

# IT Capital Program 2018 to 2022

---



Version 1.0

November 2016

# IT Capital Program 2018 to 2022

---

*This page has been intentionally left blank.*

## Table of Contents

1.	Executive Summary .....	4
2.	Introduction and Structure of Document .....	8
3.	Background – MG’s Current IT Landscape .....	10
4.	Business and Technology Impacts .....	16
5.	MG’s Business and IT Strategy - Overview .....	18
6.	IT Capital Program .....	25
7.	Financial Details .....	33
8.	Operating Cost Impacts .....	39
	Appendix A: Assumptions .....	40
	Appendix B: References .....	41
	Appendix C: Financial Cost Model .....	42
	Appendix D: Glossary of Terms .....	47
	Attachment 1: IT Capital Program Project Justifications .....	48

## 1. Executive Summary

As a result of Multinet's (MG's) program of investment in Information and Technology (IT) in recent years, the company now has a set of core IT business systems which are largely at industry standard.

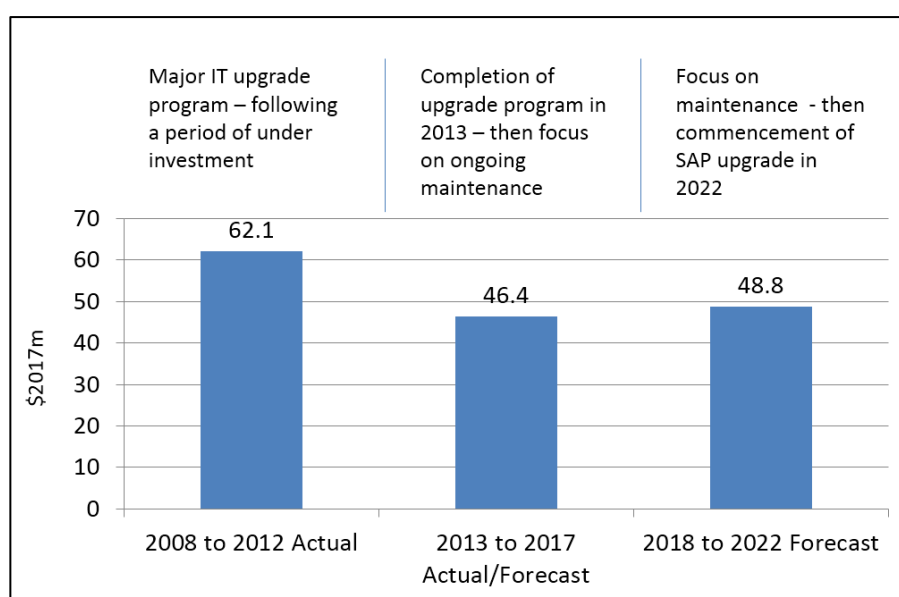
These IT systems are integral to MG's business operations. IT systems support almost all of MG's core business functions. Without on-going investment to maintain and refresh these IT assets, MG will not be able to continue to meet the information needs of its customers, achieve the integrity of services and levels of demand required by customers or meet future industry and regulatory challenges.

The forecast IT capex for the next (2018 to 2022) Access Arrangement period is \$48.8M (2017).

Figure 1 compares MG's forecast for the forthcoming Access Arrangement period with actual and estimated IT capex in the previous and current Access Arrangement periods. This figure shows that:

- In the previous (2008 to 2012) Access Arrangement period, MG invested heavily in a major IT program, based around large SAP systems, to bring the systems up to the required standard and to deliver systems that meet the requirements of the business transformation. The capex in that period followed a number of years of under investment in IT;
- In the current (2013 to 2017) Access Arrangement period, MG successfully completed that upgrade program and has continued to invest so that the systems are maintained at industry standard; and
- The forecast capex for the next (2018 to 2022) Access Arrangement period will be slightly higher than in the current period. The majority of the capex will be recurrent in nature to ensure that MG meets the information needs of customers, maintains the integrity of services and achieves the levels of demand required by customers. The slight increase in expenditure in the forthcoming period compared with the current period is largely due to the timing of the required maintenance of systems. For example, towards the end of this period, MG will commence a further upgrade of the SAP systems which, by that stage, will have been in operation for almost ten years. This upgrade is required as SAP (the vendor) will be withdrawing its support for the current platform in 2025.

