation on commodity based infrastructure services.
- Further investment in orchestration and automation, including internal and external cloud services.
- Enterprise adoption and application of process centric based services.

4.6.7 Commodity Based Infrastructure Services

JGN is making a strategic move towards commodity based infrastructure services for application enablement.

There is a worldwide trend towards the adoption of commodity based infrastructure services. This trend was initially being driven by software and hardware vendors responding to the pressure on IT capex and opex along with strong competition driven by businesses tender processes. Opportunities for functional improvements are now resulting in new value propositions for adoption of commodity based infrastructure services. In this scenario platforms become modular assemblages of lower cost hardware, operating systems and layered software with industry compatible technology.

The maturing profile of commodity based infrastructure services provides JGN with an increased number of options to manage growth in capacity and new infrastructure requirements. These options will be included for assessment in all business cases requiring additional IT infrastructure capacity. Capability assessment will be evaluated as a service provided by the vendor or providers of cloud computing services. The progressive move to environments based upon commodity services also greatly facilitates future adoption of cloud based services such as “Infrastructure as a Service” (IaaS) and “Platform as a Service” (PaaS).

For JGN this means meeting customer demand growth, higher rates of data usage and retention and the provision of new met at levels at a much lower marginal cost that might otherwise not be affordable or cost effective. An example is data storage demand is increasing at 15%-20% per annum but storage cost per unit has declined to offset the demand. It also introduces choice and flexibility to select different technologies at one layer without impacting other infrastructure services.

4.7 Preparing for Cloud Based IT Infrastructure

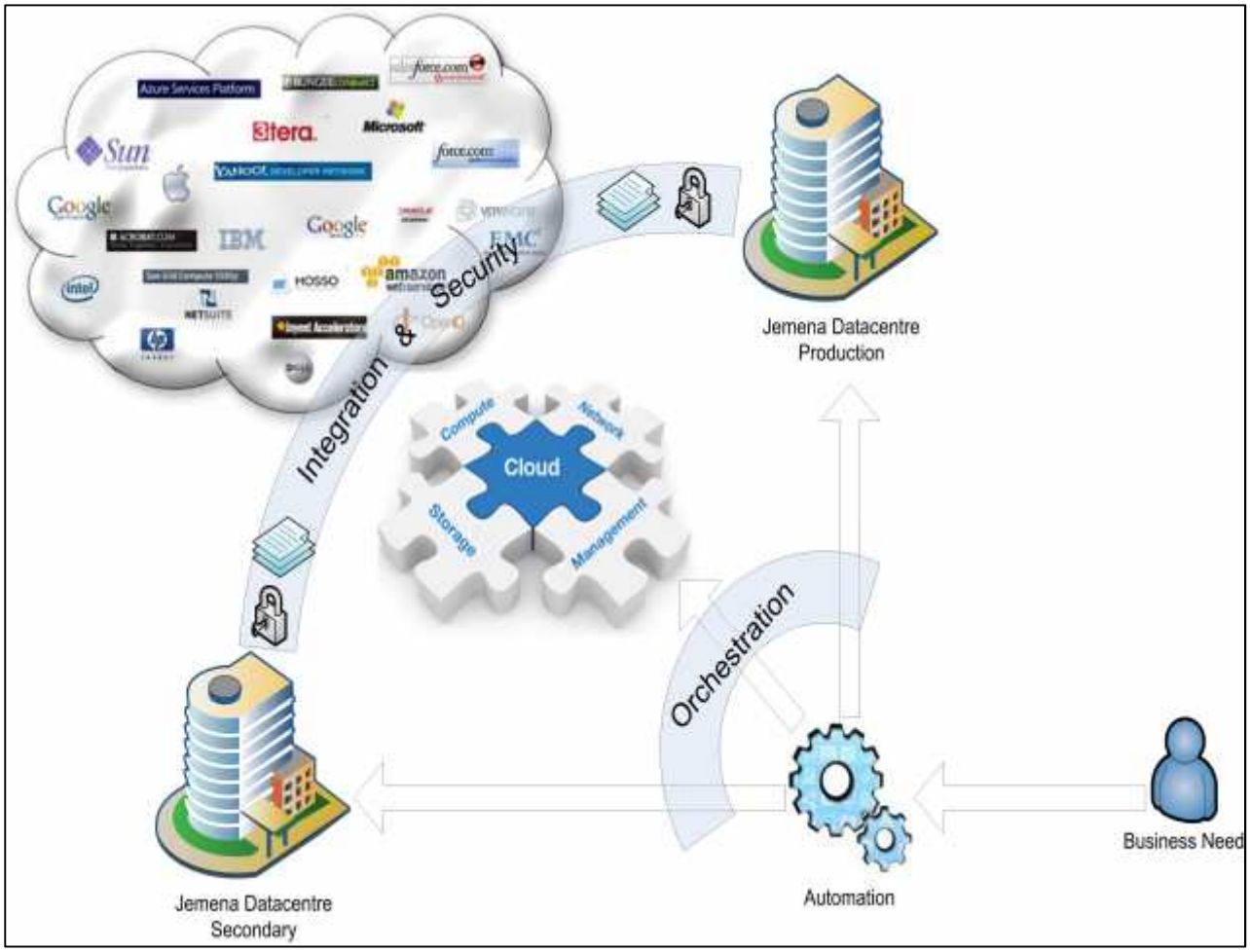
Jemena will continue to monitor and assess the viability of infrastructure in the cloud to ensure automation and orchestration services, integration options and security will be ready to adopt cloud services when it is prudent and efficient to do so. The automation and orchestration tools will integrate with cloud services seamlessly and appear as if they were on Jemena owned infrastructure.

In Figure 14 – Preparing for Cloud Based Infrastructure, illustrates the major providers of cloud based IT Infrastructure services now on offer to the Australian IT market including a mix of local and internationally resident IT facilities. The cloud in the diagram shows the many vendors now in the market and demonstrates the major new service providers such as Google in addition to the traditional IT vendors such as IBM.

The key challenges are:

- Obtaining a matured and flexible service that is timely in its ability to add to change IT Infrastructure.
- A service management process that is efficient and not costly to manage.
- Efficiently integrating with Jemena's in-house systems and partner systems.
- Satisfying the security needs of having market services critical operation outside of Jemena's own operations and controls.

Figure 14 – Preparing for Cloud Based Infrastructure



Jemena has performed a major consolidation and rationalisation of infrastructure services through its recent performance improvement initiatives enabled by new technologies, market competition and rationalisation of vendors. This consolidation and rationalisation will further drive into Operational Technologies (OT) including SCADA and Real Time Systems (RTS) and result in consistent and repeatable processes for commercial arrangements, technology standards and supporting infrastructure services. This will include the replacement of legacy infrastructure technologies no longer adding value or being performed more cost effectively by new technologies.

5 Governance and Program Delivery

5.1 Overview

Jemena's IT governance defines who is entitled to make major decisions, who have input and who is accountable for implementing those decisions. The IT governance is an integral part of Jemena's corporate governance and requires alignment between the business and IT. The IT governance enables organisations to make and implement IT decisions faster. It ensures that the Board, senior executives and managers have a standard and structured view of the IT programs of work, work in progress and status to make decisions with the necessary information, including:

- Project status by stage and gate.
- Performance compared to budget and schedule.
- Benefits specification and realisation.
- Funding requirements by stage, years and months.
- Financial forecasts.
- Risks and Issues.
- Delivery performance to requirements and outcomes.
- New projects to be initiated.
- Changing business environment and required project changes.

The IT governance operates through a framework of accountabilities, processes, and auditable and measurable controls that encourage the desired behaviour in the deployment and use of IT.

5.2 Objectives

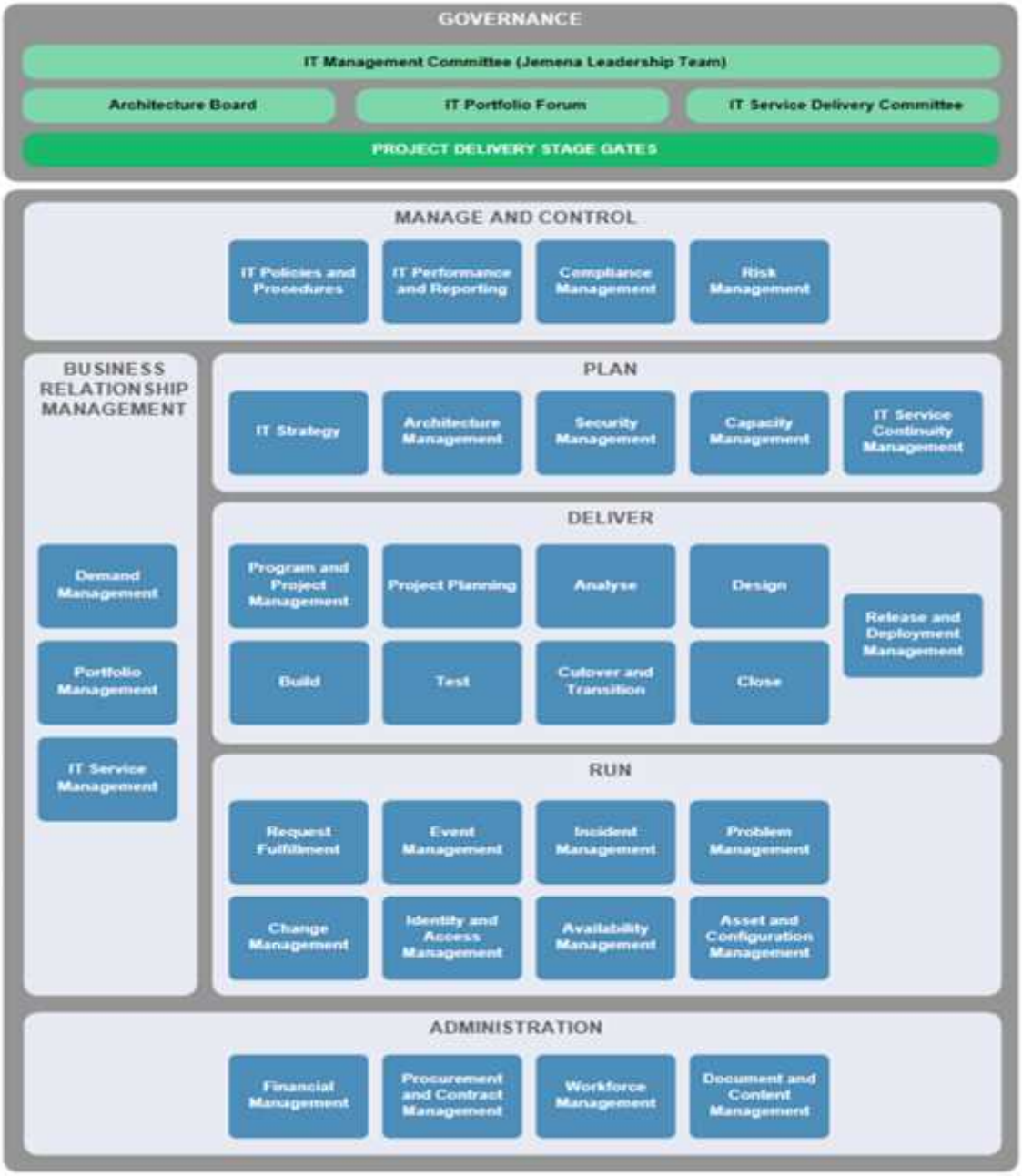
Jemena IT's objectives for recently updating the IT governance model are to:

- Confirm the model for IT Governance supporting the large-scale strategic business programs enabled by new and replacement technologies.
- Provide greater clarity around IT decision rights.
- Provide IT leadership to strategic decisions and investments.
- Provide a framework to prioritise and manage IT investments.
- Ensure IT architecture enabled business requirements are authorised with supporting evidence.
- Ensure IT operations support are fit for purpose and can support critical business services in times of disaster and catastrophic events.
- Ensure governance forums provide rigour, visibility and transparency on how IT will address business needs.

5.3 GOVERNANCE FRAMEWORK

Figure 15 – IT Governance Framework sets out the Governance Framework components described in this sub-section.

Figure 15 - IT Governance Framework



5.4 IT GOVERNANCE FORUMS

The following Governance Forums are required to support the effective operation of IT Governance under the revised Jemena operating model. These Governance Forums help facilitate the IT decision making process. They do not hold any decision rights, but comprise of individuals who are accountable for executing these decisions.

5.4.1 IT Management Committee (Jemena Leadership Team)

The Jemena Leadership Team, assembled as the IT Management Committee, is the forum that provides strategic direction and key decision making around IT. The committee ensures that the IT strategy, portfolio and operations are aligned to Jemena's business priorities and that any major IT risks and issues are mitigated and addressed. The key focus is around:

- Approving the Jemena IT strategy and capital allocation.
- Monitoring Major IT risk and security compliance.
- Endorsing IT portfolio and service delivery models.
- Endorsing the IT policies and governance frameworks.
- Alignment of Business and IT strategy.
- Monitoring enterprise SLAs.
- Reviewing and prioritising enterprise IT and large Business Unit specific IT projects/programs.

5.4.2 ERP - SAP Governance Committee

The Enterprise Resource Planning (ERP) system names JSAP as Jemena's large corporate management system used by the entire JGN business. It covers the majority of functions for financial management, human resources and payroll. Governance Committee is the forum that governs the JSAP ERP system from a business and IT perspective. The key focus is around:

- Alignment of the business operating model and JSAP design.
- Prioritisation of JSAP enhancements.
- Monitoring the performance of JSAP.
- Optimisation of the ERP system.
- Governance of JSAP changes.

5.4.3 GASS+ (Gas Solution) Governance Committee

The GASS+ system is JGN's largest and core distribution network management, processing and data system. The purpose of the GASS+ Governance Committee is to maintain or keep current the GASS+ suite of applications within the agreed level of Jemena risk. The Governance Committee will close on the completion of the project following the Post Implementation Review as part of the project shut down. The key focus is around:

- Management of GASS+ risks and issues.
- Management of GASS+ operational performance and costs.
- Ownership and accountability of the GASS+ business system.
- GASS+ compliance with statutory, regulatory, market and corporate requirements.
- Alignment of GASS+ with business strategy, IT strategy and architecture.
- Raising and approving system changes to GASS+.
- Decommissioning of the GASS+ suite and archival of information and data as required.

5.4.4 Architecture Board

The Architecture Board is a governance body formed to ensure the IT architecture aligns to the strategy, and that project architectures are appropriately governed. The key focus is around:

- Establishing architecture principles and standards.

- Alignment of business and IT architecture design.
- Reviewing solution architecture compliance and endorsing any deviations.
- Governance of approved IT security deviations.

5.4.5 IT Portfolio Forum

The IT Portfolio Forum is a governance forum that evaluates IT demand and manages the IT portfolio. The key focus is around:

- Review and management of the IT Portfolio.
- Management and prioritisation of IT demand.
- Quality assurance.
- Management of constraints.

5.4.6 IT Service Delivery Committee

The IT Service Delivery Committee is a governance forum that manages the IT service catalogues and service levels, reviews operational performance and key application and infrastructure changes, and addresses risks and issues. The key focus is around:

- Managing the IT service catalogue and service priorities.
- Monitoring IT service delivery and SLAs.
- Managing IT operational risks.
- Reviewing capacity, resilience and disaster recovery capability.
- Monitoring and reviewing the IT change and release calendar.

5.4.7 Project / Program Steering Committee

The Project or Program Steering Committee is the forum that governs a project or program from a business and IT perspective. The key focus is around:

- Business objectives and benefits realisation.
- Project governance and review.
- Project leadership and guidance.
- Business change support.

5.4.8 Business Unit IT Review Forum

The Business Unit IT Review Forum is Business Unit specific forums that focus on engagement around IT demand, IT initiatives and financials that is specific to that Business Unit. The key focus is around:

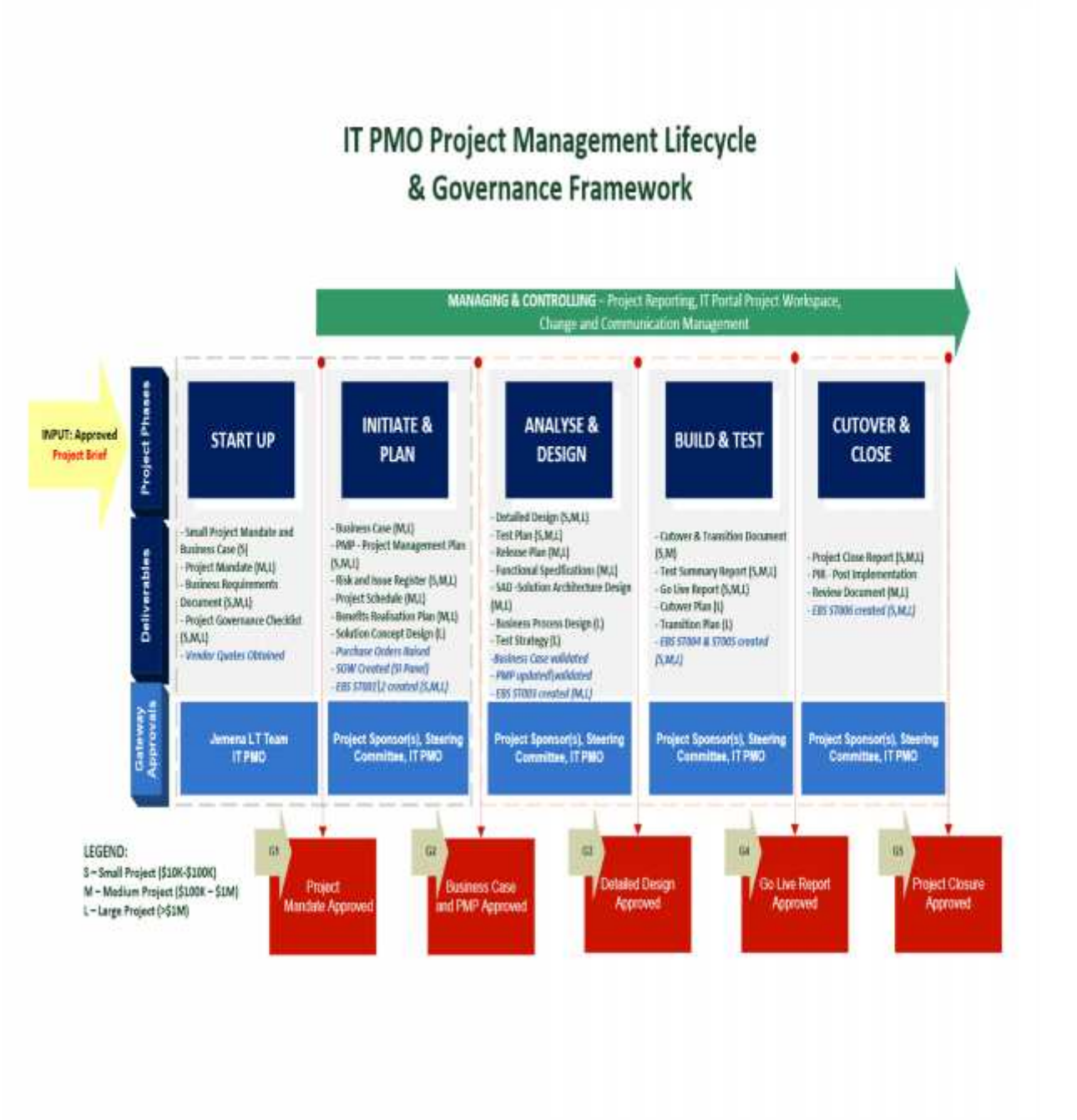
- Specific Business Unit requirements.
- Business Unit engagement on Enterprise IT initiatives.
- Review of Business Unit specific financials.

5.5 PROJECT DELIVERY AND GATES

The Project Delivery Methodology (PDM) has set review and approval points (gates) to ensure all Jemena IT projects are appropriately managed and governed in a consistent manner to ensure a quality outcome. The PDM is maintained by the Jemena IT PMO who also oversees the project governance through the project lifecycle.

Figure 16 – IT PMO Lifecycle and Governance Framework shows the project lifecycle and approval gates for the initiation and delivery of systems projects through to completion.

Figure 16 - IT PMO Lifecycle and Governance framework



5.5.1 PROJECT STAGE GATE 1 – COMMENCEMENT OF INITIATE AND PLAN STAGE

The approval of the Project Mandate by the Jemena Leadership Team, or IT Portfolio Forum for projects less than $2M, indicates the commencement of the Initiate and Plan stage of the project. The Project Mandate provides funding for the preparation of the business case, Project Management Plan (PMP) and

conceptual architecture. Where necessary, the Project Mandate may also provide funding to undertake relevant procurement activities such as Request for Information (RFI) or Request for Tender (RFT).

5.5.2 PROJECT STAGE GATE 2 – END OF INITIATE AND PLAN STAGE

At the end of the Initiate and Plan stage of the project, the key deliverables created are the business case, Project Management Plan (PMP), benefits realisation plan and conceptual architecture. Where relevant, procurement activities performed in the Initiate and Plan stage result in vendor signed contracts ready for execution.

The purpose of the Business Case is to present a compelling scenario to obtain executive approval and funding for the remaining activities of the project. It concentrates on the business and financial justification for the recommended activities. The Business Case is presented to the Jemena Leadership Team, or business specific committee for projects less than $2M, and approved by members of the Jemena leadership team or business steering committee within their respective Delegated Financial Authority (DFA). All IT projects are required to follow and conform to the Jemena DFA and Jemena Procurement Policy at all times.