Figure 1: Comparison of IT capex across the previous, current and future Access Arrangement periods (\$M, Real 2017)



MG's IT capital program for 2018 to 2022 is based on six IT strategic themes as follows:

1. **Maintain systems to industry standard to avoid increased risk of disruption to customers and to retain levels of efficiency.** Having completed a major overhaul of MG's IT systems in recent years, MG will continue to invest to ensure that these systems are refreshed to maintain the industry standard required to meet the needs of customers;
2. **Improve asset planning and management through improved data quality and reporting.** MG will enhance its systems to increase data synchronisation and quality. Improved data quality will lead to better planning and management of assets;
3. **Ensure the ongoing integrity and safety of the distribution network.** MG will implement IT solutions and security programs so that it maintains the integrity of its gas distribution network and meets the levels of demand required by customers;
4. **Deliver new capability to meet changing customer needs and growing expectations.** MG will implement IT solutions that address the needs and expectations of customers for web-based interaction and transactions. Customers have expressed strong support for increased use of digital communications (e.g. SMS) for urgent matters relating to their supply (e.g. outages and disconnections);
5. **Ensure readiness to achieve regulatory requirements.** MG will invest in its IT systems to ensure that it continues to comply with regulatory requirements and is ready to meet regulatory changes as they arise; and
6. **Utilise field mobility to automate field work processes with service providers** – MG will combine increasingly mature and low-cost mobility technologies with the Enterprise Resource Planning (ERP) system to reduce manual intervention in processes for managing field work forces.

Table 1 presents an overview of the projects within the IT Capital Program categorized by strategic theme. This table shows that the majority of the forecast IT capex for the 2018 to 2022 period will be focused on the first of MG's IT strategic themes - to maintain IT systems at industry standard. The remainder is required to address the other five themes.

Table 1: Alignment of key IT projects against IT strategic themes

Strategic Theme	Key Projects	
<b>Maintain systems to industry standard to avoid increased risk of disruption to customers and to retain levels of efficiency.</b>	IT12 IT Infrastructure Refresh IT13 Application Enhancement Factory IT15 WebMethods Refresh IT16 SCADA Refresh IT17 SAP ERP/ISU Refresh IT18 Small Applications Refresh IT19 GIS Refresh IT20 EDMS Refresh	IT21 Infrastructure Refresh - Client Device Lifecycle IT22 Infrastructure Refresh – Data Protection IT23 SAP CRM Refresh IT24 Infrastructure Refresh – Reporting Platform IT29 Legacy Application Replacement Program IT33 UAFG – Reconciliation Refresh IT35 Time Expired Meter Replacement IT39 Enterprise Project and Portfolio Management
<b>Improve asset planning and management through improved data quality and reporting</b>	IT01 Asset Data Quality Program IT06 Enterprise Content Management	IT40 Business Intelligence IT30 Tableau Refresh
<b>Ensure the ongoing integrity and safety of the distribution network.</b>	IT07 Network Monitoring Capability IT03 GIS Gas Transmission Pipelines	IT14 IT Security Program
<b>Deliver new capability to meet changing customer needs and growing expectations</b>	IT09 Digital Meters IT Support	IT38 Customer Experience Improvements Program
<b>Ensure readiness to achieve regulatory requirements</b>		
<b>Utilise field mobility to automate field work processes with service providers</b>	IT08 Mobility Integration	

Figure 2 shows the planned IT capex by calendar year. In this table, IT expenditure is categorised in accordance with MG's functional model.

**Figure 2: IT Capex by Calendar Year (\$ Real 2017)**

Capability Area	CY2018	CY2019	CY2020	CY2021	CY2022	GAAR Total
Manage Assets	\$851,476	\$1,162,030	\$1,935,233	\$2,676,056	\$745,405	\$7,370,200
Manage Business	\$0	\$0	\$0	\$0	\$0	0
Manage Customers and Stakeholders	\$2,334,194	\$693,066	\$694,965	\$2,033,636	\$691,167	\$6,447,028
Manage Information	\$944,776	\$1,726,205	\$0	\$102,057	\$0	\$2,773,037
Manage IT	\$708,992	\$1,042,018	\$2,455,435	\$5,118,293	\$1,091,464	\$10,416,201
Manage Meter Data and Revenue	\$1,154,126	\$0	\$602,918	\$1,392,128	\$7,276,959	\$10,426,131
Manage Network	\$27,042	\$433,432	\$4,371,748	\$0	\$568,411	\$5,400,634
Manage Works	\$5,079,829	\$921,938	\$0	\$0	\$0	\$6,001,767
<b>Total</b>	<b>\$11,100,435</b>	<b>\$5,978,689</b>	<b>\$10,060,299</b>	<b>\$11,322,170</b>	<b>\$10,373,406</b>	<b>\$48,834,999</b>

MG is well positioned to deliver the proposed IT Capital Program through its existing IT Project Delivery Framework (see Appendix B – References) and its contractual arrangements with external service providers. The successful delivery of the IT program in the period from 2013 to 2017 demonstrates that MG has robust IT governance structures in place.

The proposed IT Capital Program will allow MG to meet the needs of its customers by maintaining systems at industry standard, addressing current gaps in functionality, meeting regulatory requirements and addressing future business challenges and opportunities.

## 2. Introduction and Structure of Document

### 2.1. Purpose

This document presents the IT Capital Program for MG for the period from 2018 to 2022 for approval by MG senior management. The document:

- Presents MG IT's strategy for the continuing maintenance and further development of MG's IT capability leveraging appropriate advances in technology and services;
- Provides descriptions of the individual projects and programs planned for 2018 to 2022 together with the business justification for those projects and programs; and
- Supports MG's Gas Access Arrangement Review (GAAR) submission by providing IT capital expenditure estimates for the regulatory period from 2018 to 2022.

The document explains how MG is well positioned to maintain and further develop its IT capability. Each of the capital projects that MG plans to deliver in the 2018 to 2022 period is described and justified along with estimated costs.

### 2.2. Scope

The scope of this IT Capital Program covers all areas of IT including corporate applications, asset management, network management and geospatial applications as well as IT infrastructure and facilities.

In line with the AER's definition of 'non-network IT and communications expenditure'<sup>1</sup>, this document does not include plans or costs for devices within the distribution network that are monitored or controlled by network management systems. Costs and plans are therefore not included for implementation of remote monitoring elements of the network control or SCADA systems throughout the distribution network. Costs are however included for the centralised components of the SCADA systems that are housed in MG's data centres.

Cost estimates are only for capital expenditure and are inclusive of expenditure from Q1 CY2018 to Q4 CY2022. Cost estimates include resource, hardware and software costs required to deliver each project.

Further detail on capital expenditure cost estimates is provided in Section 7 Financial Details.

### 2.3. Approach

This document has been prepared with input from MG's executive management team, business representatives and the IT management team. The overall program has been approved by MG's IT Executive Forum – the peak body responsible for the governance of IT within MG.

---

<sup>1</sup> AER Final Category Analysis RIN for distribution network service providers – AER March 2014



The IT Capital Program takes into account a range of factors both internal and external including:

- MG's business objectives;
- The functionality of MG's existing systems compared with business requirements and industry practice;
- Customer needs concerns and priorities;
- Industry trends and directions;
- Lifecycle refresh requirements for software applications and IT infrastructure;
- Observed trends in MG's data and transaction volumes; and
- Trends and developments in Information Technology and the use of these technologies in the energy industry.

## 2.4. Structure of Document

Following this introduction section, the document proceeds as follows:

**Table 2: Document Structure**

No	Section	Description
3	Background - MG's Current IT landscape	Presents an overview of the outcomes from previous capital investment. Summarises the current state of the IT systems and environments and presents the need for on-going investment.
4	Business and Technology Impacts	Presents details of external factors that are impacting MG's business. Demonstrates how new developments in technology offer opportunities to MG to address industry challenges and improve efficiency.
5	MG's Business and IT Strategy	Outlines MG's business objectives and presents MG's IT strategy to continue to invest in IT systems to meet regulatory, customer and industry needs as well as maintain IT assets and industry standard.
6	IT Capital Program	Presents a comprehensive overview of the projects that comprise the IT Capital Program and the rationale for these projects. The completeness of the program is demonstrated by categorising projects against a functional reference model of the business.
7	Financial Details	Presents further detail of the financial implications of the IT Strategy and IT Capital Programs.
8	Operating Cost Impacts	Presents details of the impacts of IT projects on operating costs.
	Supporting Documentation	Appendix A: Assumptions Appendix B: References Appendix C: Financial Cost Model Appendix D: Glossary of Terms Attachment 1: IT Capital Program Project Justifications

### 3. Background – MG’s Current IT Landscape

#### 3.1. Introduction

This section presents the background and context to MG’s IT Capital Program for the next (2018 to 2022) period. The section shows that:

- In the current Access Arrangement (2013 to 2017) regulatory period, MG has successfully completed its IT capital program;
- MG’s systems are now largely at, or close to, industry standard and provide a solid foundation for the future; and
- Continued investment is now essential to maintain MG’s core IT systems and capabilities so that MG can continue to prudently and efficiently deliver services to its customers.

#### 3.2. Outcomes from MG’s IT Capital Program in 2013 to 2017

In the early years of the current (2013 to 2017) Access Arrangement period, MG successfully completed a transformation of its business. Prior to 2013, MG’s operations were almost totally outsourced. By the end of 2014, MG had implemented a new operating model in which core strategic functions had been brought back in house with other functions largely outsourced through well-defined commercial contracts.

This extensive business transformation, which has made MG a highly efficient and effective distribution business and delivered significant benefits to customers, could not have been achieved without the successful delivery of a major IT core systems replacement program that was commenced in the previous period and completed in the early years of the current (2013 to 2017) period. MG’s IT capex in the period 2013 to 2017, together with the transformation of MG’s operating model has delivered the planned benefits to MG and its customers.

In the current Access Arrangement period, MG has:

- Completed the implementation of a suite of foundation systems providing a robust platform for MG to meet future customer, business and regulatory requirements;
- Consolidated and rationalised legacy applications;
- Reduced its overall business operating costs through IT’s support of the transformation of its operating model; and
- Implemented systems to provide a foundation to meet regulatory requirements.

Table 3 presents the status of the key IT projects (i.e. with a cost of over \$1M) included in our 2013 to 2017 AER allowance. This table shows that by the end of 2017, MG will have completed the required key projects.