Upon approval of the Business Case, the Project Steering Committee (PSC) is established. The PMP, which stipulates the stage boundaries for the project and what will be delivered and checked at the end of each stage, is presented to the Project Steering Committee for approval. The approval of Business Case and PMP is the stage gate to move from Initiate and Plan into Analysis and Design.

During the Initiate and Plan stage, the Conceptual Architecture is presented to the Architecture Board for approval.

5.5.3 PROJECT STAGE GATE 3 – END OF ANALYSIS AND DESIGN STAGE

At the end of the Analysis and Design stage of the project, the key deliverable created is the Solution Blueprint (Solution Design Summary). The Solution Blueprint is a summary of the following deliverables:

- Business Requirements
- Process Design
- Detailed Design
- Test Strategy
- Solution Performance Design
- Security Compliance Design

Towards the end of the Analysis / Design Stage of the project, the Project Manager reviews the following to provide information for the next stage (Build / Test) of the project:

- Identify any variation between planned and actual progress.
- Identify any variation in the expected future resource availability.
- Assess any current risks for the stage.
- Review external developments that may impact on the project.

The Project Manager assesses if the PMP and Business Case need to be revised. This is achieved by assessing the costs, benefits, risks and schedule that may have been affected by internal or external influences. Possible reasons to update a PMP include changes in:

- Implementation dates.
- Cost of delivery or support.
- External, corporate or Program environments.
- Resources including internal and external suppliers.

Identified changes required in the PMP are documented in a Change Request and the PMP will need to be reapproved once updated. Where changes in the PMP impact the Business Case (e.g. costs of delivery or support, or delayed benefit realisation), a revision to the Business Case is required.

5.5.4 Project Stage Gate 4 – End of Build and Test Stage

At the end of the Build and Test stage of the project, the key deliverables created are the Cutover Plan and the Go-Live Readiness Report. The Go-Live Readiness Report includes references to the following deliverables:

- Test Summary Report
- Cutover Plan
- IT Operations Transition Plan
- Business Transition Plan
- Go Live Readiness Report

The Project Manager reviews the plan for the next stage to ensure that the components of the Project Management Plan are still valid. This includes:

- Ensuring the major products for the Cutover and Close stage of the project are still valid.
- Checking external dependencies to ensure that there is no change to the timeframe or scope of the project.
- Adding further detail to the project schedule for the Build / Test stage and ensure that inter-project dependencies are identified.

5.5.5 Project Stage Gate 5 – End of Cutover and Close Stage

As the project comes to a close the Project Manager will notify the Jemena IT PMO that the project is ready for decommission and to close out. The key deliverable from the end of Cutover and Close stage is the Project Close Report.

The Project Manager will complete the Project Close Report and this is presented to the Project Steering Committee (PSC) for approval. Approval of the Project Close Report signifies the project moving through the final stage gate.

5.6 Supporting Information for Projects and Expenditure

The projects require an initial project mandate with approved initial funding to commence and then followed by a business case post analysis with project blueprint before the project is approved for delivery and completion.

At the time of the completion of the AA2015 period on 30 June 2015 the GASS+ Replacement project is the only project that will be work in progress. The projects $61.5M investment is spread across the AA2010 and AA2015 periods. It is supported by a Project Mandate, Analysis and Options documents and an approved Business Case.

The program of work for AA2015 is supported by:

- Past business cases where that project will be replicated as part of the end of life replacement in future years such as the IT Infrastructure Refresh and SOE replacement projects.
- The GASS+ Replacement business case.
- Growth plans provided by the business which have also had input from external consulting specialists in energy demand and demographics.

- The existing business case for the Geographic Information System project deferred from AA2010 to AA2015.
- Formal studies into the solutions and options available with cost estimates for those projects that are pre business case or have no prior history with Jemena.
- Project profiles that provide a business case style project definition with options analysis and costs model. The project profiles are provided with this AA2015 Asset Management Plan as supporting documentation.
- For items that are incremental capital expenditure such as additional licenses and capacity current cost rates, current purchasing agreements or recent acquisition history are applied.
- Consulting organisations providing advice and data for IT and energy industry trends, metrics and benchmarking.

5.7 Procurement Policy and Process

Jemena's procurement policy underpins the various procurement activities undertaken across the business. Jemena is committed to developing innovative and sound procurement practices in support of its strategic goal to be recognised as a leader of infrastructure management and development services.

The Jemena Procurement Policy document is attached to provide the detailed process, practices and rules for all IT procurement.

5.8 Risk Management

Risk Management Process

The Risk Management process is an iterative process, whereby Jemena Risk and Risk Facilitators will ensure the key risk management activities are implemented, reviewed and re-assessed at a reasonable and appropriate frequency.

Establish the Context

This requires understanding the environment at an early stage as well as understanding the relationship of the subject with other processes, functions or assets.

Through an understanding of the context of risk, the risk evaluator will analyse risk, both internally and externally to SPIAA, for each setting.

To establish the context of risk, it is necessary to:

- Understand the objectives, goals or imperatives of the business / activity;
- Identify the scope of the risk management activity;
- Identify the main issues of concern - what's the nature of the business;
- Identify the potential stakeholders - who do you have to satisfy;
- Understand the nature of the risks inherent to the activity and the rewards / benefits of being exposed to such risks;
- Use the requirements of the SPIAA and the key stakeholders to identify a set of critical success factors against which specific criteria should be set;
- Determine the most appropriate way to measure the consequences
- Ensure understanding

Jemena has a group risk management process and assessment matrix set out in the diagrams below. IT risks with a financial value below the corporate risk threshold are managed within its own subordinate IT

risk register using the same Jemena risk process. IT risks that reach the corporate thresholds below are replicated and escalated to the Corporate Risk Register and risk management process.

Risk Causes

Once a risk has been identified, it is often useful to record any contributing factors that may cause the risk to exist. This involves the identification of the situation(s) or key cause(s), which could result in the risk event occurring.

This step in the identification process assists with better risk analysis, particularly with the control assessment where the causes of the risk identified may be linked to one or more key controls as a means to manage or treat the risk, and therefore manage the level of risk exposure.

Risk Analysis

Risk analysis consists of determining the consequences and their likelihood for identified risk events, taking into account the presence (if any) and the effectiveness of any existing controls. Factors affecting likelihood and consequences are identified and low impact risk can be eliminated from further analysis. These risks are to be documented to provide evidence of completeness.

Risk analysis involves consideration of the sources of risk, their consequences and the likelihood that those consequences can occur. Existing risk controls and their effectiveness should be taken into account.

While the majority of risk analysis techniques mathematically combine (usually by multiplication) the level of consequence with the likelihood of occurrence, it is important that all risks also be closely examined purely in terms of their consequence and their likelihood. Some risks have such a significant consequence that even though their likelihood is 'rare' they should still be addressed.

Consequence Analysis

Consequence analysis determines the nature and type of impact which could occur assuming that a particular event situation or circumstance has occurred. Consequence analysis can vary from a simple description of outcomes to detailed quantitative modelling or vulnerability analysis.

Impacts may have a low consequence but high likelihood, or a high consequence and low likelihood, or some intermediate outcome. In some cases, it is appropriate to focus on risks with potentially very large outcomes, as there are often of greatest concern to Management. In other cases, it may be important to analyse both high and low consequence risks separately. For example, a frequent but low-impact (or chronic) problem may have large cumulative or long-term effects. In addition, the treatment actions for dealing with these two distinct kinds of risks are often quite different, so it is useful to analyse them separately.

The consequence and likelihood ratings identified are used to determine the 'untreated' (or 'inherent') risk rating for each risk. A general distinction is made between the untreated and current (or 'residual') risk. Untreated risk means the level of risk before considering the effects of any controls or risk mitigating measure, while current / residual risk takes into account the effects of risk treatments or controls.

Figure 17 – Risk Ratings Matrix, illustrates the risk rating by combining the consequence and likelihood for each risk.

Figure 17 - Risk Ratings Matrix

Likelihood		Consequence				
		1	2	3	4	5
		Minor	Serious	Severe	Major	Catastrophic
5	Almost Certain	Moderate	High	Extreme	Extreme	Extreme
4	Likely	Moderate	Significant	High	Extreme	Extreme
3	Possible	Moderate	Moderate	Significant	High	Extreme
2	Unlikely	Low	Low	Moderate	Significant	High
1	Rare	Low	Low	Moderate	Moderate	Significant

Figure 18 – Qualitative Assessment of Impact Materiality sets out the Jemena standard materiality assessment of risks.

Figure 18 - Qualitative Assessment of Impact Materiality

Qualitative Assessment of Impact Materiality	
G	No issue or minor issue under control
Y	Major issue under control (mitigation measures implemented)
O	Major issue (mitigation measures identified but not fully implemented)
R	Major issue (inadequate mitigation measures)

Control Assessment

In AS/NZS ISO 31000:2009, control is defined as a 'measure that is modifying risk' and includes any process, device, practice or other actions which modify risk. An important element of the Risk Analysis process and ongoing assessment of controls is the analysis of risks and the follow-up assessment of established controls. This is important since controls may not always exert the intended or assumed modifying effect upon the associated risks.

As stated in the preceding section with regard to performing a risk analysis, it is appropriate that (in the first instance) the risk along with its consequence and likelihood be assessed as if no controls were in existence. Then, as a second step in the process, the key controls that are in place should be identified before an assessment of the effectiveness of existing controls is made, to guide the assessment of residual risk.

The risk ratings resulting from a control assessment is set in Figure 19 – Risk Rating and Controls Assessment.

Figure 19 – Risk Rating and Controls Assessment

Risk Rating	Suggested Action	Suggested Timing	Monitoring & Reporting
Extreme	Requires immediate action. Highest priority to treat risk.	Action plans prepared and normally implemented within 1 month.	Board & Executive Leadership Team
			Risk Management Committees
	Senior level monitoring.	Status of risk should be monitored monthly.	Managing Director / Executive General Managers
			Business Unit General Managers
High	Requires immediate attention – must manage with senior level monitoring.	Action plans prepared and normally implemented within 3 months.	SPIAA:
	Includes RMC and ERMC / LT oversight of Unlikely Likelihood, Catastrophic Consequence Events.	Status of risk should be monitored monthly.	Risk Management Committees, Executive Leadership Team
			Executive General Managers, General Managers
Significant	Requires Management attention with a degree of priority.	Action plans prepared and normally implemented within 6 months.	Executive Leadership Team
	Includes ERMC / LT oversight of Rare Likelihood, Catastrophic Consequence Events.	Status of risk should be monitored every 6 months.	Executive General Managers, General Managers
	High level monitoring.		
Moderate	Requires routine to periodic monitoring.	Action plans prepared and normally implemented within 6 – 12 months (where the benefits outweigh the costs).	General Managers
		Status of risk should be monitored at least every 6 months.	Escalate business unit risk to the EGM if the risk consequence or likelihood is increasing.
Low	Business as usual - should not require much attention but should be reviewed at least annually.	Ongoing control as part of a management system.	Managers
	Managed by routine policies and procedures.	Risk Facilitators to maintain register of Low risks and reassess annually.	Escalate BU risk to the GM if the risk consequence or likelihood is increasing.

Risk Treatment

Risk treatment is undertaken by responding to the risk, bringing it down to an acceptable level, and then retaining the remaining risk.

Risk Treatment Options

Risk treatment involves selecting one or more options for modifying risks, and implementing those options through risk treatment plans. Once implemented, treatments provide or modify the controls. Risk treatment involves a cyclical process of:

- Assessing a risk treatment.
- Deciding whether residual risk levels are tolerable.
- If not tolerable, generating a new risk treatment.
- Assessing the effectiveness of that treatment.

Risk treatment options are not necessarily mutually exclusive in all circumstances. A number of treatment options can be considered and applied either individually or in combination:

- Avoiding the risk by deciding not to start or continue with the activity that gives rise to the risk.
- Reducing the risk by changing the likelihood or changing the consequences.
- Sharing or transferring the risk to another party or parties (including contracts and risk financing).

- Retaining or accepting the risk by informed decision.

Risk Management System

The Jemena Compliance and Risk System (JCARS) is the enterprise risk management system adopted across the Jemena business for supporting the Risk Management Framework and processes. JCARS provides risk information from a variety of perspectives including:

- Risks
- Risk ratings
- Controls and their effectiveness
- Risk ownership
- Controls and action plans

JCARS can produce risk registers, action plans and a variety of additional reports for use and review of these risks by Management and staff at Jemena. The system provides guidance in terms of the treatment, monitoring and review of residual risks rated as Extreme, High or Significant within JCARS to:

- Raise and allocate formal risk treatment plans to mitigate these higher level risks.
- Assign specific responsibilities to action owners to report on the progress towards completion of the risk treatment plans.
- Monitor and review the adequacy, effectiveness and efficiency in both design and operation of controls linked to these higher level risks through regular checking or surveillance. The checking and surveillance activity can be periodic or ad hoc.

JCARS is cloud based software as a service solution provided by SAI Global an international “standards” organisation providing services to business and industry on standards, their management, practices and systems.

6 Determining the Program of Work

6.1 Strategic Planning

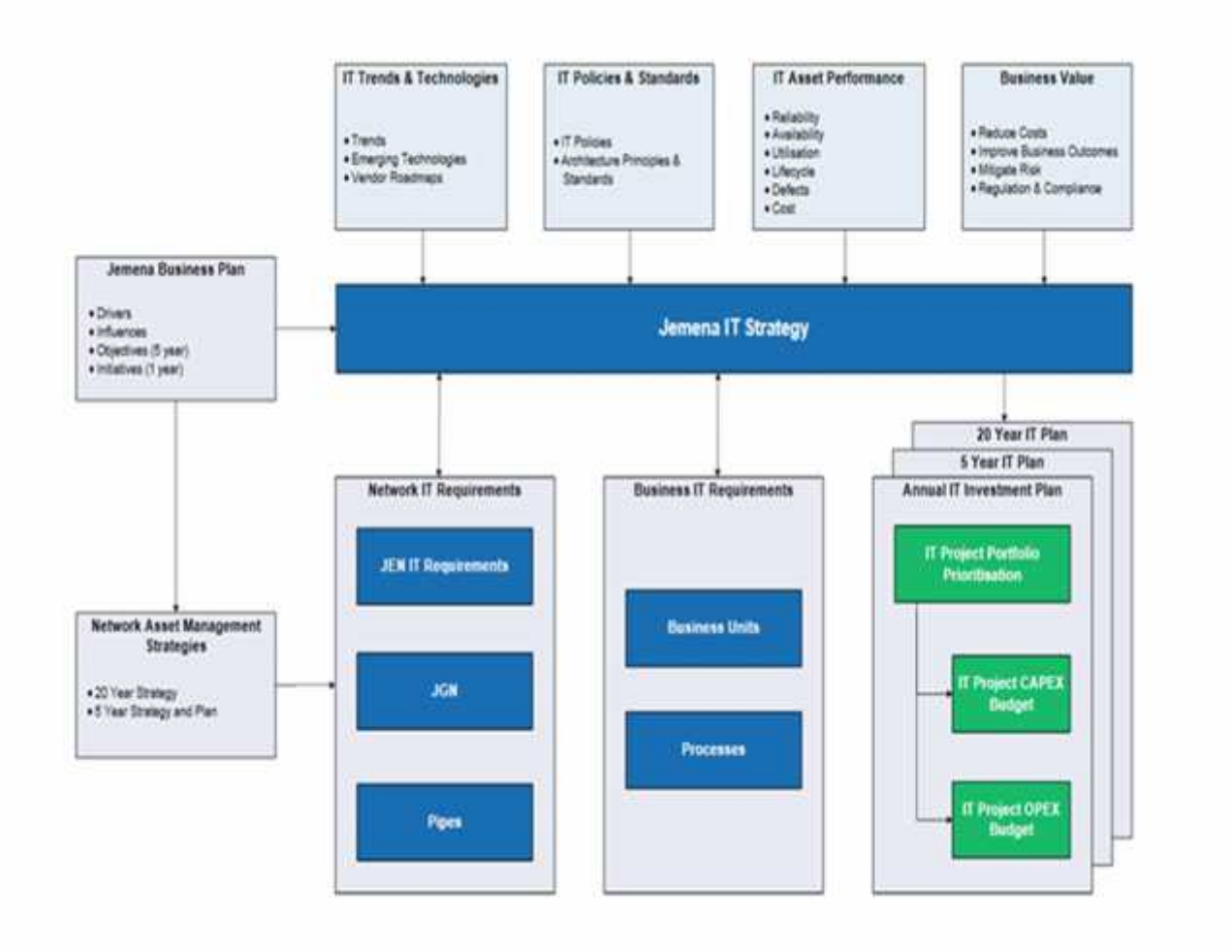
The development of the Asset Management Program of work is directed and guided by the business and IT strategies. The IT Strategy defines the short and long term IT vision and strategic direction of Jemena, including evaluating industry trends and new technology in the market. This process focuses on defining the IT Strategy and plan (at an Enterprise level or for specific business/network areas) and involves aligning the IT vision and strategy with the overall business vision and strategy. The key objectives for implementing the IT Strategy process are:

- Engaging with business and senior management in aligning IT strategic planning with current and future business needs.
- Ensuring the business has an understanding and appreciation of the potential value of IT to the business.
- Aligning all aspects of the IT strategy (such as infrastructure, applications and services) with the business strategy, network asset strategies and annual business plans, and that it is regularly examined to maintain that alignment.
- Understanding the current IT capabilities and asset performance, with a view of what will be required in the future.
- Ensuring the IT strategy is cost effective, appropriate, realistic, achievable, business-focused, balanced, and timely.
- Developing clear and concrete short term goals (which are then to be translated into annual and operational plans) which can be derived from and are traceable back to specific long term plans and objectives.

The IT strategy, stakeholders and process is represented in the diagram below. The business units conduct extensive consultations with customers and end consumers on their needs and desires with the results becoming part of the business strategy and informs the IT strategic plan.

The IT strategic planning process is set out in Figure 20 – IT Strategic Program Planning.

Figure 20 - IT Strategic Program Planning



6.2 Program of Work Development Steps

JGN develops an IT Strategy each year with a detailed asset management plan. Capex and opex budgets are produced each year with 5-year forecast and 20-year financial outlook.

The approach to the production of the IT Asset Management Plan and Program of Work centres on determining current systems status and known future IT systems needs for JGN that requires capital investment and asset management funding from 2015/16 to 2019/20. The primary steps and decisions that need to be made by JGN and Jemena IT that form the approach to the development of the IT Asset Management Plan are as follows:

- Step 1 Define the energy market economic environment, regulatory compliance requirements for the AAA2015 period.
- Step 2 Assess the asset condition and suitability of current IT assets capability to service the energy market.
- Step 3 Define the changes to be made to existing systems to deliver the AA2015 needs and sustain the asset.
- Step 4 Identify new capability requirements to meet market expectations and regulatory compliance.

- Step 5 Provide for growth and/ or changes in customers and market demand.
- Step 6 Determine the prudent investments required to sustain the systems, meet service standards and mitigate risk.
- Step 7 Determine the most efficient and financially effective means of delivery the IT the systems to serve the market.
- Step 8 Define the program of work taking into consideration financial impact on services pricing and capital limitations.

For AA submissions and determinations the asset management plan covers in detail the remaining year of the current 5-year AA period and the subsequent 5-year AA period. There are 6 asset planning and program considerations made in determining the IT Assets and the program of work to be delivered for the AA2015:

1. The increase in IT systems capacity and licenses to meet energy market and services growth.
2. Determining which systems and technologies need to be retired. Retirement dates for systems are predicated by the end of their economic life, unacceptable risk due to the inability to provide adequate vendor or alternative support or that they are no longer suitable for a changing energy market and business.
3. Determining the current IT applications, technologies and systems and services that will be ongoing and the useful or economic life of those assets.
4. Identifying the new systems that are required to:
    a. Meet new regulatory obligations.
    b. Meet market expectations beyond current capability and standards.
    c. Support Jemena's business strategy.
5. Defining the options for current and new systems provision with the cost benefits studies. This requires a consideration of the new and proven technologies not currently used by JGN that can improve service efficiency, deliver costs efficiencies, improved market services and lower risks.
6. Developing plans to extend the usage of current IT assets to:
    - Remediate an asset's performance where it is working at less than optimal performance.
    - Avoid or mitigate risk.
    - Change existing assets to align with market changes and the business environment.

6.3 Current Assets Condition and Sustainability Assessment

IT assets do not tend to deteriorate in terms of physical condition apart from mobile technologies such as hand held devices, mobile phones and the few assets exposed to the elements. The major assessment is based on the asset's ability to be economically efficient, meet performance standards with growth and ability to meet changing business needs. The IT asset's condition is assessed based on the following criteria:

- The operational stability of the product based on the number of times and duration it cannot operate.
- The ability of the product to meet operational performance standards, particularly growth in volume as the business grows.
- The ability of the product to service the business as intended by being fit for purpose.

- Ability of the products to be maintained and supported by the vendors and the supply of skilled market resources in terms of availability and economic cost.
- Economic condition in terms of cost to operate changes in terms of increasing maintenance costs as the system ages and compared to replacement or alternatives.
- The number and severity of defects requiring remediation.
- Frequency of defects occurring.
- Number of service calls relating to operational problems.
- Current ability to meet ongoing business working environment and changes causing it to be obsolete or made redundant.
- Physical condition including damage and natural wear and tear.

6.4 IT Asset Upgrades

Jemena upgrades software applications to new versions of the product on a rolling 3, 4 and 5-year basis depending on the vendors upgrade cycle and the need to upgrade.