Table 3 Current Status of Key (&gt;\$1m) IT Projects in the 2013 to 2017 IT Capital Plan

Project	Status
ERP – SAP Implementation (remainder of project)	Completed
Infrastructure Refresh	Completed
OMS Lifecycle Upgrade	Not Required The 2012 submission assumed that a separate OMS would be implemented – however this functionality was integrated into the SAP CMS solution.
GIS Strategy and GE GIS Smallworld Upgrade	Completed
Identity and Access Management System	Completed
Data Warehouse Enhancement Program	Completed
Office Expansion	Completed
SCADA Replacement	Completed
RTS Data Centre Relocation	Completed

In addition to the key projects listed above, MG has also:

- Implemented systems to support the replacement of the GPRS field communications devices;
- Modified meter data and revenue systems to meet the requirements of regulatory changes;
- Implemented a system to improve the management of customer claims and complaints;
- Implemented a security information and event management system;
- Upgraded network management systems to resolve security issues; and
- Implemented an Enterprise Program Management system for project and portfolio reporting on IT projects.

### 3.3. Current State of Systems

The findings of an assessment of MG's current IT applications are summarised in Table 4. This table shows that while MG now has a set of core IT business systems that are largely at industry standard, some areas of IT applications still require improvement. Table 4 shows that specific weaknesses and areas for improvement exist in the areas of:

- Asset information management and data quality;
- Network management systems;
- Field services automation and integration; and
- Customer communications.

---

An assessment of MG's IT infrastructure capabilities also reveals some areas of weakness (see Table 5). This assessment shows that action will be required in the following areas:

- Replacement of existing ageing enterprise servers with the contemporary equivalents;
- Replacement of core switches;
- Refresh of application presentation (Citrix) technology layers to maintain supportability and currency; and
- Replacement of data analytics servers.

This Capital Program presents an increased focus on these areas with individual projects outlined in MG's Business and IT Strategy presented in Section 5.

Table 4: Assessment of MG's Current IT Applications Capability

Business Functional Area/Overview	Assessment of current IT capability
<b><u>Customer and Stakeholder Management</u></b> <b>Provision of services and/or information to internal and external stakeholders (including customers, retailers, government agencies, regulator and employees).</b>	<ul style="list-style-type: none"> <li>MG's COMS project, completed in 2012, delivered an up-to-date industry standard customer information system based on SAP-ISU.</li> <li>In its capital program for 2018 to 2022, MG will implement a customer experience improvements program. This program will deliver a number of initiatives including a portal to replace existing paper-based interactions with customers, builders and gas fitters and support an improved customer switching processes.</li> </ul>
<b><u>Network Management</u></b> <b>Management, monitoring and control of the distribution network including responding to faults/emergencies, and optimisation of the network.</b>	<ul style="list-style-type: none"> <li>In the 2013 to 2017 period, MG successfully completed the refresh of its SCADA system.</li> <li>In the capital program for 2018 to 2022, MG will address weaknesses in the management of Gas Transmission Pipelines as well as continuing to upgrade the SCADA system.</li> </ul>
<b><u>Asset Management</u></b> <b>Strategic planning and management of assets, work programs and resources, including network extensions, inspections, maintenance and construction.</b>	<ul style="list-style-type: none"> <li>In the 2013 to 2017 period, MG completed the replacement of its core SAP ERP asset management system and an upgrade of its GIS. However, the GIS currently lacks asset lifecycle management capability.</li> <li>In its capital program for 2018 to 2022, MG will focus on improving asset data quality and refresh of key systems.</li> </ul>
<b><u>IT Management</u></b> <b>IT capabilities enabling operations and supporting planning and management of the business, including managing applications, IT portfolio, infrastructure, architecture, security and IT services.</b>	<ul style="list-style-type: none"> <li>In the 2013 to 2017 period, MG completed the implementation of Microsoft's Enterprise Project Management application to support the planning and management of MG's IT capital program.</li> <li>In the capital program for 2018 to 2022, MG will focus on a program of IT security initiatives and deployment of security tools to address increasing security threats and maintain risk levels.</li> </ul>
<b><u>Works Management</u></b> <b>Management of work programs and resources for network extensions, inspections, maintenance and construction.</b>	<ul style="list-style-type: none"> <li>In the 2013 to 2017 period, MG completed the replacement of its core SAP ERP system and ensured that the highly-outsourced business model with two regional service providers could be supported.</li> <li>In its capital program for 2018 to 2022, MG will focus on effective use of despatch, scheduling and mobility solutions to improve efficiency and effectiveness of field workforces and improve customer service.</li> </ul>
<b><u>Meter Data and Revenue Management</u></b> <b>Management of meter data, connection points and meter services, including the provision of data to market and management of service orders and metering faults.</b>	<ul style="list-style-type: none"> <li>MG's COMS project, completed in 2012 ensured that MG now has an up-to-date industry standard meter data and revenue system based on SAP - ISU.</li> <li>In its capital program for 2018 to 2022, MG will maintain its meter data and revenue systems at industry standard and will introduce IT capability to support a limited pilot of digital meters.</li> </ul>
<b><u>Information Management</u></b> <b>Focuses on the capabilities required to effectively manage large amounts of structured and unstructured information across the business.</b>	<ul style="list-style-type: none"> <li>In the 2013 to 2017 period, MG delivered a replacement of its core SAP ERP asset management system as well as an 'Information Hub' to provide a foundation analytics capability. However, MG currently has a notable gap around key information management and data quality to support effective on-going data management.</li> <li>In the 2018 to 2022 period, MG will establish a program to address weaknesses in content management.</li> </ul>
<b><u>Business Support Management</u></b> <b>Focuses on corporate capabilities required to support the business including finance, HR, risk &amp; audit, legal, supply chain &amp; logistics and OH&amp;S.</b>	<ul style="list-style-type: none"> <li>In the 2013 to 2017 period, MG completed the delivery of a new ERP solution as the core financial management capability. Solutions were also delivered to support the establishment of HR, payroll and audit functions.</li> <li>In the 2018 to 2022 period, MG will focus on the maintenance of these systems in line with changing business requirements through a program of continuing SAP improvements and enhancements.</li> </ul>