Jemena does not allow market sourced products to go out of vendor support unless the vendor goes out of business or the product has no viable replacement. In exceptional circumstances Jemena will support the product by in-house means or a third party agreement for some legacy systems.

The upgrade plan keeps systems current by upgrading to the current version but no older than current version minus 2. The plan to upgrade a system must still be supported by a business case and risk assessment to support the investment based upon:

- Risk mitigation reasons to rectify software flaws and ensure continuity of vendor support.
- Meeting new regulation provided by changes to the software made available in the upgrade version.
- Gaining access to new functionality and features to be applied by JGN.
- Cost avoidance where not upgrading increases maintenance and support costs.
- Technical necessity to be compatible with a total systems solution.

Competing investment priorities mean that not all systems due for upgrade can take place due to financial and technical constraints and the time available. Therefore upgrade priorities are determined by the level of risk.

6.5 IT Asset Life by Technology Type

Jemena has produced for each software system solution and/or its technology components a plan from 2012/13 through to their end of life, replacement or continuity of the capability to one year beyond the end of the AA2015. In the 6-year time frame all IT Infrastructure is replaced, except for communications. Communications are replaced by the outsourced communications service provider as new technologies are deployed for Australia more generally.

The most common reasons for replacing an IT asset are:

- It is no longer economical to keep an asset compared to replacing it with a new one because maintenance costs will increase once it is deemed to be an aged asset for vendor support purposes.
- The vendor no longer supports the product because it is too old to maintain the product with resources that have become scarce making it an unacceptable risk to all parties.
- It is more cost effective to replace an asset with a new technology.
- The asset can no longer expand or extend to meet business growth and usage demand.

- The asset can no longer be upgraded to allow new systems developments to take place that need to be coupled with newer technologies such as hardware and environments.

All asset replacements are still subject to a business case that includes options analysis, cost benefit justification and risk assessments. The asset replacement forecasts based on IT industry trends and Jemena history backed by business cases are based on the following asset lifecycles.

6.5.1 Software Applications Standard Asset Life

• Office systems	5 years
• Records/document management systems	7 Years
• Geographic Information Systems	8 years
• SCADA	12 Years
• Distribution Management Systems	12 Years
• Metering systems	8-10 Years depending on the specific technologies
• Enterprise Resource Planning Systems (SAP)	12 years

6.5.2 IT Infrastructure Standard Asset Life

• Desktop, Laptop & Tablets	3 Years
• Mobility Devices	5 Years
• Data Storage	4 Years
• Processing	5 Years
• Telecommunications	Planned as required Jemena does not own the communications networks. However, project capex is required for replacement technologies resulting from the retirement of the State Government analogue radio network and possible moves to the NBN network.

6.6 Asset Maintenance and Support

The asset maintenance agreements with vendors are based on the following cost rates:

- For mission critical assets requiring 24 hour by 7 days per week vendor support maintenance agreements are 20%-25% of the software license cost depending on the vendor.
- For business hours vendor standard support maintenance agreements are 20% and for 24 x 7 is 25% of the software license.
- For IT Infrastructure technologies maintenance agreements are based on 20% of the original purchase price depending on the technology.
- In some instances such as Microsoft an annual licensing and maintenance agreement fee is negotiated and paid in advance every 3 years.
- By applying market competition pressure maintenance agreements wherever possible are based on a percentage of the original licenses cost plus Australian CPI or Cost of Living Adjustment (COLA). Unless formally agreed in the licensing sale agreement software vendors reserve the right to use list price as the basis of annual maintenance agreements. This is applied infrequently due to market and relationship pressures when costs increase greater than CPI increments.

- A decrease in the value of the Australian dollar can cause maintenance agreements to increase above CPI, due to most technologies being overseas sourced.

6.7 SYSTEMS GROWTH

The growth in systems, usage and costs is determined by the following metrics:

- The growth in customers in terms of IT demand is determined by the number of customer connections. The growth that increases the use of IT results from:
    - Natural population growth creating new customers and housing developments.
    - New customer business growth.
    - The take up rate for gas energy supply in New South Wales.
    - Replacement of electricity by gas.
- The extension of existing systems usage within the business to meet increased compliance needs and gain more efficiencies.
- The addition of new systems that will have ongoing growth needs including licensing, support and data storage.
- The ability to take advantage of economies of scale with staff and therefore user numbers typically growing at a slower rate than the network, customer connections and energy demand.
- The growth in data and therefore data storage needs as more information is required, collected, stored and made possible by newer information and data intensive technologies. The higher data storage volume systems include geospatial systems, asset imaging, business intelligence and increasing compliance records for energy and non-energy functions.
- IT Infrastructure capacity increases at a greater rate than business growth. However, the benefits of new technologies and economies of scale mean the overall IT cost increases at a slower rate than business growth.
- IT data and infrastructure capacity allowances need to take into account the addition of new systems solutions and the greater use of existing systems as they penetrate further into the business.

JGN has forecast the following demand and growth for the 7 years from 2013/14 to 2019/20 with consulting advice from Core Energy. The demand forecast for the period from 2013/14 to 2019/20 is set out in Table 21 – IT Systems Growth

Table 21 - IT Systems Growth

Australian and AER Financial Year								
Business Growth	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**Average**
Forecasts								
Demand TJs	92,082	84,834	83,908	83,238	82,705	82,216	81,844	
Customer Numbers	1,203,651	1,234,809	1,267,572	1,302,091	1,335,361	1,367,182	1,398,648	
Growth Rates								
Demand		-7.87%	-1.09%	-0.80%	-0.64%	-0.59%	0.45%	-1.9%
Customer Numbers (Connections)		2.59%	2.65%	2.72%	2.56%	2.38%	2.29%	2.5%
Network Growth rate		0.14%	1.78%	1.90%	1.81%	1.69%	1.66%	1.5%

For the AA2015 period JGN has applied the following growth metrics.

- Customer and customer connection software licenses 2.5% average over 5 years.

Software licenses for distribution and metering is based on the number of connections.

- Number of users growth = (Business growth 2.5% – Productivity gain of 1%). 1.5%.

Most corporate and enterprise software licensing is based on separate rates for the number of primary users and end users. Some user licenses have a lower cost read-only license.

The productivity gain is due to economies of scale benefits.

- Data collection and retention based on 2012/13 actual growth for existing systems. 15%.
- IT Infrastructure = (Business Growth 2.5% – New Technology Improvements 0.5%). 2%.

As infrastructure is retired the new replacement technologies typically provide greater processing or throughput for the equivalent of amount of capital investment. With data storage planned for replacement on a 4-year cycle this means a 0.5% gain per annum.

6.8 New Systems Additions and Increased Capacity Needs

Capacity and capital investment planning takes into account the addition of new systems capability. The costs planning and forecasting provide for the following new and additional systems being added to the current IT asset base for the AA2015 period:

- Security Technologies.
- A Geospatial Information System.
- A Data Warehouse.
- A Customer Relationship Management System.

The costs planning and forecasting provide for greater capacity or usage needs for the following current and/or replacement systems.

- The SAP gas distribution solution replacing the current GASS+ solution data.
- Document and records management data.
- Business intelligence data.

7 IT Capex Costs Planning and Forecasting Methodology

7.1 IT Capex Costing and Forecasting

The cost methods and metrics applied to cost the program of work are:

- Business cases for projects and investments that are already in progress at the beginning of the AA2015 period.
- Solution options and project studies with cost estimates conducted by Jemena and with external advisory organisations for pre business case projects.
- Systems upgrades are calculated at 10% of the original project cost for the more recently implemented solutions. For legacy systems and in-house developed systems the costs of an upgrade has been calculated by the project teams work days and daily rate per for each system or technology.
- Extend, remediate and change provisions are based on 3% per annum of the most recent project cost to implement the solution. For legacy systems this type of expenditure is calculated by the number of full time equivalent staff members or contractors required times the daily rate based on the recent historical trend in demand and actual expenditure per system.
- The growth factors are based on the following cost drivers and metrics:
    - For customers and connections, software and technical licensing is a one to one relationship. For the AA2015 period customers and connections are forecast to growth by an average of 2.5% even though energy consumption demand is forecast to fall.
    - The number of internal users is the most common mechanism used by software application vendors for charging for licenses. The AA2015 asset management plan assumes that user growth will be 1.5% calculated at 1% less than customer connections growth of 2.5% over the 5-year period. Therefore the productivity gain is reflected in our forecasts in a lower per unit cost.

7.2 IT Operations Costs Planning and Forecasting

The AER is applying a base year cost + trend costs + step changes as defined under the regulatory definition of eligible step changes incurred that in essence is from a change in regulation or external circumstances beyond JGN's control.

Jemena Gas Network's current IT opex costs post capitalisation of operating costs for 2012/13 actual costs are [c-i-c] This forms the current baseline costs for the purposes of the draft IT Asset Management Plan. The 2012/13 actuals will be replaced by the 2013/14 actuals during the AER's determination process.

The trend costs include Australia's Consumer Price Index (CPI) and changes in cost drivers as determined by the AER. The costs drivers applicable to JGN are detailed in Section 8.5.

JGN does not have any eligible Step Changes for the AA2015; therefore no IT opex cost forecasting is required with CPI and trend costs provided by Jemena corporate and the AER's allowances determination.

7.3 Project Staff and Contractor Costs

Operating staff costs are based on the 2012/13 actual baseline costs.

The capital projects costs are based on 2 average costs per day, excluding overheads, reflecting:

- Highly specialised projects based on solutions such as SAP, Geographic Information Systems, Business Intelligence, Market Systems and Infrastructure projects are costed at an average daily rate per project team of [c-i-c]

- More widely and commonly used and less complex software applications such as Microsoft based systems development, office systems, records management and document management. These projects are costed at an average project team cost of [c-i-c]
- The daily rates are a mix of in-house employees at a total cost of employment calculation + external contract and services company staff.
- Jemena maintains a small-scale internal project staff as most projects are delivered externally, after-market tender, or req st skills for a limited term. The ratio of internal employee staff working on projects is [c-i-c] compared to [c-i-c] sourced from external IT services providers. This ratio represents a typical split between in-house staff and external resources.

7.4 IT Shared Services Cost Allocations

Jemena Gas Network's systems are a mix of dedicated gas solutions and shared enterprise wide systems used by multiple assets with the Jemena group.

[c-i-c]

The cost allocations for systems shared by the Jemena group of businesses are based on the following principles and calculations:

- Operational Costs
    - Direct costing for all systems and technologies only used by that business.
    - Direct costing for systems, technologies and services that are attributable for staff members who only work on the one specific business.
    - Service agreements backed by time sheets for shared staff working on operational services including maintenance and support.
    - Indirect costs such as maintenance agreements, external services not labour based and consumable items are allocated according to a cost model based on a combination of usage metrics and the business benefiting from the systems.
    - The cost allocation model where costs are not directly attributable includes measurement and metrics for:
        - Customer connections and meters where licensing based maintenance is based on those metrics.
        - Numbers of full time equivalent staff allocated per Jemena business.
        - Number of direct users where licensing based maintenance and work effort reflects the numbers of users.
        - Number of desktop and laptop computers.
        - Number of devices.
        - The number and range of systems applications used by each system and their weighted average costs to operate, maintain and support based on a very large, large, medium and small classification.
        - Data storage capacity.

- Capital costs
    - Project costs are allocated on a case by case based using a combination of usage metrics and which businesses in the Jemena group benefit from the project and solutions delivered.
    - Cost rates and time sheets are provided by internal and external staff and tracked against plans and budgets.
    - Incremental costs for capital items purchased that are not projects, such as systems licenses and more date storage capacity are allocated according to the percentages in the table below.

Enterprise solutions and IT Infrastructure is shared across the Jemena group of energy business as shown in the Table 22 – AA2015 Cost Allocation.

Table 22 - AA2015 Cost Allocation

Jemena AA2015 - Jemena Cost Allocations Effective Date From 1 July 2013							
	Jemena Electricity Networks	Jemena Gas Networks	Jemena Pipes	ZINFRA	ACTEW-AGL	Other	Total
IT OPEX				[c-i-c]			
IT Capex							
Application Solutions							
IT Infrastructure							

The IT operating cost allocation percentages shown in the table are determined annually reflecting changes in IT usage by each of the Jemena energy assets. For the AER financial year 2012/13 the costing model was redeveloped with the assistance of [c-i-c]

The IT Infrastructure cost allocations above were calculated for the recent Data Centres and IT Infrastructure Refresh Project and business case conducted in 2011/12 and 2012/13.

8 2015-20 Capital Investment

8.1 Overview

JGN plans to invest $120.9M in the period 2015/16 to 2019/20. The investments are costed in real $2012/13.

The capital investment plan includes [c-i-c] f deferred projects made necessary by the introduction of the National Energy Customer Framework (NECF) program by the Australian Energy Regulator and major changes to the distribution network pricing structure. Those 2 projects made it necessary to push back the planned program of work approved for the AA2010 determination. The program of work was pushed back by 18 months and capital investments of [c-i-c] were re-assigned to the new projects.

The overall IT capex by business category is set out in the Table 23 – IT Capital Investment by Business Category.

Table 23 - IT Capital Investment by Business Category

IT Capital Plan		2015/16	2016/17	2017/18	2018/19	2019/20	Total AA2015
Real 2012/13 Dollars	% Share By Category	$Ms	$Ms	$Ms	$Ms	$Ms	$Ms
Regulatory & Market Services Systems	4.3%			[c-i-c]			$ 5.14
Corporate & Enterprise Systems	9.7%						$ 11.78
Customer Systems	7.5%						$ 9.04
Distribution Network Systems	24.7%						$ 29.81
Metering Systems	8.4%						$ 10.12
Content Management & Business Intelligence	8.2%						$ 9.90
Geospatial Systems	8.3%						$ 9.99
Asset Construction & Field Services	4.1%						$ 5.00
IT Infrastructure	24.9%						$ 30.10
Total	**100.0%**	**$ 35.08**	**$ 28.63**	**$ 30.56**	**$ 16.90**	**$ 9.71**	**$ 120.88**

The key elements determining the level of category expenditure for the AA2015 are:

- The completion of the very large scale replacement of the GASS+ business solution commenced in 2012/13.
- The implementation of the Geographic Information System (GIS). The project was deferred from AA2010 due to the need to deliver and comply with the new National Energy Customer Framework (NECF) obligations required post determination.
- The time, work effort and capex required to develop and implement the new systems functionality for NECF over the 2 years is comparable to the GIS project. The NECF change impact on the business and systems development resources meant some of the 2010 program of work needed to be deferred until the next AA period.
- Introduce, develop and Implement a new data warehouse capability to provide greater analytical and decision making support as well as become more efficient in the management of data and information.
- The replacement of ageing metering systems at their end of life.
- Produce a new distribution network data model for design purposes and decision support following the replacement of metering systems and the introduction of the new data warehouse.
- Introduce, acquire and develop new mobility capability to become more efficient with improved services by having the provision of information and systems in the field and for all staff members wherever they need to work.
- Provision for growth in customers, connections and the scale of the distribution network to meet demand and to grow the use of gas energy in New South Wales.

- Provision for systems extensions, the optimising of systems performance and respond to change as the energy market and business environment constantly changes and evolves.
- The funding required for asset lifecycle management to upgrade systems and replace end of life systems.

Jemena's investments for recurrent expenditure represent 78% of total expenditure which includes market growth, ongoing change, upgrades and systems replacements. New capability represents 22% of total investments to bring Jemena up to the IT capabilities of Australian energy distribution companies by 2018. The current and non-recurrent profile is consistent with Australian and international capital investments required to sustain current capability while progressing market services with efficient new technologies.

The systems replacement percentage of 46% is at a peak level due to the replacement of the legacy GASS+ system suite which supports the majority of the Jemena Gas Network business and by the time of replacement will be more than 25 years old.

Major projects represent almost 70% of total investments. The remaining 30% consists of smaller upgrade projects, growth and changes to existing systems. Approximately $11.84M of investments represent deferrals from the AA2010 period as a result of the new AER required National Energy Customer Framework taking the highest priority and capital investment not being included in the AA2010 determination.

The major investments have a balance of replacing legacy systems and the introduction of new capability consisting of a Geographic Information System, field mobility and a data warehouse and reporting solution. This brings Jemena up to the level of solutions and technologies in place at most of our contemporary Australian energy distribution businesses.

8.2 Major Projects and Capital Expenditure

The major IT projects and incremental capital investments for extensions, upgrades and growth planned for the next AA period are a mix of:

- Sustaining the ongoing asset base through upgrades, optimising asset performance and providing for energy market growth.
- Continuing through to completion the large scale GASS+ replacement with the new SAP GAS systems. The project commenced in the AA2010 period with a 2 Stage implementation from 2014 to 2017 spanning the 2010 and 2015 Access Arrangement periods.
- Implementing projects deferred from the AA2015 as a result of post determination regulatory requirements requiring the highest priority including field mobility, business intelligence and document management.
- Replacing systems that have come to the end of their useful or economic life.
- Retiring end of life systems and technologies that have gradually become redundant as new systems replace their business and technical purpose.
- Adding new systems and technologies to bring JGN up to the capability level of Australian energy distribution businesses. JGN currently has gaps in IT solutions and technology capabilities when benchmarked against comparable and best practice Australian and international energy distributors in the areas of Geographic Information Systems, Field Mobility, Business Intelligence and Analytics.

The major projects and material value capital expenditures are:

- **Complete GASS+ Replacement Project with SAP Gas**: The GASS+ system has reached its end of life after 25 years and is being replaced to mitigate maintenance risk becoming unacceptable, overcome constraints on new development including for regulatory change and to enable the next stages of implementing business and systems efficiencies.

- The GASS+ system is being replaced by a new gas solution based on SAP. Jemena will leverage the capability and learning's gained from the Multinet Gas implementation, which was implemented by Jemena.
- **Geographic Information System**: The system will be introduced into JGN as a new capability. The new system suite encompasses all land based asset information, mapping, geographic and topographic information including NSW Government provided information and data. The project had to be deferred from the AA2010 period as a result of the unplanned national energy customer framework taking highest priority and similar capital funding.
- **Field Mobility**: The Field mobility solution builds on the works delivery capability provided by the SAP Gas system and the Geographic Information Systems. The project delivers information into the field using laptops and tablets via wireless communications including trucks as hot spots and downloaded information. The usage is applied to asset management including construction, maintenance, emergency management, materials management, asset remediation and replacements.
- **Business Analytics and Data Warehouse Project**: The data warehouse project provides new capability using the SAP business data warehouse product. The data warehouse coupled with the business intelligence tools provide by SAP Business Objects products will be the major enabling solution for decision making in most parts of JGN for corporate, financial management, meter data, network modelling, predictive analysis, and analytics including data mining. JGN has lower level of analytics capability compared to Australian energy distributors and can improve services, improve risk management and achieve efficiencies by applying contemporary analytics capability and methods.
- **Real Time Data & Network Management Model**: The project establishes and enables a more sophisticated view of the distribution network for planning, management and operations by leveraging the increase in data sourced from metering systems, the geographic information system and SAP Gas system. The model and data will be used by planners, analysts, emergency management and decision support at all levels of the business and operations.
- **Meter Data Loggers Project**: The analogue network will be shutdown in NSW requiring replacement communications capability and new devices for the reading, recording and transmission of meter data. In addition the rollout of the National Broadband Network (NBN) is both an opportunity and need to be met as the NBN replaces existing communications making current data logging means obsolete or redundant. This project is planned for 2014 and 2015.
- **MVRS Upgrade & Technology Replacement**: Provision is made for material value capex over the AA2015 period for the upgrade and/or replacement of software along with the replacement of ageing communications technologies.
- **Customer Management**: The AER has issued new guidelines for the management and interaction with customers that require new information, service engagement obligations and tracking along with analysis and reporting. To meet the new obligations JGN will introduce new IT capabilities including the SAP Customer Relationship Management system, customer portal and extend current customer contact functionality.
- **Market Data Management**: JGN is increasing the level of market, customer and metering data collected and analysed including more interval data to provide improved understanding of market demand and behaviour to support planning, operations management and emergency management. The project enables a new management process and provides supporting information for market analysts and decision makers and integration with customer, network, demand and assets data sources.
- **IT Infrastructure - Asset Lifecycle Projects**: IT Infrastructure consists of a large collection of hardware, communications links and technical operating software. A significant percentage of the IT Infrastructure investments are small scale and incremental purchases. Therefore this capital

investment consists of bundles of capital works to form projects and many item purchases not requiring a project.

- **Data Storage**: Data storage is planned to be replaced at the end of 4 to 5 years subject to business case when the cost of technical upgrades and increased maintenance agreements becomes uneconomic compared to replacement. Typically advances in technology means replacement technologies are more powerful and provide greater volume of storage per dollar than current data storage.
- **Desktop/Laptop Standard Operating Environment Replacement**: Desktop and laptop computers are planned for replacement on a rolling cycle once they have been used for 3 years. The replacement is driven by the economic business case of replacement compared to maintenance cost increases and compatibility of retention.
- **Microsoft Software Agreement Renewal**: Jemena has 3-year software and maintenance agreement for a suite of office software, corporate, design and systems development tools with annual increments for growth. The agreement is planned to be renewed subject to business case or replaced during each access arrangements period.
- **Provision for Growth**: The funds are required to provide additional software licenses and infrastructure capacity for market growth for new customers, additional connections as well as cumulative retention of information, records and data for compliance and/or ongoing usage.
- **Provision to Extend Remediate and Change**: The funding is required to extend the use of current systems, ensure optimal performance and change systems as the market and economic environment constantly changes.

Table 24 – Major IT Capital Investment lists the 14 major projects and the aggregate cost of smaller scale projects. The smaller scale projects and costs include incremental capital acquisitions for increased capacity.

Table 24 - Major IT Capital Investment

Major Projects	JGN Percent Share of Costs $Ms	AA2015 Share of IT Capex	Type of Invesment	Project Owner
Systems Solutions Projects Software + Additional Hardware				
Complete GASS+ Replacement Project with SAP Gas	[c-i-c]		Replacement	Jemena Gas Networks
Geographic Information System			New Capability	Jemena Gas Networks
Field Mobility			New Capability	Jemena Gas Networks
Data Warehouse Project			New Capability	Jemena Gas Networks
Real Time Data & Network Management Model			Extension	Jemena Gas Networks
Meter Data Loggers Project			Replacement	Jemena Gas Networks
MVRS Upgrade & Technology Replacement			Upgrade and Replacement	Jemena Gas Networks
Customer Relationship Management			New Capability	Jemena Gas Networks
Market Data Management			New Capability	Jemena Gas Networks
Sub-Total	**$ 46.17**	**38.2%**		
IT Infrastructure - Asset Lifecycle Projects				
Data Storage - SAN Replacement	[c-i-c]		Replacement	Jemena Enterprise
Desktop/Laptop Standard Operating Environment Replacement			Replacement	Jemena Enterprise
Microsoft Software Agreement Renewal			Replacement	Jemena Enterprise
Sub-Total	**$ 7.32**	**6.1%**		
Provision for Growth	**$ 6.88**	**5.7%**	Extensions	Jemena Gas Networks
Extend Remediate and Change	**$ 24.49**	**20.3%**	Extensions	Jemena Gas Networks
Total Major Projects	**$ 84.86**	**70.2%**		
All Other Capex	**$ 36.02**	**29.8%**		
Overall Total	**$ 120.88**	**100.0%**		

8.3 Capital Expenditure by Investment Type

The table below summarises the investments in IT application solutions and IT Infrastructure by investment type. The table demonstrates that new capability represents 22% of all IT capex and 78% represents lifecycle investments to sustain and replace current capability.

Growth at 6% reflects the natural growth business in response to the market, increased take up of systems, data growth and the additional growth that will be required for new systems.

The 20% provision for extensions, remediation and changes to existing systems largely reflects JGN leveraging the newer investments in existing systems, such as the SAP capability, applying unused functionality without the need to invest in new licenses. This investment type also includes the cost of adapting to the continuous change in the external business environment and market as well as continuous improvements and remediation.

Replacements represent 45% of all IT capex as JGN completes the replacement of legacy systems and of IT Infrastructure which is largely replaced within any one 5 year period.

Table 25 – Capacity Investment by Investment Type represents the capital investment types relative to software solutions and It infrastructure and as a share of overall IT capex.

Table 25 - Capital Investment by Investment Type

Investment Type	Percent of Total Capex	AA 2015 Total $Ms
IT Projects & Software Solutions		
New Capability	[c-i-c]	
Extend, Remediate & Change		
Growth		
Software Application Upgrades		
Systems Replacements & Retirements		
Sub-Total	**75%**	**$ 90.77**
IT Infrastructure		
New Capability	[c-i-c]	
Extend, Remediate & Change		
Growth		
Infrastructure Upgrades		
Systems Replacements & Retirements		
Sub Total	**25%**	**$ 30.10**
Summary by Investment Type		
New Capability	[c-i-c]	
Extend, Remediate & Change		
Growth		
Upgrades		
Systems Replacements & Retirements		
Overall Total	**100%**	**$ 120.88**

8.4 Capital Expenditure by Cost Category

Internal and external labour is largely driven by supply and demand factors influence by the changes in demographics, immigration and retirement of the workforce. Software and hardware are also heavily influenced by supply and demand with the value of the Australian dollar also influencing these largely imported products.

External services costs for IT are primarily influenced by the demand and supply for staff to work on legacy systems or the most recent technologies. Over time, aging systems become harder to service or develop as those

skills diminish in the market due to retirement or people moving on to careers with newer technologies. The more rapid take-up of new technologies creates an excess of demand over supply until such time as the market can develop the skills and resource levels required. Legacy systems are retired as a service risk exceeds acceptable manageable levels and replaced with new proven technologies that can be supported at a reasonable cost and sufficient numbers of skilled resources are available thus reducing exposure to higher market rate fluctuations. Table 26 – IT Capex by Cost Categories

Table 26 - IT Capex by Cost Categories

2013/14 Dollars		AA2015 Total
Investment	JGN Percent Share of Costs	Asset Management Plan
Internal Labour	[c-i-c]	
External Labour		
Software		
Hardware		
External Services		
Overall Total	**100.0%**	**$ 120.88**

8.5 Capital Expenditure 20-Year Forecast 2015/16 to 2034/35

By the end of 2019/20, JGN plans to have in place the IT capability of a mature and contemporary Australian energy distributor. New technologies emerge and some are taken up very rapidly, however while new technologies are anticipated they are not predictable beyond 2020. Therefore the IT capex beyond 2020 has been forecast on the basis of current asset management lifecycle and replacement. Cost estimates are based on 2010/11 to 2014/15 real values costs being repeatable over the 20-year period per system solution and for IT infrastructure.

Assets reaching end of life or becoming no longer fit for purpose will be primary reasons for implementing new solutions as well as taking advantage of the service opportunities and efficiencies offered by proven new technologies backed by the requirement of a rigorous business case.

IT asset replacements from 2020/21 onwards are forecast based on their anticipated useful life and then costed using their most recent replacement cost.

A market growth factor of 2.5% per annum has been determined by external expert consulting for JGN's future energy demand. This has been applied for relevant customer increases, new connections, network expansion, licensing and capacity volumes. The growth in data is increasing from 15% to 20% per annum. The growth is typical of IT industry trends and due to market growth, greater uses of photograph imaging, video, and customer internet based interaction, accumulation of data and the addition of new capability. The increase is partly offset by cost price per unit economies of scale, manufacturing improvements and vendor competition in the current period. Staff growth is deemed to be 1% per annum less than the energy market growth due to economies of scale benefits.

Table 27 – IT Capex 20 Year View shows a relatively constant investment in IT systems over 20 years based on the current asset base and plan to 2019/20. This reflects the program of work for AA2015 achieving comprehensive systems capability and maturity. The 20-year outlook implies IT capex as a percentage of overall JGN will reduce as the business grows with a larger network, customers and connections.

Table 27 - IT Capex 20-Year View

2013/14 Dollars		AA2015 Total	2020 AA	2025 AA	2030 AA
Investment	JGN Percent Share of Costs		Forecast	Forecast	Forecast
		$Ms	$Ms	$Ms	$Ms
Internal Labour			[c-i-c]		
External Labour					
Software					
Hardware					
External Services					
Overall Total	**100.0%**	**$ 120.88**	**$ 113.56**	**$ 137.85**	**$ 109.54**

9 AA2010 Asset Management Program, Delivery and Completion

JGN will have largely delivered the program of work submitted and approved in the AA2010. JGN needed to defer projects with allowances of $11.84M due to post determination new capital projects initiated and required by the AER. The new projects were:

- The "National Energy Customer Framework" (NECF) project initiated by the Australian Energy Regulator (AER) after the AA2010 determination at a cost the JGN of [c-i-c]
- New gas access arrangement including changed pricing mechanism at a cost [c-i-c] higher than the provisional allowance at the time of the determination.
- Initial study cost of [c-i-c] into the possible introduction of a new GAS "business to business" (GAS B2B) information and transaction transfer facility via the Australian Energy Market Operator (AEMO). AEMO and the market participants have placed the project on indefinite hold.

JGN needed to reschedule the program of work so that highest priority price re-set changes to systems and the NECF projects were conducted over 24 months from 2010/11 to 2012/13.The deferral was necessary due to the:

- Change impact on Jemena Gas Network.
- IT division's delivery capability.
- Need to re-assign capital to investments not included in the determination allowance.

Since the re-scheduling and delivery JGN understands NECF may be recovered as a cost pass through investment.

The projects deferred at a similar aggregate cost of [c-i-c] to the AA2015 period are:

- The acquisition and implementation of a Geographic Information System at a cost of [c-i-c]
- Field Mobility acquisition, development and implementation at a cost of [c-i-c]

Program Delivery Status 2010/11 to 2013/14

From the commencement of the AA2010 period on 1 July 2010 to June 2013/14 JGN has undertaken and completed the following major projects:

1. Replaced the legacy SAP systems more than 12-years old that provided capability for enterprise management, asset management as well as financial management and accounting.
2. Implemented the new National Energy Customer Framework as a regulatory requirement. This involved systems development to the core gas management and customer management systems including GASS+ and SAP customer management functions. The first and second stages of the NECF program were delivered from 2011/12 to 2012/13.

   The next stage focused on customer management is underway as part of the GASS+ legacy systems replacement commenced in 2013/14 with that stage to be completed in 2015/16.
3. Relocated from the legacy Data Centres services that had reached end of life as they could no longer expand. The transition was completed in 2012/13 into 2 outsourced data centres and services.
4. Replaced the core IT Infrastructure including a back log of end of life systems with new technologies to be more efficient and more cost effective.
5. Replaced the desktop and laptop standard operating environments as well as the Microsoft Office application solutions.
6. Redeveloped the Contracts and Billing System (CABS) and the Emergency Load Management System (ELMS) merging them into one more efficient application sharing common data and with upgraded underlying technologies.

7. Conducted a number of systems consolidations, replacements and retirements enabled by new technologies, cloud based software as a service and the new capability introduced by the above project.

Work in Progress Projects 2013/14 onwards to the end of the AA2010 Period

8. JGN has commenced the replacement of the GASS+ legacy systems suite which is now 25-years old. The $56M capital investment is being conducted from 2013/14 in three development and replacement phases through to 2016/17. The GASS+ legacy systems are being replaced by the SAP Gas Solution. The three projects stages are:
   - SAP Works & Asset Management commenced in 2013/14 and to be implemented in 2014/15.
   - SAP Customer, Outage and Market Services commencing in 2014/15 and to be implemented in 2015/16.
   - SAP Business Process Reporting, Historical Data Solution & GASS+ Decommissioning to be implemented in 2016/17.
9. Jemena JSAP (Corporate and Financial SAP) Operations Alignment.

   The project commenced in 2013/14 to set up the foundation for the new JGN to align core processes across the Jemena business enabled by the enterprise SAP corporate and financial systems. The project delivers the following capability across Jemena and within JGN:

   Physical to Financials Capability

   - Traceability of total lifecycle costs based on work activity, equipment and financial settlement.
   - Establish a practical level of granularity for the equipment hierarchy to support cost collection.
   - Commitment to budget traceability based on the right granularity of activity costs.
   - Consistent definition of process, aligned with activity types.

   Budget Controls

   - Establish investment management budgets with roll down of budgets to projects.
   - Establish a common project Governance, gating structure and budget controls.
   - Align investment planning with profit centre structures.

   Cost Capture and Allocations

   - Reduction in corporate costs allocations and increase in direct project activity costing.
   - Simplification of cross company projects and settlement and time code activities.
   - Establish activity costing methodology based upon an accountability structure.

   Service Provider

   - Establish consistent field work force and service provider interactions reflective of current arrangements that support changes in sourcing strategy.

   The project is a shared Jemena enterprise project with JGN's share [c-i-c] with [c-i-c] expended in 2014/15.

Planned Asset Management Program Completion in 2014/15

The following projects to be conducted in 2014/15 are all consistent with the AA2010 asset management plan submission and determination and capex allowances:

- The GASS+ Replacement Project - phase 1 of the project will largely be completed by the end of the current AA2010 period with some finalisation work to be completed in the early months of 2015/16.
- The Jemena JSAP Operations Alignment will be completed in the AER financial year 2014/15.
- The development of ongoing incremental improvements, to the existing NECF capability.
- SAP Financial Management – Provides for continuous change to financial management, accounting and reporting as the market and business environment constantly changes.
- Implementation of a SAP archiving capability as new functionality and remediating the current inability to archive transactions and data that impairs processing response time and throughput.
- The MVRS Itron system requires an upgrade to mitigate risk as well as the replacement of workstations and readers which have reached their end of life. The project cost is [c-i-c]
- The first stage of the Portfolio Management Project is to be implemented as planned in the AA2010 determination with the introduction of the Microsoft MS Project Server product at a cost of $0.09M. The remaining stages have been deferred to 2015/16 in view of the need for the JSAP Alignment projects and GASS+ Replacement for Works and Asset Management to be in place first.
- Lifecycle growth and replacement projects for IT Infrastructure will take place at a cost of $1.3M for:
  - Data storage
  - Infrastructure services
  - Platforms and processing
  - End user services
  - Organic growth as the market and business grows.

Table 28 – JGN 2014/15 IT Capex Plan sets out the projects and capex cost plans for 2014/15 which completes the AA2010 Period. The plan is consistent with the AA2010 Asset Management Plan and determination.

Table 28 - JGN 2014/15 IT Capex Plan

Project ID	Business Purpose & Projects	IT Solution Systems & Products	Investment Type	Extension or Replacement	2014/15
1	**Regulatory Systems & Market Services Systems**				
9		National Energy Customer Framework (NECF)	Extend, Remediate & Change	Extension	[c-i-c]
10		Customer Contact System	Extend, Remediate & Change	Extension	
14	**Corporate & Enterprise Systems**				
15	**Office Systems**	Microsoft Office and Visio, ARIS IT Architecture Tool,	Extend, Remediate & Change	Extension	[c-i-c]
16			Growth	Extension	
26.1	**SAP Alignment Project**				
26.2				Extension	
32				Extension	
41				Extension	
65	**Distribution Network Systems**				
66	**GASS+ Replacement Project**				
66.2	Gas Solution - Phase 1	SAP Works & Asset Management	Systems Replacement & Retirement	Replacement	[c-i-c]
66.3	Gas Solution - Phase 2	Services	Systems Replacement & Retirement	Replacement	
66.4	Gas Solution - Phase 3	Historical Data Solution & GASS+ Decommissioning	Systems Replacement & Retirement	Replacement	
76	**Metering Systems**				
77	**Metering Systems**	Metretek Remediation & Business Case	Extend, Remediate & Change	Extension	[c-i-c]
81		MVRS - Itron Upgrade + Replace Workstations & Readers	Systems Replacement & Retirement	Replacement	
124	**Asset Construction & Field Services Systems**				
125	**Asset Management & Construction**				
126	Portfolio Management	SAP Portfolio Management	New Capability	Extension	[c-i-c]
127	Project Planning & Scheduling	Microsoft Server	New Capability	Extension	
141	**IT Infrastructure**				
142	**Lifecycle Capex - Upgrade, Replace & Retire**				
143	Data Storage & Management		Refer Infrastructure IT Capex Model	Replacement	[c-i-c]
144	Infrastructure Services		Refer Infrastructure IT Capex Model	Extension	
145	Platforms & Processing		Refer Infrastructure IT Capex Model	Replacement	
146	End User Services	Includes Upgrade to Windows 8 for Tablets & Smart Devices	Refer Infrastructure IT Capex Model	Replacement	
156	Organic Growth - Technical Licenses & Data Storage @ 2%	Network, Customers, Connections, Staff and Data Growth	Refer Infrastructure IT Capex Model	Extension	
				Asset Management Total	**$ 36,325,716**

10 AA2015 IT Capital Program of Work by Project Category

In the following section the asset management plan provides a profile and listing of the IT Investment projects by business category. The categories represent the business purpose. By nature, the applications systems cover large parts of the business. Therefore, the same application solutions are involved in some projects multiple times and in more than one business category, such as the SAP core system.

SAP corporate and financial solution and the SAP gas solutions are at the core of most of the JGN program. IT Infrastructure in terms of processing, data storage and communications apply to most projects. Jemena's consolidation of applications and infrastructure means larger scale and fewer solutions, less integration development needed supported by fewer processing devices and data storage devices. Consolidation results in lower systems build costs and implementation costs, lower work effort and cost to maintain systems as well as the cost advantages of economies of scale.

Capital projects are numbered for reference and tracking by Jemena Budgets sections and used in this document for cross referencing to the IT capex Plans and Models. This includes the 2013/14 budget and plans from 2014/15 out to 2034/35. Projects that do not occur during the 6-year asset management plan are omitted and so are projects already completed in 2013/14, therefore there are gaps in the project numbering sequence.

For each systems application or suite of systems provision has been made, where applicable, for recurrent projects and capex for:

- New capability implemented for the first time.
- Ongoing development, extended usage and change as the working environment changes.
- Growth in licenses, staff and capacity as the business and distribution network grows.
- Systems upgrades.
- Systems replacements and retirements.

The IT program of work 2014-2020 can be summarised to represent the following four themes:

- Delivering new capabilities to business that are aligned to market trends and changing industry focus.
- Improving existing capabilities to minimise risk and drive efficiencies.
- Enabling business transformation key to delivering the business plan.
- Respond to business needs in terms of implementing capabilities and enabling solutions that drive regulatory and other priorities.

The initiatives within the above four themes aim to deliver the following outcomes to Jemena business:

- New opportunities and operational / process efficiencies.
- Centricity of information/data.
- Advanced analytical capabilities leading to better decision making.
- Reliable infrastructure, systems and environment that is up-to-date, secure and efficient.
- Provision for growth and continuous change as the regulatory and business environment changes.

The IT program of work capex for JGN AA2015 by business category is summarised in the Table 29 – Capital Program Summary

Table 29 - Capital Program Summary

IT Capital Plan		2015/16	2016/17	2017/18	2018/19	2019/20	Total AA2015
Real 2012/13 Dollars	% Share By Category	$Ms	$Ms	$Ms	$Ms	$Ms	$Ms
Regulatory & Market Services Systems	4.3%			[c-i-c]			$ 5.14
Corporate & Enterprise Systems	9.7%						$ 11.78
Customer Systems	7.5%						$ 9.04
Distribution Network Systems	24.7%						$ 29.81
Metering Systems	8.4%						$ 10.12
Content Management & Business Intelligence	8.2%						$ 9.90
Geospatial Systems	8.3%						$ 9.99
Asset Construction & Field Services	4.1%						$ 5.00
IT Infrastructure	24.9%						$ 30.10
Total	100.0%	$ 35.08	$ 28.63	$ 30.56	$ 16.90	$ 9.71	$ 120.88

10.1 Business and IT Needs

JGN's IT program of work is determined by the following business and economic environment for the energy industry and IT industry.

- **Regulatory Environment and Change** – The regulated Australian energy market and industry continues to change, evolve and diversify with the AER consistently responding with new and refined regulation to change circumstances, ensure the market operates as intended and put into effect the policies of Federal and State Governments. JGN must conform to new and changed regulations changes to meet its market obligations and to stay in business as a regulatory compliant organisation. The enablement of regulatory compliance in most cases requires new or changed systems capability.
- **Customer Expectations** – JGN's customers directly and indirectly consist of the retailers, end consumer and energy transmission business that provide energy to the Australian market. The customer expectations evolve over time and need to be met in terms of defined services standards determined by regulation and includes customer engagement and customer satisfaction.
- **Sustainability and Risk Management** – The IT asset management plan must provide sustainable solutions that are low risk including the ability to be supported by vendors and if not to be replaced or supported in house at a reasonable cost. The sustainability of systems diminishes over time as technologies go out of vendor support, cease to be relevant or are no longer economic to operate compared to alternatives. The asset management plan provides for all systems and technologies to have manageable low risk or better or be replaced.
- **Network and Demand Growth** – The NSW economy and population continues to grow the network and customers while energy consumption demand for gas has started to flatten due to price increases above CPI and emissions reductions behaviour changes consumption levels. JGN is also impacted by major corporate energy consumers closing, becoming more efficient or relocating outside of NSW. The IT asset management plan provides for a combination of natural growth, network growth and peak energy consumption where applicable in terms of transaction and data capacity, licenses for additional users, new connection points and the introduction of new systems.
- **Cost Drivers and Affordability** – Information technologies are sensitive to price changes that fluctuate according to the relative value of the Australian dollar, the market position of vendors and competition, the age of current systems and the cost of skilled resources based on supply and demand.
- **Opportunities Presented by New Technologies** – IT continues to introduce new technologies and solutions that have a high adoption rate in Australia and are proven to be robust and supported in

relatively short time frames well within our 6-year asset management plan time frames. Relevant proven technologies include mobility solutions, smart phones, tablets and the provision of services and data via cloud computing for example cloud infrastructure and Software as a Service (SaaS). These technologies and services have been considered and continue to be considered for the 6-year plan but not all could be included as strategies in the 2013/14 asset management due to time constraints and priorities.