Table 5: Assessment of MG's IT Infrastructure Capability

IT Capability	Assessment of current IT capability
<b>End User Services</b> Provides hardware devices, operating systems, software and services to all users.	<ul style="list-style-type: none"> <li>MG's end-user computing platform is at industry standard with the deployment of Office 2013 and the use of Microsoft Cloud for mail and content management</li> <li>MG will now focus on 'bring-your-own device' approaches and potentially moving away from a traditional corporate approach.</li> </ul>
<b>Enterprise Reporting and Business Intelligence Services</b> Provides support for strategic and operational planning.	<ul style="list-style-type: none"> <li>MG uses Oracle database, Data stage for data transformations and loading and Cognos reporting to support strategic and operational reporting. However, SAP HANA has been used to provide a foundation analytics capability for the delivery of business reporting.</li> <li>In the 2018 to 2022 period, MG will focus on improvements to Business reporting with analytics tools being increasingly used to process network data.</li> </ul>
<b>Enterprise Middleware Services</b> Enables communications between disparate enterprise applications.	<ul style="list-style-type: none"> <li>MG has an effective integration capability in place with a heavy dependence on WebMethods for system integration.</li> <li>MG will need to refresh its integration platform in the 2018 to 2022 period. The project will consider alternative products and solutions not the restrictive licencing approaches of current software on a virtualised platform</li> </ul>
<b>Enterprise Data Services</b> Databases, storage, backup and archive systems.	<ul style="list-style-type: none"> <li>MG's storage capabilities were refreshed in 2014. However, backups are still dependence on an aging disk and tape infrastructure. Long term retention is achieved by tapes held offsite by a third party.</li> <li>In the 2018 to 2022 period, MG will implement new mechanisms for data retention and appliance-based backups to reduce costs and simplify data recovery.</li> </ul>
<b>Enterprise Platform Services</b> Server hardware, operating system and standard software.	<ul style="list-style-type: none"> <li>Current SPARC (Enterprise) and Intel (General Purpose) platforms were refreshed in 2014.</li> <li>In the 2018 to 2022 period, MG will migrate more workloads to General Purpose and consider Cloud services for some workloads</li> </ul>
<b>Enterprise Network Services</b> Management of data, voice and video communications.	<ul style="list-style-type: none"> <li>MG has an ample Wide Area and Local Area Network in place with extensive use of Fibre. The telephony system is based on a unified voice and data network using Cisco Call Manager</li> <li>Further projects will be carried out in 2018 to 2022 to integrate voice, data, video, desk phone, mobile phones and desk top computers into a unified communications platform</li> </ul>
<b>Enterprise Facility Services</b> Management of data centres and computer rooms which house IT infrastructure.	<ul style="list-style-type: none"> <li>MG migrated to new data centres in the 2013 to 2017 period and rationalised the number of data centres.</li> <li>MG can now focus on the efficiency and effectiveness of data centre management.</li> </ul>
<b>Enterprise Monitoring and Management Services</b> Supervision of the entire IT environment to ensure key business and regulatory service and availability levels are met	<ul style="list-style-type: none"> <li>MG has an aging and increasingly expensive Enterprise Systems Management (ESM) in place based on traditional licensed products.</li> <li>In the 2018 to 2022 period MG will implement a contemporary and cost effective ESM based on supported open source product. MG will be able to provide enhanced monitoring and automation without the burden of high license costs.</li> </ul>
<b>Enterprise Security Services</b> Encompasses security standards, policy and procedure, prevention and detection of security threats, reaction to security threats, security administration and identity and asset management.	<ul style="list-style-type: none"> <li>MG now has security management capabilities in place</li> <li>However, MG will place a major priority in 2018 to 2022 on rapidly detecting signs of a potential security breach, gathering information from a range of sources to assess the situation, identifying potential responses and then mobilising resources to remove the threat.</li> </ul>

### **3.4. Requirement for Continued Investment**

MG's investment in IT in recent years has delivered a robust integrated suite of systems. Continued investment is now required to ensure that versions of software and hardware are sufficiently up-to-date for continuity of maintenance and support from suppliers.