10.2 NEW CAPABILITIES

The IT plan aims to deliver the following major or key new capabilities over the IT strategy period:

- **GIS**: Deliver a GIS platform based on GE SmallWorld or ESRI for all land based asset information, mapping, geographic and topographic information. The GIS solution is to be delivered in 3 Stages that will progressively integrate with asset and works management, vehicle management, network distribution management and field mobility.
- **Field Mobility**: This is the next major initiative after SAP and GIS implementation that will enable delivery of information into the field using laptops and tablets via wireless communications including trucks as hot spots.
- **Data warehousing and Analytics**: Implement SAP BI as the analytics platform for Jemena coupled with a new SAP business data warehouse. This will be the major enabling solution for decision making across the business and will drive further opportunities to expand into data analytics and predictive analysis.
- **Drawings Management**: Implement a new drawings management system.
- **Customer**: Deliver SAP based Customer Relationship Management solution
- **Market**: Deliver capabilities to manage market incentives (GAS SAP Billing) and market data management.
- **Asset Management**: SAP Portfolio management and Microsoft project server for consolidating projects, managing and accounting of large programs of work.
- **Employee Management**: Implement SAP HCM and SAP Learning Management solutions with self service capabilities as the platform for employee information, skills and training management.
- **Governance and Risk**: Deliver SAP based Governance and Risk Management capabilities.
- **Infrastructure and other**:
  - Enable corporate mobility, virtualisation infrastructure and infrastructure to manage and control mobile devices from a security, privacy and risk perspective.
  - Identity and access management infrastructure and implement a SIEM tool (Security Information and Event Management).
  - Infrastructure automation capabilities.

10.3 SIMPLIFY JGN OPERATIONS ENABLED BY INFORMATION TECHNOLOGY

Jemena has committed to becoming a process centric focused organisation. This, from an IT systems perspective, means that all business processes are mapped to the IT services that support them. The benefits of this approach will be recognised via:

- Predictive change modelling with the ability to perform top down and bottom up reviews.
- A single authoritative source of truth and change management for Infrastructure, Architecture, Services, Applications and Business Processes.
- The capture of Intellectual Property maintained in a dedicated ARIS repository.

- Further benefits flowing from change impact assessments, risk analysis, design implications or project delivery dependencies and greater agility during implementation of change with less risk.
- A Technical Reference Model (TRM) to support the infrastructure meta-model for the Enterprise Architecture tool. TRM will describe infrastructure services and functions provides along with the current standards followed.

10.4 IMPROVING EXISTING CAPABILITIES

IT assets are constantly monitored for performance to standards and for defects. The assets are also subject to constant change as the business changes. Maintenance contracts are entered into with the vendor and/or developer of the software application and their associated IT infrastructure. If a product can no longer be maintained by a vendor the product is replaced or alternative. Vendors reach a point when they will no longer support a product that has aged or the organisation has not consistently upgraded the product to stay reasonable current and applied corrections to known problems. The IT plan includes a number of planned lifecycle upgrades to technology assets over the strategy period. This includes upgrades and maintenance of the following key systems:

- **SAP**: As a recently replaced product, SAP is in good condition and requires low levels of maintenance. As the most strategic, powerful and complex solution over the next 7 years SAP requires continuous management of the SAP configuration and reporting as the business continuously changes. SAP ECC6 and Solution manager will be upgraded to later versions in 2015/16 along with other SAP related upgrades.
- **CABS-ELMS**: CABS-ELMS are planned as an ongoing solution for the 7 year period as a Jemena product developed and maintained for the business by Dius Computing. The new SAP solutions being implemented will diminish some of the functions of CABS-ELMS for customer and outages. New functionality of this nature may be incorporated in the new SAP Gas asset rather than continue to develop the CABS-ELMS product. Strategic decisions on future products for these functions and development will be taken once the SAP Gas product is implemented.
- **Microsoft Office**: Microsoft has very low maintenance requirements typically as a well-established solution within Jemena and as a robust commodity product. In-house support is provided focused mainly on operation problems arising from set up, changing users, new users and changes to the associated IT Infrastructure platforms.
- **Metretek Systems and MVRS Systems**: The core metering application solution is Metretek which will be upgrade based on the asset lifecycle plan in 2018/19. Replacement will be considered at the time given the age of the product reached in 2017/18 and will be market tested with competing products.
- **The Jemena Web-Site, Customer Portal and Internet**: These undergo continual content change and development requiring IT capitalised and incremental opex services per annum depending on the works scale and cost levels. A refresh of the capability and assets is planned for every 3 years and done as a business and technical upgrade. This approach means large scale replacements are not required instead underlying products and components are progressively replaced.
- **Infrastructure**: The consolidation of the IT Infrastructure, adoption of cloud based services and replacement with newer and fewer technologies means the intended lifecycle becomes more achievable and cost efficient over time. The replacement of legacy systems, virtualisation and reduction in systems for the same purpose resulting from company acquisitions are all simplifying the asset management, maintenance and support. The current strategy is to have all IT infrastructure assets to be managed according to their standard lifecycle without a backlog by 2016/17.

IT Capital projects described in Table 40 – IT Infrastructure by Sub Category, provides a comprehensive asset management plan that encompasses:

- New capability to be implemented.
- Ongoing investment in existing systems including increased take up by the business and optimising efficiencies.
- Provision for continuous change as the regulatory and business environment changes.
- Provision for natural economic growth, network growth and customer growth.
- Upgrades to systems to manage risk and performance.
- Replacement and retirements of end of life systems.

JGN will continue to improve BAU process to support regulatory and delivery forecasting building on the major achievements enabled by replacement and new IT systems.

Infrastructure and applications will continue to be managed through well-defined and updated Infrastructure Roadmap, Lifecycle Management Framework and business unit cost allocations.

Jemena requires reliable and timely forecasting and planning for IT infrastructure spend to ensure accurate and traceable regulatory submissions. The infrastructure roadmap will be reviewed and updated on an annual basis to underpin this. The creation and implementation of a Lifecycle Management Framework allows for clear understanding of upcoming capital allocation for infrastructure for the respective regulatory submissions.

In the following sub-sections the IT capital program of work by business category is detailed describing each project as well as incremental work and acquisitions required to sustain the current systems and provided for growth.

10.5 Regulatory and Market Systems

The regulatory and market systems encompass information systems, functions and facilities required to:

- Comply with AER regulation and rules.
- Provide the services and integration for the energy market to operate via AEMO.
- Comply with all non-energy Federal and State Government regulation.

The regulatory and market systems needs are provided by the following IT systems:

- CABS – ELMS for demand and load management, short term trading market and contract billing.
- GASS+ for the regulated components of National Energy Customer Framework, customer management, engagement and billing.
- SAP for Human Resources regulation, tax and superannuation.
- Additionally, there are substantial integration information and technologies between JGN and AEMO that needs to be managed and maintained.

10.5.1 Asset Condition

The assessment of asset condition, for the purposes of IT systems, is defined as:

- Being fit for purpose.
- Being economically efficient.
- Being technically current with low incidence and risk of failure.
- Having low levels of systems outage.
- Meeting performance standards.

The condition assessments for the following systems are:

- **CABS- ELMS**: The CABS and ELMS systems were recently merged into one system and redeveloped as well as re-platformed with new technologies and infrastructure. The systems are changed annually as pricing, billing and contracts change. The software solution is in robust condition, technically current, fit for purpose and is expected to only require technical upgrades from 2014-2020.
- **GASS+ System**: The GASS+ system is reaching end of life. See Network Distribution Asset Class for more detailed information.
- **SAP**: Occupational Health and Safety, Payroll and Human Resources. The system was recently replaced in its entirety and has an estimated life of at least 12 years through to 2024. Regulation and rules changes take place annually for the management of OHS, tax rates and other human resources rules.

- **AEMO – Integration**: The systems developed and operated by AEMO are largely ageing and based on advice from AEMO will require redevelopment and/or replacement in the foreseeable future out to 2019/20. Specific plans have not been formed by AEMO however it is likely the plans and some redevelopment and replacement will take place in the current 6-year period. AEMO consistently develops new market operation systems, improvements and changes and funding provision has been made based on history.

10.5.2 LIFECYCLE MANAGEMENT PLANS

Capital Plan

The following regulatory capital projects are inflight during 2014/15 and/or required through to 2019/20.

- **Energy Regulation and Market Operation** **Projects 2 & 3**

  Provision is made for regulation and market operations changes based on historical spend experience for any new requirements that may emerge between 2014/15 and 2019/20.

  Provision is made for ongoing development and modification as circumstances change for:

  - Project 1 – Regulatory Reporting.
  - Project 2 – Non-energy regulation changes.

- **Energy Market Services** **Projects 5 & 6**

  JGN provides a range of software functionality to support market operations and integrate with AEMO systems. As the only gas distributor for most of New South Wales, JGN has provided demand and load data to the gas energy market since the contestable market began. AEMO has flagged the need to replace their ageing systems in the foreseeable future and to continue to evolve the market services. The strategies, projects and initiatives including AEMO replacement systems are not yet defined or commenced in any way. Therefore a provision based on recent trends only has been made in this AMP until more specific needs become known.

  Provision is made for:

  - Project 5 – CABS and short term trading market provision for ongoing development and change.
  - Project 6 – Provision for changes and development of AEMO's systems and the integration with Jemena.

- **National Energy Customer Framework (NECF)** **Project 9**

  JGN has recently developed and implemented the major components of the new National Energy Customer Framework initiated by the Australian Energy Regulatory (AER) as a mandatory requirement. The projects became the highest priority for the Asset Management program of work and continue through to completion into 2014/15 as part of the GASS+ Replacement project.

- **Customer Management** **Project 10 – 12**

  The AER has issued new guidelines for the management and interaction with customers that require new information, service engagement obligations and tracking along with analysis and reporting. To meet the new obligations JGN will introduce the following new IT capabilities:

  - Project 8 - Customer Relationship Management System – SAP Module. See Section 10.4.2 for further detail.
  - Project 10 – Customer Contact System.
  - Project 11 - Customer Portal – A combination of the Jemena Portals and SAP Portal including some in-house development.
  - Project 12 – Customer Portal provision for ongoing development and change.

- **Non Energy State and Federal Regulation Change** **Project 13**

  Each year Federal and State Governments make changes to regulations separate to energy and most consistently in the areas of:

  - Occupational Health and Safety.
  - Human Resources.
  - Carbon Emissions.
  - Superannuation.

  This section makes a provision for annual regulation changes that are non-specific based on historical trend.

Maintenance Plan

The IT assets are constantly monitored for performance to standards and for defects. The assets are also subject to constant change as the business changes. Maintenance contracts are entered into with the vendor and/or developer of the software application and their associated IT infrastructure. If a product can no longer be maintained by a vendor the product is replaced or alternative support arrangements are sourced. Vendors will inevitably reach a point when they will no longer support a product that has aged or where the organisation has not consistently upgraded the product to stay reasonably current and applied corrections to known problems.

The maintenance status for each of the regulatory systems is:

- **CABS-ELMS**: Maintained by Dius Computing under contract by the developer of the system to JGN specifications.
- **GASS+**: Maintained by IBM and an in-house team as the product was developed in house.
- **SAP**: The product has first line support and configuration change maintained in-house with the software application maintained by the vendor SAP.
- **AEMO Integration**: The software is developed, maintained, changed and supported in-house by Jemena following the absorption of EB Services back into Jemena in 2014

Table 30 provides a summary of Regulation and Market Systems IT Capex

Table 30 - Regulation and Market Systems IT Capex

JGN AA2015 IT Capex Plan		2012/13 Dollars			Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Project ID IT AMP	Business Purpose & Projects	IT Solution Systems & Products	Investment Type	Extension or Replacement	2015/16 $Ms	2016/17 $Ms	2017/18 $Ms	2018/19 $Ms	2019/20 $Ms	Total AA2015 $Ms
1	**Regulatory Systems & Market Services Systems**									
2	**Energy Regulation & Market Operation**	Regulatory Reporting	Extend, Remediate & Change	Extension						
3		Regulatory Change Provision	Extend, Remediate & Change	Extension			[c-i-c]			
4	**Energy Market Services**									
5	AEMO Systems & Services	CABS - Short Term Trading Market	Extend, Remediate & Change	Extension						
6	AEMO Systems & Services	AEMO - Other	Extend, Remediate & Change	Extension						
7	**Customer Management**									
9		National Energy Customer Framework (NECF)	Extend, Remediate & Change	Extension						
10		Customer Contact System	Extend, Remediate & Change	Extension						
11	Customer Portal	Bespoke Development & SAP Portal	Systems Replacement & Retirement	Replacement						
12			Extend, Remediate & Change	Extension						
13	**Non Energy - Federal & State Regulatory Change**	Multiple Systems	Extend, Remediate & Change	Extension						
				Category Total			[c-i-c]			**$ 5.143**

10.6 Corporate and Enterprise Systems

The corporate and enterprise systems as summarised in Table 32 - Corporate and Enterprise IT Systems, encompass the corporate and back office functions of JGN. The enterprise systems cover IT solution used by the entire business including office systems, intranet and general reference information. The functions supported by the corporate and enterprise systems are:

- Executive and General Management.
- Governance and Risk Management.
- Financial Management and Accounting.
- Procurement.
- Treasury.
- Human Resources.
- Occupational Health and Safety (OHS).
- Office administration and productivity tools.
- Internet and Intranet.
- Corporate Communications.

The assets used to service the above functions are a combination of the following IT assets and their associated IT Infrastructure.

- **SAP ERP System**: The software solution is the strategic application for the functions of Finance and Accounting, Human Resources, Payroll, OHS and general corporate operations reporting.
- **Microsoft Solutions**: A range of Microsoft office applications are used for planning, administration and the more general document production including spread sheets, design tools and presentation information.
- **Quantum**: This software application is the primary product, in conjunction with financial accounting SAP systems and MS Excel spread sheets, used for Treasury purposes.

10.6.1 Asset Condition

- **SAP ERP System**: The SAP solution was implemented as a very large project from 2011 to 2013 as a complete replacement of the preceding SAP solution which had passed end of life. The solution is therefore current and in robust condition with an expected life of at least 12 years out to 2024. The solution is continually being developed, configured and adapted to the business.

- **Microsoft Office Solutions**: The Microsoft assets are current version as at 2014 and in good condition and performing to standard.
- **Quantum**: The Quantum software application is performing well and meets current needs with no development plans in the foreseeable future. It is routinely upgraded on a 5-year cycle.

10.6.2 Lifecycle Management Plans

Capital Plan – New Assets and Capability

- **Governance and Risk Management** **Projects 24 & 25**

  JGN will introduce in 2015 the SAP module for the management of Governance and Risk. The module provides management, controls, evidence and tracking software for roles and responsibilities including certifications, and the end to end management of risk.

Capital Plan – Current Systems Assets

- **Office Systems** **Projects 15 – 18**

  Jemena has no major projects planned for the Microsoft corporate application until replacement in 5 years planned for 2017/18. Replacement is more likely to be driven by the business demand for proven new technologies rather than risk, asset condition or economic reasons. Those technologies include mobility solutions, tablets, touch screens and "smart applications" creating new software applications and a new viable SOE. Note that there are plans for a Microsoft based content, records and document management application described in that asset class in a following subsection.

  Capital projects for the office solutions will include changes made necessary by business change, growth and upgrades to remediate problems or enhance the current suite. Replacements for some application tools are expected within the Microsoft SOE.

  The Jemena web-site, internet and intranet systems facilities for non-customer development are included in Office systems with provision for ongoing development, change and growth.

- **SAP** **Projects 29 – 50**

  Jemena will implement the following SAP based new initiatives and technical improvements over the next 3 years from 2013/14 to 2016/17 followed by upgrades thereafter are envisaged at this point in time. The projects planned are:

  - **Project 29. Human Capital Project** to manage each employee in their entirety based on their proficiencies and capabilities including skills, licensing, certifications, education, training and work history.
  - **Project 30. Human Resources Managed Self- Service** to improve the level of employee services, and to become more efficient.
  - **Project 31. Learning Management** module to manage, track and provide training including the management of certifications and qualifications linked back to the job role and individual employee.

- **Project 32. Extend, Remediate and Change.** The extension of applications involves the take up of unused functionality. This may be pre-existing capability or resulting from software upgrades available within implemented solutions or the take up of implemented functionality by more users.

Remediation involves correcting or optimising the performance of software applications not performing to the required service standards. Remediation is mostly IT opex, however at times new investment is required to meet the performance standards and to mitigate risk.

The service changes are for small-scale ongoing modifications to current systems as a result of changes in the business or technical environment needing to be reflected in the application systems.

- **Project 33 – Enhancement Pack 7**. This project recurs every 2-3 years and consists of the vendor, SAP, providing functional and technical upgrades to the product solution.
- **Projects 34 & 35. Payroll** is typically upgraded annually to provide for changes to taxation, superannuation and employee allowances.
- **Project 36 – 39. Occupational Health and Safety** current systems replacement with provisions for ongoing development, system changes and upgrades.
- **Project 41. Remediation and Technical Improvements** the scale and complexity of the SAP solutions means Jemena will continue to invest in optimising the use and operational efficiency of the modules including the enabling of improved business processes.
- **Project 42 & 43. Data Volume Management and Archiving** which are not currently implemented and will make operations and data management more service efficient and cost effective.
- **Project 44. Retirement of the old SAP System** which is yet to shut down due to the need to reference past information and transactions.
- **Projects 46 to 50. Lifecycle and Growth** standard upgrades to the SAP modules planned every 5 years or more frequently on demand for areas such as Occupational Health and Safety.

- **Quantum**

  There are no current capital projects planned for the Treasury solution beyond upgrades. Replacement is not planned at present and will be guided by the plans of the vendor.

Maintenance Plan

- SAP requires a significant level of skills and competencies to support the scale, complexity and mission critical importance of the SAP suite of assets. First line support for SAP is currently being provided by Singapore Power IT; however following the acquisition by SGID both support and physical assets are being relocated to Jemena head office and local data centres. This is required due to the following factors:
  - The change of majority ownership from Singapore Power International to State Grid International Development Corporation (SGIDC).

- The service, operational and technical advantages and synergies of consolidating all SAP support in Australia after GASS+ is replaced by the SAP Gas solution.
- The economies of scale and service advantages of having consolidated first line support and configuration management including change in Australia as more SAP solutions and modules are implemented as planned.

As a recently replaced product SAP is in good condition and requires low levels of maintenance. SAP is a strategic, powerful and highly complex ERP solution that will be used over the next 7 years. By nature, it requires continuous management of the SAP configuration and reporting as the business continuously changes. Small scale changes that are incremental and low cost are not capitalised.

- Microsoft has very low maintenance requirements typically as a well-established solution within Jemena and as a robust commodity product. In-house support is provided focused mainly on operation problems arising from set up, changing users, new users and changes to the associated IT Infrastructure platforms.
- Quantum support and maintenance is provided by the vendor which is managed by Jemena.

In Table 31 – Corporate and Enterprise IT Systems a summary of Capex is provided

Table 31 - Corporate and Enterprise IT Systems

JGN AA2015 IT Capex Plan		2012/13 Dollars			Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Project ID IT AMP	Business Purpose & Projects	IT Solution Systems & Products	Investment Type	Extension or Replacement	2015/16 $Ms	2016/17 $Ms	2017/18 $Ms	2018/19 $Ms	2019/20 $Ms	Total AA2015 $Ms
14	**Corporate & Enterprise Systems**									
15	**Office Systems**	Microsoft Office and Visio, ARIS IT Architecture Tool,	Extend, Remediate & Change	Extension			[c-i-c]			
16			Growth	Extension						
17			Systems Replacement & Retirement	Replacement						
18		MOE & SOE Upgrades	Software Application Upgrades	Extension						
19	**Corporate Mobility**	To be determined - multiple technologies	New Capability	Extension						
20			Growth	Extension						
21			Systems Replacement & Retirement	Replacement						
22			Software Application Upgrades	Extension						
23	**SAP Corporate Projects**									
24	**Governance, Management & Risk**	SAP, FICS - Standards Australia	New Capability	Extension						
25		JCARS, FICS	Extend, Remediate & Change	Extension						
26.1	**SAP Alignment Project**									
26.2	**Financial Management & Accounting**	SAP	Extend, Remediate & Change	Extension						
27		Invoice Processing Software - KOFAX	New Capability	Extension						
28	**Human Resources**									
29	Human Capital Management Project	SAP	New Capability	Extension						
30	Managed Self Service - Implement	SAP & Multiple Technologies	New Capability	Extension						
31	Learning Management Project	SAP Learning Management	New Capability	Extension						
32		SAP	Extend, Remediate & Change	Extension						
33	HR Service Pack x 2 @ $50K		Software Application Upgrades	Extension						
34	**Payroll**	SAP	Extend, Remediate & Change	Extension						
35			Software Application Upgrades	Extension						
36	**Occupational Health & Safety**	OHS Module	Extend, Remediate & Change	Extension						
37	Incident Management	SAP, Sit- Safe & Chemalert	Systems Replacement & Retirement	Replacement						
38			Extend, Remediate & Change	Extension						
39			Software Application Upgrades	Extension						
40	**Enterprise SAP Management Projects**									
41	SAP Remediation & Technical Improvements Per Annum		Extend, Remediate & Change	Extension						
42	SAP Solution Manager - Data Volume Management		New Capability	Extension						
43	SAP Archiving Project		New Capability	Extension						
44	Retire Legacy SAP Systems		Systems Replacement & Retirement	Replacement						
45	**Lifecycle and Growth**									
46	SAP Organic Growth	New Staff Growth of 1% Per Annum from a base of 800 Staff	Growth	Extension						
47	SAP ECC6 - Enhancement Pack 6	New release upgrades	Software Application Upgrades	Extension						
48	SAP Upgrade - Solution Manager		Software Application Upgrades	Extension						
49	SAP All Other Functional Upgrades	SAP Implement Upgraded and New Functionality	Software Application Upgrades	Extension						
50	SAP Corporate, Financial, HR, Payroll & OHS Replacement		Systems Replacement & Retirement	Replacement						
				Category Total			[c-i-c]			**$ 11.776**

10.7 Customer Systems

Customer Systems are summarised in Table 32 – IT Customer Systems IT Capex, encompass all interaction with JGN's customers including the end consumer of energy. The Customer consists of those systems required to engage with and service end customers, retailers, providers and transmission businesses. The systems that have customer management functionality are:

- **CABS-ELMS**

  For the purposes of managing demand, large energy contracts, their billing and interaction during loss of energy supply and emergencies.

- **GASS+ and its planned replacement SAP GAS**

  For managing customer connections, outages and changes to distribution assets relating to a customer. Indirectly, work at a customer site is enabled by GASS+ and by the replacement SAP product. Customer requirements are part of the new SAP Gas system.

- **Jemena Web Site, Customer Portal and Internet**

  The combination of IT facilities provides customer access via the web with customer information content, transactions, outage notifications, emergency information and Jemena services information.

- **Dial Before You Dig**

  The system was recently replaced with an interim solution using a combination of manual processes, information from GASS+ and the ESRI geospatial solution. This solution is not suitable long term and will be replaced in 2016/17.

10.7.1 Asset Condition

The Jemena web site, customer portal and Internet based services to the market are kept constantly up to date and therefore in prime condition. The use of all Internet enabling technologies will experience increased demand with new customer regulation and growth in the use of web-enabled facilities also driven by a population that is now increasingly Internet savvy.

The condition of CABS-ELMS is covered in earlier subsections. The condition of GASS+ is covered in the subsequent sub-sections.

10.7.2 Lifecycle Management Plans

Capital Plan – New Assets and Capability

- **Customer Relationship Management System (CRM) Projects 8 & 8.1**

  New capability for customer relationship management will be implemented using the SAP CRM module. It will provide the solution for the AER's customer management and engagement requirements described in the preceding sub-section 1.6 Regulation. This solution is to be delivered through a cloud based SaaS facility and deployment.

- **Market Incentives** **Project 55 & 56**

  JGN is to offer market incentives to help develop and grow the gas network including infill to gain more connections within the existing distribution network. The incentives are aimed at new property developments as well as replacement developments including high rise accommodation.

- **Market Data Management** **Projects 57 – 60**

  JGN is increasing the level of market, customer and metering data collected and analysed including more interval data. The data needs a project to establish a new management process for:

  - Analysts and decision makers.
  - The data model.
  - Integration with those systems that will make use of the improved data such as planning, customer management, network controllers, emergency managers, demand and load managers as well as network construction.

Capital Plan – Current Systems Assets

- **CABS-ELMS** **Projects 52 – 54**

  Upgrades are planned as an ongoing activity for the 6-year period as a Jemena product developed and maintained for the business by Dius Computing. The new SAP solution will diminish some of the functions of CABS-ELMS for customer and outages. New functionality of this nature may be incorporated in the new SAP Gas solution rather than continue to develop the CABS-ELMS product. Strategic decisions on future products for these functions and development will be taken once the SAP Gas solution is implemented.

  The GASS+ system will be replaced as described in the next sub-section 1.4.5 Distribution Network Systems as it has reached its end of life.

- **Dial Before You Dig replace interim solution** **Projects 61 – 64**

  The dial before you dig services are currently provided as a combination of data sourced from the GASS+ systems, the ESRI GIS transmission system and manual processes. The current system is an interim solution and will be replaced in 2016/17 by the Jemena Electricity Networks “Dial Before You Dig System” adapted for gas distribution. The JEN system is to be replicated and adapted for gas networks.

Maintenance Plan

Currently the CABS-ELMS products are Jemena in-house developed and supported solutions and likely to remain that way through to the end of 19/20. The solutions will be reduced in scope and as data sources as the market based solutions of SAP Asset Management capability, new SAP Gas solution and the new Geographic Information System take over some functions. The software applications by nature are not market solutions and have been developed by Jemena in-house or in partnership with systems development organisations. CABS-ELMS is maintained by Dius Computing the partner developer of the solution with first line support in-house and second line support with Dius Computing.

Dial-before you dig will be replaced once the new gas solutions (GASS+ Replacement) and the geographic system are in place. The plan is to have the customer services support team support the dial before you dig solution and the maintenance to be provided by the Geographic Information System in-house support team.

Table 32 - IT Customer Systems

JGN AA2015 IT Capex Plan	2012/13 Dollars				Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Project ID IT AMP	Business Purpose & Projects	IT Solution Systems & Products	Investment Type	Extension or Replacement	2015/16 $Ms	2016/17 $Ms	2017/18 $Ms	2018/19 $Ms	2019/20 $Ms	Total AA2015 $Ms
51	**Customer Systems**									
52	**Contracts Billing & Emergency Load Management**	CABS-ELMS System	Extend, Remediate & Change	Extension			[c-i-c]			
			Extend, Remediate & Change	Extension						
53		Replace or Redevelop Cabs	Systems Replacement & Retirement	Replacement						
54			Software Application Upgrades	Extension						
8	**Customer Relationship Management Project**	SAP CRM & Bespoke Development	New Capability	Extension						
56			Extend, Remediate & Change	Extension						
64			Software Application Upgrades	Extension						
55	**Market Incentives**	GAS SAP (Billing)	New Capability	Extension						
56			Extend, Remediate & Change	Extension						
57	**Market Data Management Project**	Bespoke & Data Warehouse	New Capability	Extension						
58			Extend, Remediate & Change	Extension						
59			Growth	Extension						
60			Software Application Upgrades	Extension						
61	**Safety - Dial Before You Dig Project**	Dial Before You Dig	Systems Replacement & Retirement	Replacement						
62			Extend, Remediate & Change	Extension						
63			Growth	Extension						
64			Software Application Upgrades	Extension						
				Category Total			[c-i-c]			**$ 9.039**

10.8 Distribution Network Systems

As described in Table 33 – Distribution Network Systems, the distribution network systems for the purposes of this asset class are those systems that manage the network as a physical asset and to distribute gas. The systems manage the gas from the point of advice by the retailer to provide the service, to receiving the energy from the transmission businesses and through to the end consumer.

The distribution network systems are by far JGN largest systems group and for AA2015 the largest capex expenditure. There are two systems assets in this category which are:

- **GASS+:** The system holds all asset information and data for the entire distribution network and manages all asset lifecycle maintenance and support relating to the network including works management and customer connections. The large scale and comprehensive nature of the GASS+ suite includes works management and materials management.
- **Site safe:** The system manages and supports all worksite safety functions and incidents in conjunction with SAP Occupational Health and Safety. Site safe supports the physical safety processes for each network asset and work site.

10.8.1 Asset Condition

- **GASS+:** The GASS+ systems is in stable condition, however due to its age of more than 25 years it has become a very difficult product to develop as business needs change and to support due to the old technologies its uses that are no longer used for development. In particular staff resources for the technologies uses in the GASS+ application are in scarce supply both in Australia and internationally.
- **Site safe:** The system has reached end of life and is due for replacement. The product can be replaced by a relatively new product from the same vendor IMS or by the SAP module for the management of safety and incidents. The strategy is to be determined with a business case currently in progress including options analysis.

10.8.2 LIFECYCLE MANAGEMENT PLANS

Capital Plan

- **The GASS+ Replacement Project** **Projects 66 & 66.1 – 66.4**

  GASS+ replacement project was approved by Board in December 2013 and commenced in 2014.

  The GASS+ system has reached its end of life after 25 years and is being replaced to mitigate maintenance risk becoming unacceptable, overcome constraints on new development including for regulatory change. The GASS+ system is being replaced by the proven SAP Gas Solution Jemena recently implemented with Multinet Gas when it was a client energy business. The new solution will incorporate the functionality for the National Energy Customer Framework.

  The GASS+ Replacement will be conducted from 2014/15 through to 2015/16 with two major releases consisting of:

  - Works and Asset Management.
  - Customer, Outage and Market Services.

  The new solution will incorporate the functionality for the National Energy Customer Framework.

- **SAP Gas System** **Projects 67 – 70**

  Provision has been made for:

  - Ongoing development and change of the SAP Gas system.
  - Growth in licenses and capacity reflecting distribution network extensions, customers and connections growth.
  - System upgrades for new releases.

- **Site safe** **Projects 73 – 75**

  The product can be replaced by a relatively new product from the same vendor IMS or by the SAP module for the management of safety and incidents. The strategy is to be determined with a business case currently in progress.

  Provision has been made for:

  - Ongoing development and change.
  - Growth in licenses and capacity reflecting distribution network extensions, customers and connections growth.
  - System upgrades for new releases.

Maintenance Plan

- **GASS+**

  First line maintenance support and small scale change is provided in-house by JIT based at Sydney Olympic Park. IBM has a contract to support GASS+ in addition to first line in-house support and experiences the same staffing difficulties. The constraints imposed on business change and the risks of support should failure occur have become unacceptable. Therefore the GASS+ system is planned for replacement by the SAP Gas solution Jemena with further development to meet the needs of the NSW business and regulatory environment.

- **SAP Gas Distribution**

  The new SAP Gas distribution system will be maintained and supported by a combination of:

  - The vendor, SAP, under a 24 x 7 maintenance support agreement for the standard software application product.
  - An in-house SAP support team to look after the gas configuration, systems integration and the gas end users for level 2 support, level 1 being the service desk.

  The in-house SAP Gas support team will be part of the overall SAP support that includes the existing SAP corporate systems. This will provide skills sharing, economies of scale benefits and staff back up for a mission critical system.

- **Site safe**

  Site safe is maintained and supported by the vendor. The replacement for Site safe is planned to be supported by the vendor for either solution IMS or SAP with no requirement for in-house support given the low level of change required over time and high stability of the products.

10.8.3 DISTRIBUTION NETWORK SYSTEMS IT CAPEX

Table 33 – Distribution Network Systems

JGN AA2015 IT Capex Plan		2012/13 Dollars			Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Project ID IT AMP	Business Purpose & Projects	IT Solution Systems & Products	Investment Type	Extension or Replacement	2015/16 $Ms	2016/17 $Ms	2017/18 $Ms	2018/19 $Ms	2019/20 $Ms	Total AA2015 $Ms
65	**Distribution Network Systems**									
66	**GASS+ Replacement Project**									
66.1	GASS+ Replacement Project	Solution Blueprint & Business Case	Systems Replacement & Retirement	Replacement			[c-i-c]			
66.2	Gas Solution - Phase 1	SAP Works & Asset Management	Systems Replacement & Retirement	Replacement						
66.3	Gas Solution - Phase 2	SAP Customer, Outage and Market Services	Systems Replacement & Retirement	Replacement						
66.4	Gas Solution - Phase 3	SAP Business Process Reporting, Historical Data Solution & GASS+ Decommissioning	Systems Replacement & Retirement	Replacement						
67			Software Application Upgrades	Extension						
69			Extend, Remediate & Change	Extension						
			Extend, Remediate & Change	Extension						
			Extend, Remediate & Change	Extension						
70			Growth	Extension						
73	**Incident Management - Emergency Management**		Extend, Remediate & Change	Extension						
74		*SiteSafe Upgrade	Software Application Upgrades	Extension						
75		SiteSafe Replacement - SAP Solution	Systems Replacement & Retirement	Replacement						
				Category Total			[c-i-c]			**$ 29.806**

10.9 METERING SYSTEMS

As summarised in Table 34 – Metering Systems encompass all functions relating to the provision of gas meters, their operation, maintenance and support and include meter data.

The real time applications systems software assets are managed by the non IT asset management division. IT provides the IT Infrastructure platforms and communications network for the real time systems and integration with GASS+ and SAP asset management data.

The metering application systems are:

- Metretek for meter management and operations.
- MVRS and Itron for meter reading.

10.9.1 ASSET CONDITION

All of the current metering solutions and technologies are reaching end of life by going out of vendor support, not being suited to future business needs and becoming obsolete. The obsolescence relates to the:

- Analog radio networks uses by meter data loggers.
- Communications networks that need to be upgraded to 3G and 4G or replaced by the National Broadband network.
- Replacement of copper wire networks with new technologies that may include the National Broadband Network.

The metering applications will continue to be upgraded according to their lifecycle plan as mission critical assets and then replaced between 2015/16 and 2017/18.

10.9.2 LIFECYCLE MANAGEMENT PLANS

Capital Plan

- **Metering Systems**

  The core metering application solution is Metretek which will be replaced based on the asset lifecycle plan in 2018/19. New initiatives are planned for metering consisting of the following projects:

  - **Metretek Systems and MVRS Systems** **Projects 77 – 81.**

    No major projects are planned for these systems. Provision is made for major capital expenditure over time for:

    - The upgrade or replacement of ageing communications technology
    - Ongoing development and change

- Growth in licenses and capacity reflecting distribution network extensions, customers and connections growth
- System upgrades for new releases of MVRS

- **Meter Data Loggers Systems Project** **Projects 82 – 85.**

  The analog network will be shutdown in NSW requiring replacement communications capability and new devices of for the reading, recording and transmission of meter data. The project is planned for 2016/17. The project corresponds to the network divisions Meter Data Loggers (MDL) project to provide the new IT platforms required and make the changes to the way data is stored and managed including the increase in data that will be received by digital networks.

- **Analogue Network Shutdown & Backend Management Project** **Projects 86 – 89.**

  The analogue telephone communications network will be progressively replaced by digital and broadband networks making some of JGN's metering communication redundant and therefore new capability is required. This project will be conducted in tandem with the meter data-loggers project in 2016/17. They are identified as separate projects due to the separate nature of the solutions and external services providers. JGN plans to consolidate telecommunications networks to gain efficiencies and therefore the projects are planned together.

  The project includes changing the collection of data by new communications networks. The new networks include the NBN, 3G and 4G networks which have been installed in current and new buildings which will require all current analogue capability and older 2G digital networks be replaced.

- **Real Time Data & Network Management Model Project** **Projects 90 – 92.**

  JGN intends to take advantage of the application systems implemented, the new digital technologies and the more extensive meter data that will be implemented by JGN progressively out to 2016/17. The new systems make it possible to build a replacement and more sophisticated Network Management Model with a greater level of complexity, granularity, predictive analysis that also includes the use of more interval meter data. JGN will become more service and delivery efficient as well as lowering risk by having the data and using it to manage gas supply, outages, planning, growth and gas network development.

Maintenance Plan

The metering software assets are supported by vendors and consistently upgraded to stay current as mission critical IT solutions and assets. The applications will be upgraded prior to their replacement from 2016/17 onwards.

Communications maintenance and support is currently outsourced to Telstra as a result of competitive tenders and will be subject to market tender and competition at agreement expiry. At the expiry of the current communications agreements the services will continue to be outsourced and will be subject to new competitive tenders and with a view to adopting the newer communications technologies.

The assets dependent on analog radio communications used by meter data loggers will be replaced prior the NSW Governments date for shutting down analog communications.

Table 34 - Metering Systems

JGN AA2015 IT Capex Plan	2012/13 Dollars				Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Project ID IT AMP	Business Purpose & Projects	IT Solution Systems & Products	Investment Type	Extension or Replacement	2015/16 $Ms	2016/17 $Ms	2017/18 $Ms	2018/19 $Ms	2019/20 $Ms	Total AA2015 $Ms
76	**Metering Systems**									
77	**Metering Systems**	Metretek Remediation & Business Case	Extend, Remediate & Change	Extension			[c-i-c]			
78		Ongoing Development & Change	Extend, Remediate & Change	Extension						
			Extend, Remediate & Change	Extension						
			Extend, Remediate & Change	Extension						
			Extend, Remediate & Change	Extension						
79		Growth	Growth	Extension						
80		Metretek Upgrade	Software Application Upgrades	Extension						
81		MVRS - Itron Upgrade + Replace Workstations & Readers	Systems Replacement & Retirement	Replacement						
82	**Meter Data Loggers Systems Project**		Systems Replacement & Retirement	Replacement						
83			Extend, Remediate & Change	Extension						
84			Growth	Extension						
85			Software Application Upgrades	Extension						
86	**Analogue Telephone Network Shutdown & Backend Management Project**		Systems Replacement & Retirement	Replacement						
87			Extend, Remediate & Change	Extension						
88			Growth	Extension						
89			Software Application Upgrades	Extension						
90	**Real Time Data & Network Management Model Project**		Systems Replacement & Retirement	Replacement						
91			Extend, Remediate & Change	Extension						
92			Growth	Extension						
				Category Total			[c-i-c]			**$ 10,117,700**

10.10 Content Management, Records management and Business Intelligence Systems

In Table 35 - Content Management, Records Management and BI Capex, further details are provided on the content management, records and business intelligence systems asset class encompassing all systems that manage, enable and support the following business needs:

- Executive and management reporting.
- Knowledge and information management including information sources.
- Content management in terms of information sources, taxonomy, current and redundancy of information.
- Document and Records Management including regulatory and certifications compliance records.
- Drawings including design tools, management of drawing versions and their provision to end users.
- Business analytics.
- Data management, consolidation of data from source systems and data analysis for discovery purposes.

The applications systems currently used by JGN for the management of content, documents and records are used together and include:

- Microsoft applications:
    - MS Office 2010.
    - OpenText Livelink with ECMS (Electronic Content Management System).
    - SharePoint.
- Lotus Notes for information repositories and some reference information including appended documents.
- For drawings tools and management JGN uses CADSMAN and HPGL View.
- For business intelligence JGN uses BRIO and some Cognos as well as in-house query tools titled ASKS and TCCH.
- Data management depending on the software application is a combination of manual processes using Oracle Tools.
- There is currently no data warehouse. A project is planned for 2017 – 2018 to implement one.

10.10.1 Asset Condition

All Microsoft applications were refreshed and brought up to date as at 2012 to be in prime condition and fully supported.

The following applications are out of vendor support with no alternative support or at the end of the economic life and planned for replacement:

- Drawings management CADSMAN and HPGL View.
- Lotus Notes.
- TRIM.

10.10.2 LIFECYCLE MANAGEMENT PLANS

Capital Plan

- **Business Intelligence** **Projects 94 – 98**

  JGN plans to supplement business intelligence technologies with SAP Business Objects. The additional new tools will support technology integration with the Data Warehouse project.

- **Data Warehouse** **Projects 99 – 102**

  The data warehouse project introduces new capability for the Jemena Gas solution. It is to be implemented using the SAP business data warehouse solution with licenses already owned as part of the SAP licensing agreement. The data warehouse coupled with the business intelligence tools provided by SAP Business Objects products will be the major enabling solution for decision making in most parts of JGN for corporate, financial management, meter data, network modelling, predictive analysis, and analytics including data mining.

- **Management Reporting** **Projects 103**

  Provision has been made for ongoing development and change of Board, Executive and Enterprise management reporting.

- **Records and Document Management** **Project 104 – 108**

  This project is focused on reviewing all existing records in terms of up to date accurate status and transforming how they are produced, maintained and delivered to those who need them. The projects include the upgrade of Open Text (Livelink) to the latest version of the software application.

  The current SharePoint application solutions will be consolidated on to a single Microsoft SharePoint application and sustained under their current status with a future decision to be made on integration with Open Text.

- **Jemena Consolidation Program** **Project 109 – 112**

  The enterprise is improving its content, records and document management systems as part of the Jemena Business Consolidation Program. The progressive initiatives are underway in 2014/15 and planned to be implemented out to the end of 2015/16.

- **Drawings Tools and Management** **Project 113**

  The current software application is reaching end of life and needs replacement. In addition Jemena requires an enterprise wide solution for complete business coverage, consistency and efficiency. A strategic solution with an evaluation and decision is planned for 2014.

- **Information Management** **Project 114**

  The increase in capability, needs and sophistication encompassing knowledge management, business intelligence, data warehouse and content management requires ongoing small projects to manage the information and the data sources efficiently. Provision has been made for these projects not previously conducted and includes data cleansing.

Maintenance Plan

First line support is provided by Jemena and is subsequently provided by the vendors where there are maintenance agreements still offered by the vendor.

Second line support is already provided in-house by Jemena for business intelligence which will be extended to JGN once the replacement of existing BI tools has taken place by the SAP business objects product.

In future second line support is anticipated to be provided in-house as EB Services is to be closed on 1 September 2014.

The drawings solution will be supported by the service desk for first line support with second line from within the Jemena division that own the solutions for business purposes. The drawings software as products will be supported by the new application vendors under maintenance agreements. Drawings products have a planned upgrade cycle of 3 years and a replacement cycle of 8 years.

Table 35 - Content Management, Records Management and BI Capex

JGN AA2015 IT Capex Plan	2012/13 Dollars			Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Project ID IT AMP	Business Purpose & Projects	IT Solution Systems & Products	Investment Type	Extension or Replacement	2015/16 $Ms	2016/17 $Ms	2017/18 $Ms	2018/19 $Ms	2019/20 $Ms	Total AA2015 $Ms
93	**Content Management & Business Intelligence Systems**									
94	**Business Intelligence Project**									
95	Business Intelligence Project	Combination of New Technologies	New Capability	Extension			[c-i-c]			
96		Incremental Development	Extend, Remediate & Change	Extension						
98		Upgrade	Software Application Upgrades	Extension						
99	**Data Warehouse**	Go to Market	New Capability	Extension						
100			Extend, Remediate & Change	Extension						
101			Growth	Extension						
102			Software Application Upgrades	Extension						
103	**Management Reporting**	Ongoing Development	Extend, Remediate & Change	Extension						
104	**Records and Document Management**	Sharepoint + OpenText Content Server 10	Systems Replacement & Retirement	Replacement						
105		Incremental Development	Extend, Remediate & Change	Extension						
106		Growth	Growth	Extension						
107			Software Application Upgrades	Extension						
108			Systems Replacement & Retirement	Replacement						
109	**Jemena Consolidation Program**	Enterprise Sharepoint	Systems Replacement & Retirement	Replacement						
110		Document Consolidation & Taxonomy	New Capability	Extension						
111		Decommissioning of Systems & Processes - Databases, Spreadsheets and Bespoke Systems	Systems Replacement & Retirement	Replacement						
113	**Drawings Management**	Drawings Management	New Capability	Extension						
114	**Information and Content Management**	Information Management	Extend, Remediate & Change	Extension						
				Category Total			[C-I-C]			**$ 9.902**

10.11 GEOSPATIAL SYSTEMS

A Geospatial Information System will be introduced into JGN as a new capability. The new system suite will encompass all land based asset information, mapping, geographic and topographic information including NSW State Government provided information and data. The project had to be deferred from the AA2010 period as a result of the unplanned national energy customer framework taking highest priority and similar capital funding. A summary of Geospatial Systems can be found in Table 36 – Geospatial Systems IT Capex.