Failure to maintain systems at industry standard would present business risks to MG and potentially degrade the services that MG provides to customers. For example, systems must be adequately maintained to ensure that MG can:

- Continue to comply with regulatory and audit requirements (avoiding risk of penalties and fines);
- Avoid system failures and unplanned outages that may impact business processes and disrupt the provision of services to customers
- Mitigate information security risks to protect MG and its customers; and
- Minimise risk of data processing errors causing erroneous data being released to the market with consequential impact on retailers and end customers.

MG's continued investment in the refresh of its IT assets therefore has a direct benefit to customers.

## **4. Business and Technology Impacts**

### **4.1. Introduction**

In developing its IT Strategy and IT Capital Plan for 2018 to 2022, MG has taken into account the external factors that may impact the industry in the five-year period.

This section presents the following key external factors that influence MG's IT Capital Plan:

- Customers will increasingly focus on energy efficiency - putting increased pressure on gas network providers to provide both high-quality and cost-effective services;
- Customers increasingly expect information to be available wherever and whenever required using digital communication channels; and
- Increasing maturity of cloud, analytics and mobility technologies present opportunities for improving levels of efficiency and effectiveness.

### **4.2. Customer Expectations – Digital Communications**

The widespread use of digital communications and social media is changing the expectations of MG's customers. Mobile technology and digital communications are now pervasive. Customers want communication with us to be simple and effortless and expect information and services to be available wherever and whenever required.

Stakeholder focus groups were held during July and August 2016 to provide customers with an opportunity to contribute to MG by raising suggestions for future improvements, providing feedback on MG services and generally expressing their expectations.

Customers expressed strong support during these sessions for:

- Increasing use of digital communications (e.g. SMS) for urgent matters related to their supply (e.g. unplanned and planned outages and disconnections); and
- Based on the increasing volume of customer transfers improvements in customer switching processes.

This feedback has been considered and taken into account in the proposed Customer Experience Improvements program.

MG's IT Capital Program will address these requirements by providing an improved customer web-based portal providing the ability to raise service requests on line and to monitor the status of these requests.

More details on MG's strategy and projects in this area are presented as part of MG's IT Strategy in Section 5 MG's Business and IT Strategy.

### **4.3. Developments in Cloud, Analytics and Mobility Technologies**

Table 6 presents an overview of current IT trends in cloud, analytics and mobility technology. The increasing maturity of these technologies and services provides opportunities for MG to maintain and improve the quality and efficiency of its services.



**Table 6: IT Trends in Cloud, Analytics and Mobility**

IT Trend	Overview
<b>Cloud and 'as a service' products</b>	<p>The emergence and increasing maturity of cloud-based services create a number of opportunities for utilities. Cloud services can be used to rapidly and flexibly test, pilot and trial new capabilities with limited up-front investment. System changes and refinements may be implemented faster and at a reduced cost. The latest technology and innovations can be accessed as and when needed.</p> <p>While cloud computing is attractive and presents opportunities for increased efficiency, its adoption is complex. A transition to cloud requires careful consideration of the maturity of supplier offerings as well as areas such as data controls and ownership, back-up, retention and disposal, availability and reliability, disaster recovery, legal compliance, assurance, scalability and security implications. Failure to assess all of these aspects may expose an organisation to unnecessary operational and reputational risk.</p> <p>MG already utilises cloud computing services in areas where service offerings are mature. These areas include: payroll, treasury, email, regulatory compliance monitoring, performance management, document management and workflow, recruitment, training and project delivery management.</p> <p>In the 2018 to 2022 period, MG will closely monitor the development of cloud services and will assess cloud as an option for each project (see Section 5 MG's Business and IT Strategy).</p>
<b>Analytics</b>	<p>Predictive analytics has become generally used to describe any approach to data mining with four attributes: an emphasis on prediction, rapid time to insight, an emphasis on the business relevance of the resulting insights and an increasing emphasis on ease of use, thus making the tools accessible to business users. Common applications include understanding the future failure patterns of equipment, or the likely load from certain customer groups or regions. By understanding likely future circumstances, organisations are better able to allocate investments to maximize returns.</p> <p>More details on MG's strategy and projects in this area are presented as part of MG's IT Strategy in section 5 MG's Business and IT Strategy.</p>
<b>Mobility</b>	<p>The increasing availability of low-cost smart phones, tablets and notebooks for use by employees and subcontractors creates a series of opportunities for energy network operators to improve the efficiency and effectiveness of business processes. Mobility solutions can be used to:</p> <ul style="list-style-type: none"> <li>• Automate field-based processes and capture accurate and detailed data on network assets;</li> <li>• Support job assignment for reactive and planned tasks;</li> <li>• Transfer field and asset information between field works and back-office systems.</li> </ul> <p>MG customers will directly benefit from increased use of Mobility solutions by MG service providers. Service orders can be addressed in a timelier and efficient manner as a result of field technicians having direct mobile access to the latest information relating to each call.</p> <p>In the 2018 to 2022 period, MG will implement systems to implement scheduling and planning capabilities for Fault Despatch and Works Planning in MG's IT systems for use by service providers.</p> <p>More details on MG's strategy and projects in this area are presented as part of MG's IT Strategy in section 5 MG's Business and IT Strategy.</p>