The geospatial asset class encompasses all systems solutions that provide:

- Geographic Information.
- Mapping.
- Asset imaging and geological imaging.
- Government geographic and topographic information.
- Geological information relating to the positioning of the current and future distribution network.
- Integration with asset management systems.
- Integration with geographic information sources including entities such as State Government services and Google Maps.

JGN currently uses the following systems assets for geospatial purposes:

- CADSMAN and HPGL View for mapping.
- There is some use of the Jemena Pipes (Gas Transmission) geospatial system ESRI at the interface between Transmission and Distribution pipes for gas supply.

As noted, JGN currently does not have a Geographic Information System. This is planned to be implemented from 2015/16 onwards.

10.11.1 ASSET CONDITION

The current CADSMAN and HPGL view are out date and out of vendor support. They were due for replacement in 2011/12 to 2013/14 under the JGN AA2010 determination and program but were deferred due to priority given to AER mandatory projects. The products are stable but the risk of being out of support, while acceptable until planned replacement, is not acceptable longer term.

10.11.2 LIFECYCLE MANAGEMENT PLANS

Capital Plan

- **Geographic Information System (GIS)**

  The GIS was to be implemented in AA2010 however the program of work had to be rescheduled due to the new National Customer Energy Framework and new pricing mechanism for the AA2010 Access Arrangements taking priority.

  The GIS is for the most part completely new systems functionality and will replace the existing mapping systems and functions.

  The GIS is to be implemented in 3 stages consisting of:

  - **Project 117. Stage 1 -** Acquiring, developing and building the base GIS systems stand-alone including replacing current mapping.
  - **Project 118. Stage 2 –** Integrating the GIS with the SAP Gas distribution systems and financial systems with a roll out to the field.
  - **Project 119. Stage 3 –** Complete all systems integration and rollout to the entire workforce including contractors and partners that need access to the GIS.
  - **Project 120 – 123.** Provision has been made for:
    - Ongoing development and change.
    - Growth in licenses and capacity reflecting distribution network extensions, customers and connections growth.
    - System upgrades for new releases.

Maintenance Plan

A maintenance agreement will be established once the successful product and vendor have been selected and in accordance with the Jemena Procurement policy. First and second line support is planned to be performed in house but a hybrid arrangement may be established with third parties for specialist support based on the perceived access shortage of skilled GIS staff resources. Market rates for GIS resources are high due to demand versus supply in a growing market for geospatial skills and for the preferred technologies.

Table 36 - Geospatial Systems IT Capex

JGN AA2015 IT Capex Plan 2012/13 Dollars					Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Project ID IT AMP	Business Purpose & Projects	IT Solution Systems & Products	Investment Type	Extension or Replacement	2015/16 $Ms	2016/17 $Ms	2017/18 $Ms	2018/19 $Ms	2019/20 $Ms	Total AA2015 $Ms
115	**Geospatial Systems Systems & Mapping & Asset Imaging**									
116	**Geographic Information System**	ESRI or GE Smallworld								
117	GIS Stage 1 - Base System		New Capability	Extension						
118	GIS Stage 2 - Field Workers & Contractors		New Capability	Extension			[c-i-c]			
119	GIS Stage 3 - Asset Management Integration		New Capability	Extension						
120		Incremental Development	Extend, Remediate & Change	Extension						
121			Growth	Extension						
122			Software Application Upgrades	Extension						
123			Systems Replacement & Retirement	Replacement						
				Category Total			[c-i-c]			**$ 9.987**

10.12 Asset Construction and Field Services

The asset construction systems assets encompass program, portfolio and project management solutions. The field services assets are those software applications and hand held technologies used by managers, supervisors and workers in the field for planning, construction and for works management including maintenance, inspections, outages and materials management. A summary can be found in Table 37 - Asset Construction and Field Services systems IT Capex

The works management and materials management solutions are currently part of the GASS+ suite and will be replaced by the SAP GAS solution covered in previous sub-sections and are not part of this asset class.

The products currently used for Asset Construction and field services are project planning and procurement related. Procurement is covered under the corporate systems assets class. The project planning software asset is currently limited to Microsoft Project.

10.12.1 Asset Condition

The Microsoft Office suite has recently been refreshed as part of the SOE refresh and replacement. The SOE/MOE will be replaced during the AA 2015/16 period once it is 5-years old rather than upgraded unless a compelling reason emerges to upgrade before replacement.

The replacement of the SOE/MOE will subject to business case assessments of alternative replacement options such as moving to "Software as a Service" and using cloud computing services.

10.12.2 Lifecycle Management Plans

Capital Plan

- **Asset Construction, Portfolio and Program Management Projects 126 – 129**

  The asset construction, portfolio and program management systems were deferred from the AA2010 due to new AER initiated projects requiring first priority. The regulatory projects were:

  - The National Customer Energy Framework
  - The new pricing methods for the AA2010 Access Arrangements

  The projects, process improvements and solutions are largely aimed at making the construction of network assets and IT assets more efficient and to improve the management of risk. The solutions are to use a combination of the following application systems:

  - The Microsoft Enterprise Server product and then consolidating projects as programs as well as the re-use of current and repeatable project plans.
  - The SAP Program and Portfolio Management solution for managing and accounting for programs of work in their entirety as portfolios.
  - SAP Financial Accounting modules. Procurement and asset management systems that are already in place will be enhanced to integrate the new program and portfolio management capability.

- **Field Mobility & Corporate Mobility** **Projects 130 – 135, 19 – 22**

  The Field Mobility solution builds on the works delivery capability provided by the SAP GAS system and the Geographic Information Systems. The project delivers information into the field using laptops and tablets via wireless communications, including utilising trucks as hot spots, and downloaded information. The usage is applied to asset management including construction, maintenance, emergency management, materials management, asset remediation and replacements.

  The preceding implementation of the new SAP solution for Works Management and the GIS solution makes the introduction of Field Mobility the next major initiative and ongoing innovation possible consistent with the Jemena Consolidation Program. The technologies to be applied will be determined by a go to market tender building on the mobility strategy study completed in 2012/13 that will need to be refreshed. The project is planned for 2016/17 and 2017/18.

Maintenance Plan

- **Program, Portfolio and Project Management**

  The two new asset solutions to be acquired will be maintained under the current arrangements for SAP and Microsoft products as described in previous sections.

  - First line support will be provided by the service desk.
  - Second line support in the use of the products in the JGN working environment will be provided by the vendors under maintenance and support agreements.

Table 37 - Asset Construction and Field Services systems IT Capex

JGN AA2015 IT Capex Plan		2012/13 Dollars			Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Project ID IT AMP	Business Purpose & Projects	IT Solution Systems & Products	Investment Type	Extension or Replacement	2015/16 $Ms	2016/17 $Ms	2017/18 $Ms	2018/19 $Ms	2019/20 $Ms	Total AA2015 $Ms
124	**Asset Construction & Field Services Systems**									
125	**Asset Management & Construction**									
126	Portfolio Management	SAP Portfolio Management	New Capability	Extension			[c-i-c]			
127	Project Planning & Scheduling	Microsoft Server	New Capability	Extension						
128	Project Management & Accounting	SAP - GASS+ Replacement	Extend, Remediate & Change	Extension						
129		Incremental Development	Growth	Extension						
130	**Works Management, Scheduling & Asset Maintenance**									
131	**Field Mobility**	SAP & Multiple new technologies	New Capability	Extension						
132		Incremental Development	Extend, Remediate & Change	Extension						
133		Growth	Growth	Extension						
134			Software Application Upgrades	Extension						
135			Systems Replacement & Retirement	Replacement						
136	**Environment Management**	Vegetation, Land, Air, Noise	Systems Replacement & Retirement	Replacement						
137			Extend, Remediate & Change	Extension						
138			Growth	Extension						
139			Software Application Upgrades	Extension						
140			Systems Replacement & Retirement	Replacement						
				Category Total			[c-i-c]			**$ 5.004**

10.13 IT Infrastructure Capital Program and expenditure

The IT infrastructure category encompasses all hardware technology platforms, communications, operating environments and data systems needed to operate the application solutions.

In the 6-year asset management lifecycle the entire IT infrastructure, with the exception of communications, is planned to be replaced due to the assets becoming unsupported by vendors, uneconomic to retain or overtaken by newer more efficient technologies.

The majority of the IT infrastructure investments made during the AA2015 period will be involved in lifecycle replacements of the platforms with some upgrades.

Infrastructure Capital Plan

The number of asset categories within IT Infrastructure is 11 and the number of asset types within the categories that require individual planning and lifecycles is over 160. The projects are listed per asset type within a category.

In summary, the IT Infrastructure program consists of 170 asset projects that are on a small, medium and large IT Infrastructure scale with the following lifecycles all based on economic efficiency:

- Personal computing and telephony 3-year lifecycle sometimes extended to 4 years due to competing priorities.
- Data storage has a 4-year economic cycle and then replacement takes place in the 5th year.
- Systems processing and all other technologies have a 5-year cycle except for communications.
- Communications networks are provided as a service by outsourced telecommunications companies selected by competitive tender. The external communications networks are owned by the outsourced service provider or partner organisation. Replacements, higher capacity with growth and upgrades all require capital projects. The lifecycle is determined by the service provider and external asset owner but is typically 7 years or greater.
- Enabling communications technologies such as routers, switches and other network devices are owned and operated by Jemena. The lifecycle is a minimum of 5 years.

The IT infrastructure plan and program of work is costed at $30.1M over the AA2015 period. The program of work has been further broken down into 11 sub categories listed below.

1. Data Storage and Management
2. Infrastructure Services
3. Platforms and Processing
4. End User Services
5. Security Services

6. Systems Management and Operations
7. Communications and IT Network Services
8. Facilities and Data Centres
9. Commercial Agreements
10. Service Management and Help Desk
11. Systems Capacity Growth

Each sub category has the IT assets within that sub-category listed. For each IT Infrastructure asset an asset lifecycle plan has been defined and described in the subsequent sub-sections. The lifecycle asset management plans commence from sub-section 10.10.1. There are 160 IT Infrastructure assets in the plan with identical assets listed as 1 asset line item, for the purposes of this IT asset management plan.

Asset Condition

The current condition of the IT Infrastructure is assessed as good and well supported with maintenance and support agreements. However, some IT infrastructure assets are beyond their useful economic life and a significant percentage are reaching end of vendor support in the near future. This means there is a small but significant backlog of infrastructure assets that would have been replaced if the time, funding and priorities were available.

Between 2014/15 and 2019/20 all IT infrastructure will complete at least one full lifecycle that includes replacement of every item. The replacement is due to:

- Becoming uneconomic with escalating costs to sustain the products and services greater than the cost of replacement over time.
- Reaching a state of unacceptable risk due to the vendor or manufacturer no longer providing maintenance and support for the product.
- No longer compatible with the application solutions it needs to support in terms of capability in terms of meeting performance standards including capacity and response times
- The age of the technology means it cannot operate in conjunction with other new applications and technologies and therefore must be upgraded or replaced.

The IT Infrastructure Program capex is [c-i-c] representing of the planned $120.9M overall IT Capex or [c-i-c] the key elements are:

- Major IT Infrastructure capex total $18M of the $30M infrastructure total.
- New technologies represents [c-i-c] of the total IT Infrastructure with all other investments in the infrastructure category applied to recurrent capex including growth.

- Provision for growth represents 19% consistent with the current trends and includes the additional growth needed for the new solution for the geographic information system, new data warehouse and the replacement solution for GASS++.
- Systems replacements and retirements represent 71% of IT Infrastructure costs which reflects the economic benefit of replacement compared to upgrades or retaining core infrastructure for longer than 4-5 years.

Table 38 – IT Infrastructure

Investment Type	2015 AA Total		
	Percent of Total Capex	Percent of IT Infrastructure Capex	Total Infrastructure $Ms
IT Infrastructure			
New Capability		[c-i-c]	
Extend, Remediate & Change			
Growth			
Infrastructure Upgrades			
Systems Replacements & Retirements			
Total	**25%**	**100%**	**$ 30.10**

The IT Infrastructure costs per sub-category are set out in the Table 39 – IT Infrastructure Capex by Sub Category.

Table 39 - IT Infrastructure Capex by Sub-Category

JGN AA2015 IT Capex Plan	2012/13 Dollars			Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
Project ID IT AMP	Business Purpose & Projects	IT Solution Systems & Products	Investment Type	Extension or Replacement	2015/16 $Ms	2016/17 $Ms	2017/18 $Ms	2018/19 $Ms	2019/20 $Ms	Total AA2015 $Ms
141	**IT Infrastructure**									
142	**Lifecycle Capex - Upgrade, Replace & Retire**									
143	Data Storage & Management		Refer Infrastructure IT Capex Model	Replacement						
144	Infrastructure Services		Refer Infrastructure IT Capex Model	Extension			[c-i-c]			
145	Platforms & Processing		Refer Infrastructure IT Capex Model	Replacement						
146	End User Services	Includes Upgrade to Windows 8 for Tablets & Smart Devices	Refer Infrastructure IT Capex Model	Replacement						
			Refer Infrastructure IT Capex Model	Extension						
147	Security Services		Refer Infrastructure IT Capex Model	Extension						
148	Systems Management & Operations		Refer Infrastructure IT Capex Model	Extension						
149	Communications & Network Services		Refer Infrastructure IT Capex Model	Replacement						
				Extension						
				Extension						
150	Facilities & Property		Refer Infrastructure IT Capex Model	Extension						
151	Commercial Agreements		Refer Infrastructure IT Capex Model	Extension						
152	Service Management & Helpdesk		Refer Infrastructure IT Capex Model	Replacement						
153	**Data Centres**									
154	Data Centres Expansion/Growth		Refer Infrastructure IT Capex Model	Extension						
154.1	Data Centres Consolidation	Move King St into Flinders St	Refer Infrastructure IT Capex Model	Replacement						
155	**Business and Systems Growth**									
156	Organic Growth - Technical Licenses & Data Storage @ 2%	Network, Customers, Connections, Staff and Data Growth	Refer Infrastructure IT Capex Model	Extension						
157	Corporate SAP Capability Projects' Platform Growth	Ongoing cost of additional Infrastructure Corporate Enterprise SAP	Refer Infrastructure IT Capex Model	Extension						
158	New Data Warehouse	Ongoing cost of new Infrastructure for data warehouse	Refer Infrastructure IT Capex Model	Extension						
159	New GASS+ Replacement - SAP Hardware Growth	Ongoing cost of additional Infrastructure for GASS+ Replacement by SAP	Refer Infrastructure IT Capex Model	Extension						
160	New Geographic Information System (GIS) Capability Projects' Platform Growth	Ongoing cost of new Infrastructure for the new GIS	Refer Infrastructure IT Capex Model	Extension						
161	New Small Systems Platform Growth	Ongoing cost of new Infrastructure for all other small scale systems	Refer Infrastructure IT Capex Model	Extension						
				Category Total			[c-i-c]			**$ 30.104**

10.14 IT Infrastructure Lifecycle management Plan & Capex Costs

In the following sub-sections each IT Infrastructure category is listed by IT asset with its corresponding lifecycle asset management plan and costs from 2015/16 to 2019/20.

10.14.1 Data Storage & Management

Project 143

The data storage management sub-category encompasses all IT assets that store and manage data for all of JGN. The program of work for this sub-category and capital costs of the projects to acquire, build and deploy is set out below. The capital plan includes incremental costs of additional asset units which are treated as small projects largely consisting of procurement and installation work effort.

The data storage hardware is used for 4 years and then replaced in most cases as the cost of retaining the products with the higher maintenance agreements costs becomes uneconomic in terms of total cost of ownership. The hardware maintenance agreements are increased after 4 years at renewal time by the vendor as the newer technologies consistently improve and can be offered at a lower total cost of ownership per unit of storage.

The data storage investments consist of:

[c-i-c]

- The smaller scale investments are described in the table on the next pages.

The IT Infrastructure by asset item costing in the Table 40 – Data Storage & Management IT Capex by Year on the following pages are represented in whole numbers rather than $Ms as the numbers are too small in many cases and would have rounded to $0.00M.

Table 40 - Data Storage & Management IT Capex by Year

Function	Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycel Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Data Storage & Management												

[c-i-c]

Function	Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycel Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Data Storage & Management												

[c-i-c]

10.14.2 INFRASTRUCTURE SERVICES

Project 144

Infrastructure services encompass all email services, user addresses, directory services and the profiles of individual users for the purposes of assigning their usage of systems and technologies. It includes the automation of batch control and scheduling automation of production operations for the email, directory and systems assignment functions.

The investment in this area is low due to the longer life of the assets at 5-7 years and their small scale not driven by user numbers, customers or connections. The investments described in the table below include:

[c-i-c]

- Upgrades to existing batch control and scheduling
- Improvements to the B2B technologies
- The addition of capability for the introduction of the new Linux operating environments

The more detailed description of the investments is shown in the table on the next page.

Table 41 - Infrastructure Services IT Capex Year

Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Infrastructure Services													

[c-i-c]

10.14.4 PLATFORMS & PROCESSING

Project 145

Platforms and processing encompasses all technologies that providing the processing capability for applications solution such as CPU, operating systems, technical software, switches and routers.

Each year the specific assets considered due for retirement are business case assessed before proceeding with replacement. This does mean that some IT infrastructure assets continue beyond their planned life due to competing priorities and the level of change and disruption impacts that cannot be absorbed in that year.

Jemena has been consistently consolidating technologies through replacement driving down the variety of hardware and processing platforms. This has also been achieved by substantially reducing the number of software applications in recent years. The reduction in numbers and variety in technologies means fewer vendors, agreements, skills required and administration resulting in a reduction in the associated costs. The lifecycle investments for the AA2015 period are:

- Consolidating the data storage infrastructure with a new replacement Storage Area Network (SAN) deployed with will reduce the number of hardware storage devices and simplify their management. The investment will further increase flexibility to optimise the sharing of data and take greater advantage of the economies of scale from consolidated infrastructure.

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Provision for organic growth of 2% per annum in technical licenses including operating systems.

- Complete the virtualisation program conducted in the current AA period as the software applications supported by the infrastructure release version that will operate on virtualised technologies.

Table 42 - Platforms & Processing IT capex by Year

Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Platforms & Processing													

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Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Platforms & Processing													

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Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Platforms & Processing													

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10.14.5 End User Services

Project 146

End user services consist of technologies and devices used directly by JGN workforce needed to perform their role as well as the means to support and service those technologies. The devices include desktop and laptops computers, mobility devices and bar code readers.

Desktop and laptop computers are replaced on a rolling annual cycle based on a 3-year economic life. This means a device is typically used for at least 3 years and then replaced during its 4th year of operation after the end of its depreciated life align with its economic and technological life for compatibility with newer systems. Their replacement is separate to the replacement of the end user application software, such as Microsoft Office and email which is planned on a 7-year cycle and most recently replaced in 2011/12 to 2012/13.

Tablets are currently purchased at the discretion of the business units. The standard policies and issue of tablets will be determined as part of the new field and corporate mobility projects and solutions. In future years Jemena plans to use more tablets reducing the use of laptop computers and enabling staff to be even more mobile.

Jemena has planned 2 mobility projects introducing the ability to work from anywhere that public mobile and Wi-Fi networks can be accessed supplemented by satellite communications already in place for remote locations and workers. The 2 projects are:

- Corporate mobility for office based staff members and any tracking or data reading activities
- Field mobility for all members of the workforce who work outside an office designing, building, inspecting, maintaining and servicing the network.

Jemena plans to make greater uses of smart technologies such as smart phones and tablets including hybrid tablets and laptops combined in the one device. This sub-category maintains the devices for all mobility solutions in future.

Table 43 - End User Services IT Capex by Year

Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
End User Services													

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10.14.6 SECURITY TECHNOLOGIES AND SERVICES

Project 147 Security Services

The threat to energy provision and business security from exploitation of cyber vulnerabilities (cyber-attack) has increased significantly for Jemena in recent years. This is due to:

- The business now has greater reliance on IT systems for day to day operation.
- Increased sophistication and accessibility of hacking tools to potential attackers
- New opportunities for cyber-attacks, as more people and devices (both internal and external) are now accessing digitised reporting, outage and energy management services provided by Jemena
- Global trends in the use of cyber warfare for realisation of political and financial goals.

As Operational Technologies (OT) becomes increasingly digitised and integrated with broader IT systems, a cyber-attack on Jemena systems can now have a direct impact on Jemena's core operational capabilities, such as outage management, control and monitoring of its energy networks.

Unauthorised people or parties attempting to breach security and cause damage have become more sophisticated in their methods, tools and means of gaining access to secured systems and information. In addition, as systems age they become more vulnerable to security breaches using newer sophisticated technologies and methods.

The proliferation of new Internet enabled technologies within Jemena is increasing the avenues for malicious software to find its way onto the company networks. Deployment of Smart Meters and new smart grid technologies by Jemena Electricity networks (JEN) opened up a new set of challenges for ongoing security of data exchange between Jemena customers and new electricity management and business management systems, and consequently also for Jemena Gas Network (JGN). This trend is forecast to continue as we move towards large scale provision of Internet enabled solutions and the adoption of cloud based services. These changes, while delivering both efficiencies and improvements in services to customers, require that Jemena continue to evolve and enhance security measures to avoid negative impacts to Jemena and its customers which may arise as the threat environment changes in both an evolutionary and in a stepwise manner.

Jemena is continually reviewing and adding new prevention and detection technologies and will step up these capital investments in 2014/15 in line with changes in our new and replacement systems. Security regulations and voluntary guidelines developed by government agencies around the globe are continuing to evolve to address cyber security threats and risks to critical infrastructure. At the same time, utilities are moving towards an integrated IT and Operating Technologies environment and are looking to provide more efficient capabilities to its workforce without increasing the risk to its critical infrastructure. Jemena is committed not only to complying with existing security regulatory requirements, but also working toward globally accepted standards of practice, some of which may in future become regulatory requirements.

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As the older “black box” technologies are replaced with the new network connected alternatives JGN will face increased security demands requiring new supporting tools and processes. Black box technologies means the device helping to control the distribution network largely operates autonomously from other networked devices in a way that is usually not changeable remotely via mainstream IT tools.

Delivery of security services for OT environments faces additional obstacles due to:

- The impact of mandated security regulations and uncertainty of future regulation.
- Historic organisational separation of OT and IT personnel and practice, leading to reduced efficiency, and potential delays and/or errors in responding to threats.
- OT security technology maturity and limitations in IT security product abilities to address OT security requirements.
- Modernisation of OT systems via leveraging of main stream information technologies and the associated security impact.

Other industry related trends and business requirements are also adding to the challenge of staying on top of security as utilities, including Jemena, are looking for continuous improvements and delivery of new capabilities, such as:

- **IT / OT Integration** - Integration of the information technology and operational technology environments.
- **Cloud adoption –** Adoption of cloud-based solutions (e.g. infrastructure-as-a-service (**IaaS**), platform-as-a-service (**PaaS**), or software-as-a-service (**SaaS**)) and the changed threat environment this represents, including impacts to any internal systems.
- **Mobility –** Delivery of mobility capabilities for its field services and corporate office workforce.
- **Collaboration, applications and data -** Responding to the need for better collaboration capabilities and access to business applications and data, both from office/site locations and when mobile.
- **BYOD –** Support for bring-your-own-device (BYOD). This means providing staff members or non-Jemena partners, consultants and contractors with the ability to bring and use their own desktop, laptop, tablets and smart phone devices to perform Jemena work and become secured when accessing JGN systems.

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Table 46 – Security Technologies Program of Work

Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Security Services													

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Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Security Services													

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10.14.7 SYSTEMS MANAGEMENT & OPERATIONS

Project 148 Systems Management & Operations

This sub-category encompasses the technologies and tools that are applied to operate production systems, operate systems development environments and for IT disaster recovery processes and their activation. The IT operating functions and processes supported by the technologies are:

- Systems installation.
- Live systems deployment.
- Systems back-up and recovery.
- Application packaging that work in combination to form a solution.
- Systems configuration management.
- Change control.
- Managing systems patches.
- Operations scheduling, run sequence and execution.
- Control of hardware devices.
- Control of mobility devices.
- Software management.
- Capacity planning tools that monitor usage levels over time and for predictive analysis to plan acquisitions of increased capacity.
- Event management for the automated logging and manual recording of problem events as well as supporting their resolution.
- Systems detection and usage for software licensing purposes including end of year licensing payments for growth in usage also known as “True Up”.

The capital investments for systems management operations consist of a series of small scale cost items to upgrade and replace the tools. The investments include the addition of new small scale capability more automated control over software patching and event management.

The plans and costs by technology, tool and year of activity is described in the table on the next 2 pages

Table 47 - Systems Management & Operations IT Capex by Year

Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Systems Management & Operations													

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Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Systems Management & Operations													

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10.14.8 COMMUNICATIONS & NETWORK SERVICES

Project 149 Communications & Network Services

Communications and network services encompasses all technologies and project related to the provision of telephony, wide area networks (WAN), local area networks, Wi-Fi facilities, satellite, radio and broadband optical fibre facilities.

Communications networks are largely outsourced and replacement therefore is decided by the service provider with planning and the capital costs of change determined as required.

Over the next 7 years JGN will be replacing analog radio networks and ageing metering networks related to the collection of meter data. The adoption of the 3G, 4G and the roll out of the National Broadband Network (NBN) are all part of the replacement of the current communications capability. However specific strategies and solutions will be on a case by case basis with some decisions held over until the Federal Government redefines its plans for the NBN now underway with new plans to be announced in mid-2014.

Communication networks and technologies have a useful or economic life of 5-8 years and determined on a case by case basis described in the tables on the next page. PABX and desk telephones have a life of 5 years. Mobile smart phones have a planned life of 3 years as compared to the prior era of mobile phones being phased out of 4 or more years. Mobile phones are a business cost and not included in the IT section.

In the period 2016/17 will replace the following communications technologies:

- Network switching, for core switches, encompassing the complete CISCO products that all work together to deliver the services.
- Network switching, for edge switches which consist of a range of general network components.

In the years 2015/16 to 2019/20 there is provision for growth in demand for the uses of communications drive by JGN's increasing scale in response to market growth in gas energy demand, new customers and connections.

The lifecycle plan and timing over the 5 year period for each communications asset are described in the table on the next page.

Table 48 - Communications & Network Services IT Capex by Year

Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total

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Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Communications & Network Services													

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Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Communications & Network Services													

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10.14.9 FACILITIES & DATA CENTRES

Project 150 Facilities & Data Centres

The facilities and data centres sub-category encompasses the technologies associated with any buildings, property and data centres used by Jemena. For the period 2015/16 to 2019/20 provision is made for:

- Annual upgrades or replacements to PABX services.
- Relocation of the SOP facilities to be consolidated into the Jemena enterprise data centres, to simplify data centre related facilities, reduce risk and be more efficient.
- Many of network operating technologies have existed outside of the main Jemena offices or data centre. As those technologies are replaced with the newer network operating technologies they are being located inside data centres and operated from control rooms using their new application software and communications technologies. Provision is made in the data centres to accommodate the replacement operating technologies. The investments are prudent made as a risk mitigation made possible by the new replacement technologies including the provision of disaster recovery facilities. The consolidation of the technologies into the data centres is also more efficient for management, maintenance, support and any break-fix activities previously conducted in the field or at disparate sites across the JGN geographic area.

Note:

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Table 49 - Facilities & Data Centres Capex by Year

Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Facilities & Data Centres													

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Table 50 - Commercial Agreements Capex by Year

Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total

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10.14.12 SERVICE MANAGEMENT & HELPDESK

Project 152 Service Management & Helpdesk

The service management application software and tools have reached their end of life and need to be replaced to avoid the unacceptable risk of support becoming unavailable from the vendor Hewlett Packard. In addition the current application is old in terms of underlying technologies and design that makes it cumbersome to use and more labour intensive compared to market sourced products available today.

The project replaces the legacy service management and helpdesk systems as a prudent investment. In addition the project improves the services and processes including the use of self-service to be a more efficient. The project capex is shared across the Jemena group providing JGN with the benefits of economies of scale and the most efficient cost.

Table 51 - Service Management Capex by Year

Function	Category	Sub Category	Technology	Version / Model	Support End of Life	Investment Type	Lifecycle Activity Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Service Management & Helpdesk													

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10.14.13 IT INFRASTRUCTURE GROWTH

The IT infrastructure growth section provides for incremental growth in terms of units and technical software licenses each year. The nature of the growth for each item listed in the table below is described in the subsequent paragraphs.

Data Centres

Jemena does not own data centres, it owns the IT infrastructure inside the facility that runs operates and support the Jemena systems.

- Data centres organic growth provides for more racks and devices to house the technologies resident in the data centre and for any expansion work such as racks, cabling and their installation costs.

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Business and Systems Growth

- **Project – 156** Organic Growth – represents the rate of business growth for existing systems as at 2013/14 in terms of JGN customers, connections and transactions being processed.
- **Project – 157** Natural Growth – represents the growth in new SAP capability for corporate systems processing volumes including human resources self-service, learning management, governance and risk management.
- **Project – 158** Costs for the growth in infrastructure capacity for the new data warehouse once is implemented.
- **Project – 159** GASS+ is to be replace by an SAP based Gas Solution which requires much more data capacity than the current systems. These costs provide for the marginal growth capacity required for the new solution compared to the current solution.
- **Project – 160** Costs for the growth in infrastructure capacity for the new geographic information system once is implemented.
- **Project – 161** Provision for growth in:
    - New small scale systems
    - Extended usage of current systems for more users
    - Take up of unused functionality.

Table 52 – Data Centre and Infrastructure Growth by Year

Description	2015/16	2016/17	2017/18	2018/19	2019/20	Total
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10.14.14 Maintenance Plan

The consolidation of the IT Infrastructure strategy and replacement with newer and fewer technologies means the intended lifecycle becomes more achievable and cost efficient over time. Jemena has been simplifying the asset management, maintenance and support of its IT environment through the replacement of legacy systems, virtualisation and the reduction in the numbers of systems.

The current strategy is to have all IT infrastructure assets managed according to their standard lifecycle without a backlog by 2016/17. No technologies will go out of vendor maintenance agreements and support prior to 2016/17 without highest priority replacement taking place.

From 2010 to 2014 EB Services has managed the maintenance, support and vendors for the provision of all IT Infrastructure maintenance and support as directed by the Jemena General Management IT Operations. From 1 October 2014 EB services will no longer exist and the services previously provided will be managed directly by Jemena's Information Technology division.

10.15 IT PROGRAM OF WORK ROADMAPS

Figure 53 – Jemena IT Assets Lifecycle Timeline

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Figure 54 – Jemena IT Program Delivery Timelines

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11 IT Operations

Jemena has overall management of IT operations. IT Operations encompass the following range of services and includes the provision of operations by EB Services:

- General IT Management and Administration.
- IT Strategy and Planning.
- IT Architecture.
- Relationship management with the Jemena group of business stakeholders.
- Day to day operation of production systems and IT disaster recovery.
- Procurement of software, hardware, and services.
- Vendor and services agreements management, monitoring and administration.
- Costing, budgeting and financial management of IT systems.

11.1 IT Operations Services Provision

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In the past 3 years the IT Operational costs have been contained through a combination of factors including:

1. Replacement and refresh of the end of life technologies that resulted in:
    - The lowering of maintenance and support costs.
    - Increased capacity and processing power per dollar invested lowering depreciation and costs per service unit.
2. Consolidation of systems reducing the number of solutions and products and the associated costs of management, maintenance, support and administration in terms of:
    - Staffing levels.
    - Costs of IT services per business function.
3. Competition in the awarding of contracts for the provision of software and hardware.
4. In sourcing of facilities management.
5. Insourcing of a range of level 2 support for some of the more complex solutions to be more efficient and at lower cost.
6. Increasing productivity per staff member resulting in lower costs due to fewer systems, improved processes and up to date tools.
7. The rise in the purchasing power of the Australian dollar.
8. Technical improvements in the virtualisation of almost all solutions processing.
9. New replacement technologies that provided for the same investment costs more processing, storage and technical efficiency.

All of the above initiatives had a material impact on the reduction in the service efficiencies achieved and the resulting reduction in operating costs. The reduction in IT operating costs have been achieved during a 3-year period when the business grew year on year in terms of customers, connections and processing needs by about 2% per annum and retained data grew by about 15% per annum. IT operations services

and costs were recently re-baselined led by Jemena with the assistance of [c-i-c] [c-i-c] The new baseline and costs were determined to:

- Define and establish the new long term services and costs model following the achievement of the efficiencies listed in this section.
- Define the cost to operate by business function and the associated solutions
- Establish a new cost sharing model across the Jemena group by using more detailed metrics and the costs by business function solutions

11.2 IT Operations Plans and Step Changes 2014/15 to 2019/20

IT will continue to make service efficiency and cost gains but at a lower rate given recent achievements that will result from:

- The Jemena Consolidation Program lowering some of the current IT user and systems management support and maintenance.
- Taking advantage of the greater processing power and capacity of new technologies as current assets reach the end of the economic life.
- Competitive tension in the marketplace.

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The gains in operational efficiencies and costs will be offset by the introduction of new capabilities and technologies not currently available that include:

- Increased regulation and compliance demands with supporting information and data.
- Workforce mobility.
- A Geographic Information System.
- Data Warehouse.
- Greater use of OT systems for non IT managed areas that will require IT facilitation, agreements management, support and disaster recovery.
- The greater use of documents, records and data as we enter an IT era known as “big data” with business analytics and interval metering two examples.
- Greater complexity in solutions and integration.

JGN does not have any regulatory compliance step changes in IT Operations costs for the period from 2012/13 to 2019/20.

Appendices

Appendix A **Glossary of Terms**

Appendix B **Application Systems Glossary**

12 Appendix A – Glossary of Terms

Term	Explanation
AEMA	Australian Energy Market Agreement
AEMO	Australian Energy Market Operator0
AER	Australian Energy Regulator
AMP	Asset Management Plan
B2B	Business to Business In the context of automated computer interfaces
B2M	Business to Market In the context of automated computer interfaces
CAD	Computer Aided Design
Capex	Capital expenditure
COAG	Council of Australian Governments
COLA	Cost of Living Adjustment
CPI	Consumer Price Index
CRM	Customer Relationship Management
DFA	Delegated Financial Authority
ECMS	Enterprise Content Management System

Term	Explanation
ERP	Enterprise Resource Planning Fully integrated suite of applications for finance, HR, asset management etc.
GIS	Geographical/Geophysical Information System
IaaS	Infrastructure as a Service Cloud based service delivery at the hardware layer
ICT	Information and Communications Technology
IMS	Incident Management System
JEN	Jemena Electricity Networks (Vic)
JIT	Jemena Information Technology
JLT	Jemena Leadership Team
JGN	Jemena Gas Networks (NSW)
IVR	Interactive Voice Response
MOE	Managed Operating Environment i.e. the desktop environment and suite of tools installed on Jemena's personal computer fleet
NBN	National Broadband Network
NECF	National Energy Customer Framework
OH&S	Occupational Health and Safety

Term	Explanation
Opex	Operating expenditure
OS	Operating System
OT	Operational Technology
PaaS	Platform as a Service Cloud based service delivery at the Operating System (OS) and database layer
PMP	Project Management Plan
PSC	Project Steering Committee
RFI	Request for Information
RFT	Request for Tender
RTS	Real Time Systems
SaaS	Software as a Service Cloud based service delivery at the application layer
SAN	Storage Area Network A storage option that provides managed data storage to multiple devices.
SCADA	Supervisory Control And Data Acquisition
SLA	Service Level Agreement

Term	Explanation
SOE	Standard Operating Environment i.e. the desktop environment and suite of tools installed on Jemena's personal computer fleet
TRM	Technical Reference Model

13 Appendix B – Application Systems Glossary

Application Name	Vendor or Brand	Application Description
ACL Audit Server	Jemena in-house developed	Application that takes extracts of SAP data for analysis by internal audit
ARIS	Software AG	Business Process Modelling and Systems Architecture Tool
ASKS	Jemena in-house developed	GASS+ Key Performance Indicators and ad hoc queries: • Jemena Gas Network NSW • ActewAGL Gas Network ACT
Audit Records Management System	Jemena in-house developed	
CADDSMAN Modeller	CADDSMAN Pty Ltd	Computer Aided Drafting (CAD) Package. Used to maintain record of asset location (gas mains & facilities) for Jemena Gas Network (ActewAGL?)
ChemAlert	ChemAlert	Chemical Management to meet OH&S regulations
CABS-ELMS	Jemena in-house developed In partnership with Dius Computing	The systems consists of 2 components: • Manages the contracts and produces data and billing for large businesses and users of gas including non-standard agreements • Manages the gas demand and load including emergency shedding of gas load
Drawbridge	BTM Software	Drawings tool used by Jemena for distribution network assets drawings and
Control M	IBM	Job Scheduling Tool - schedules most of CISPlus jobs
Control SA	IBM	Account Provisioning workflow
Crossing Notification System	Jemena in-house developed	Manages crossing data for gas assets.
Emergency Load Management System	Jemena in-house developed with external services provider Dius Computing	Gas network outage management tool for load shedding
ERDAS ER Mapper	Intergraph	Package add on for GeoPlus to manage extensive aerial photography data in ECW format

Application Name	Vendor or Brand	Application Description
ESRI (Suite of Applications and Tools)	ESRI	A Geographic Information system currently used by JGN for geographic management of the interface between the distribution network and the transmission pipes
ESRI - FlexLM License Manager	ESRI	ESRI FlexLM ESRI FlexLM licence manager for GeoPlus GIS system ESRIv9.2
ESRI ArcGIS Desktop	ESRI	GIS system for managing gas pipelines assets.
ESRI ArcReader	ESRI	The Field GIS is a lightweight GIS viewer (ESRI ArcReader application), with an intermediate level of mapping, markup and data querying capabilities. The Field GIS is aimed at users who require OFFLINE access to gas Transmission GIS data
ESRI WebGIS	ESRI	The WebGIS is an on-line GIS viewer designed to offer a single interface to the GIS data and related databases
GASS+ (Includes ASAP, ASIO, DIGS, GASS, GASSPLAY, GOLD, NETWPLAY, RUGS & VANS)	Jemena in-house developed	Gas Administration and Service System: • Jemena Gas Network • ActewAGL Gas Network
GASS Suite Modules • ASAP • ASIO • DIGS • GASSPlay & RUGS • GOLD • NETWPLAY • VANS	Jemena in-house developed	Inventory management GASS Suite security management and access Manages requests for gas service Information analysis and reporting Systems to manage the rehabilitation of gas pipes Distribution network modelling too Management and tracking of non-inventory vehicles
GENe	GE Digital Energy	Supervisory Control & Data Acquisition. SCADA.
GeoPlus Portal	GEO-Plus	Web Portal application for managing gas assets

Application Name	Vendor or Brand	Application Description
HP Quality Centre	Hewlett Packard	Systems Testing Tool
HPGL View	Hewlett Packard	Application to view & print native CADDSMAN files of NSW mains maps (being replaced by Mains Maps)
JCARS	Standards Australia	Jemena Compliance and Risk Management System for tracking risks
Jemena Intranet	Jemena in-house developed	Portal to services and applications including: • Web apps • IT Shop • Phone list • Self-service portal
Jemena Intranet	Jemena in-house developed	An external information and interactive facility that provides on-line access to end customers, the community, business partners and interested parties on Jemena, the networks, outages and any useful information.
Land Management System	Jemena in-house developed	Manages contact details of land owners (pipe crossings) for gas assets.
Lotus Notes	IBM	The information tool provides reference information for network asset management, serving, maintenance and field services
Livelink ECMS	Microsoft	Electronic Data/Content Repository
Mains Maps	Jemena in-house developed	Read only client for CADDSMAN & HPGL View drawings (in PDF format) GeoPlus provides tile definition
Metretek DC2009 (including SMODTracker)	Metretek Incorporated	Used for remote reading of gas meters at large sites & in emergency situations. These are passed on to GASS.
Microsoft Office 2010	Microsoft	Office productivity tools encompassing spreadsheets, word processing, presentations and photograph editing
MVRS	Itron	Meter reading and data collection solution suite encompassing multiple reader types and methods including mobile reads via radio, communications networks and direct load.

Application Name	Vendor or Brand	Application Description
OCCAM7	Occam Solutions	e-based learning Easy-I Holdings
OrgPlus Enterprise 4000	Microsoft	Organisational management reporting & display tool – Org Chart software.
OSI PI (JEN/JGN)	OSI Soft	Manages historical network data
Outages & Emergencies (PIPES)	Jemena in-house developed	Jemena received information from Transmission businesses for outages that will impact the gas distribution network. Information provided to IVR, Jemena.com & Data Warehouse
Outlook	Microsoft	Email and diary system
Phone List	Jemena in-house developed	Portal Application
SAP	SAP AG	Enterprise resource planning (ERP system) for the management, transaction processing and information sourcing for: • Financial management and accounting • Human Resources • Payroll • Occupational Health and Safety • Business Analysis • Reporting
SAP 4.6C (Ex-Agility)	SAP AG	Copy of ex-Agility SAP 4.6C environment
SAP 4.6C (Ex-Alinta)	SAP AG	Copy of ex-Alinta Jemena SAP 4.6C environment
Self Service Portal	SAP AG	Provides portal functionality on intranet
SharePoint	Microsoft	A software tool for sharing documents and artefacts. It is a collaboration via the internet for live meetings or live written communication between groups of people

Application Name	Vendor or Brand	Application Description
SiteSafe	SiteSafe	An incident management system used throughout the business (AKA Incident Reporting) A Corporate Incident Reporting System
TCCH	Jemena in-house developed	Tariff Customer Consumption History TCCH is the repository of the daily energy consumption data and records for non-daily read meters.
TRIM	IBM	Records Management System
Weather app (G)	Jemena in-house developed	Provides weather reporting capabilities