MG will continue to assess developments in cloud, analytics and mobile technologies. Each of the projects in MG's IT Capital Program will assess the potential use of cloud-based solutions where relevant.

## 5. MG's Business and IT Strategy - Overview

### 5.1. Introduction

MG's IT strategy is tightly aligned with the overall strategy for the business. The IT strategy and the resulting capital investment will support MG to:

- Address changing customer needs and expectations;
- Comply with regulatory obligations;
- Maintain the quality, reliability and the security of the gas distribution network; and
- Maintain safety.

### 5.2. MG's Business Objectives

The key business objectives that will drive MG's IT strategy and direction over the next five years are as follows:

- Maintain network safety for our customers, the public and our employees and contractors;
- Meet our customers' expectations while providing an effortless customer experience;
- Incur expenditure efficiently to meet our customers' service expectations;
- Grow our customer base to deliver lower prices under a revenue cap.
- Comply with our technical and other regulatory obligations;

### 5.3. MG's IT Strategy

MG's IT Strategy to meet the MG Business Objectives can be summarised into six key strategic themes as follows:

- **Maintain systems to industry standard to avoid increased risk of disruption to customers and to retain levels of efficiency.** Having completed a major overhaul of IT systems in recent years, MG will continue to invest to ensure that these systems are refreshed to maintain the industry standard required to meet the needs of customers;
- **Improve asset planning and management through improved data quality and reporting.** MG will enhance its systems to increase data synchronisation and quality. Improved data quality will lead to better planning and management of assets;
- **Ensure the ongoing integrity and safety of the distribution network.** MG will implement IT solutions and security programs so that it maintains the integrity of services provided by its gas distribution network and meets the levels of demand required by customers;
- **Deliver new capability to meet changing customer needs and growing expectations.** MG will implement IT solutions that address the needs and expectations of customers for web-based interaction and transactions;
- **Ensure readiness to achieve regulatory requirements.** MG will invest in its IT systems to ensure that it is ready to meet regulatory change requirements; and
- **Utilise field mobility to automate field work processes with service providers** – MG will combine increasingly mature and low-cost mobility technologies with the ERP system to reduce manual intervention in processes for managing the work carried out by field work forces.

Table 7 shows how these IT strategic themes align with MG's business objectives.

Table 7: MG's IT Strategy alignment with business objectives

MG's Business Objectives  IT Strategic Themes	Maintain network safety for our customers, the public and our employees and contractors	Meet our customers' expectations while providing an effortless consumer experience	Incur expenditure efficiently to meet our customers' service expectations	Grow our customer base to deliver lower prices under a revenue cap	Comply with our technical and other regulatory requirements
Maintain systems to industry standard	✓	✓	✓		✓
Improve asset planning and management			✓	✓	
Ensure the ongoing integrity and safety of the distribution network	✓				✓
Meet customers' changing needs and expectations		✓	✓		
Ensure readiness to meet regulatory requirements					✓
Utilise field mobility to automate field work processes		✓	✓	✓	

The following sections present each of the IT strategic themes in turn.

#### 5.4. Maintaining MG's IT Capability – Recurrent Expenditure

As outlined in previous sections, MG has made a significant investment over the last five years in new IT systems. MG must now maintain these systems to reduce risk of business disruption and retain levels of efficiency.

IT systems lifecycle refresh is a recurring cost which covers:

- Licence fees and implementation costs to maintain application software at a version which is in line with MG's IT Asset Management Policy (see Appendix B – References); and
- Purchase and implementation costs to refresh hardware, firmware and systems software (such as operating systems, communications and database software) to versions that are in line with MG's IT asset management policy.

Failure to maintain IT systems properly would increase the risks of disruption to business operations and failure to comply with regulatory obligations.

Towards the end of the 2018 to 2022 Access Arrangement period, MG will commence a major upgrade to a new version of the SAP Enterprise Resource Planning, Customer Management and Billing systems. This major upgrade will require a significant investment which will commence in the forthcoming Access Arrangement period and then continue in the following Access Arrangement period. The vendor has stated that it will withdraw support for the current version of SAP in 2025. Commencing the project in 2022 is prudent given the complexity of the upgrade. By that time, the system will have been in operation for almost ten years.

Recurring expenditure on maintaining IT systems at industry standard makes up over 75% of the planned IT capital expenditure for the period (excluding the provision for regulatory change). MG carefully considers lifecycle refresh requirements, risks and options as part of its Project Delivery Framework.

Key projects for 2018 to 2022 include lifecycle refreshes of:

- SAP ERP/ISU and commencement of migration to SAP HANA S/4;
- Geographical Information Systems;
- SAP HANA information management systems;
- SCADA; and
- Shared storage, Intel servers, data network and data centre hardware and operating level software.

In addition, MG will operate an ongoing program of minor application refreshes to maintain systems at industry standard. This program is carried out under a single capital project entitled Small Applications Lifecycle Refresh.

The capex required to maintain our systems at industry standard is forecast to be \$36.6 million over the 2018 to 2022 Access Arrangement period.

## **5.5. Improve asset planning and management through improved data quality and reporting**

In the first year of the current Access Arrangement period, MG replaced its core SAP ERP asset management system. In the current period MG also upgraded its Geographical Information System and implemented an 'Information Hub' to provide a foundation analytics capability. While these systems provide a sound IT foundation, some key weaknesses have been identified in information management and data quality.

In the 2018 to 2022 Access Arrangement period, MG will establish an ongoing program of IT enhancements to address outstanding and unresolved data asset issues in IT systems. The program will:

- Improve the capability of systems to link and categorise data so that staff can more easily find and update records – which will then decrease the creation of duplicate and inconsistent data elements in systems;
- Enhance and maintain core asset management systems so that they can capture additional data about equipment and devices in the gas distribution network that are currently not adequately recorded and tracked;
- Improve the data validation capabilities of systems to maintain the accuracy of data; and
- Improve synchronisation of data held in different systems.

As a result of this program, MG will:

- Reduce the time taken to obtain accurate asset data from systems and to resolve data inconsistencies;
- Avoid the ongoing degradation of quality of the data in systems due to the creation of duplicate, inconsistent and inaccurate data records;
- Increase accuracy and quality of work orders; and
- Improve quality in customer interaction and services (in areas such as new connections and outages).

MG will also:

- Upgrade content management systems capability so that MG is able to manage increasing level of unstructured data including emails, documents (Microsoft Word), spreadsheets (Microsoft Excel), presentations and diagrams (Microsoft PowerPoint), pictures, photos, design documents, customer interaction records and digital signatures; and
- Update the data visualisation product (Tableau) that is used for analytical reporting.

If MG did not proceed with this program, the quality of data in the systems and the content management and reporting capability would not be in line with accepted industry practice and would threaten MG's ongoing ability to maintain the integrity of services.

The cost of this program is forecast to be \$4.1 million over the 2018 to 2022 Access Arrangement period.

## **5.6. Ensure the ongoing integrity and safety of distribution network**

### **5.6.1. Gas transmission pipelines**

Managing the integrity and safety of high-pressure gas transmission pipelines requires effective storage and management of key data including location data, detailed asset detail, asset maintenance history and overlay aerial photography. However, currently these pipeline assets are treated in our GIS in the same way as all other distribution assets. The additional data (e.g. GPS locations, asset maintenance history), critical to maintaining the integrity and safety of this class of asset is not currently available and/or maintained within the GIS.

In the 2018 to 2022 Access Arrangement period, we will establish a project to add functionality to the GIS system to allow data (including new data types and sources) for this asset class to be sourced, stored, analysed and maintained so that it is readily available for maintenance, emergency and augmentation projects on our network.

### **5.6.2. Security**

Energy utilities are increasingly deploying technologies to remotely monitor and control the various elements of the distribution network. These new capabilities bring significant benefits but also create unwelcome new security challenges. The equipment connected to utilities' information technology systems is no longer contained only within secure buildings but is deployed throughout the distribution network. This extension of IT outside the boundaries of secure data centres and buildings increases the risk of unauthorised access to IT systems.

The evolving security threat landscape including geopolitics, competition and innovation are making the utilities industry a prime target for nation-states, criminals and activists<sup>2</sup>. According to the Symantec 2014 Internet Security Threat Report, targeted attack campaigns have increased by 91%, and security breaches have increased by 62% in 2013<sup>3</sup>. The upward trending of targeted attack and security breaches presents a range of significant risks to MG's operational and corporate environments, which need managing within acceptable risk parameters.

---

<sup>2</sup> <https://ics-cert.us-cert.gov/content/cyber-threat-source-descriptions>

<sup>3</sup> [http://www.symantec.com/security\\_response/publications/threatreport.jsp](http://www.symantec.com/security_response/publications/threatreport.jsp)

Information security related risks now feature in the top 10 risks in MG's corporate risk register. The Executive Leadership Team and the Board has recognised that information security risks, if not managed properly, may affect the sustainability and reliability of the business. Security must now be considered as a key part of every IT project. MG must be able to rapidly detect signs of a potential security breach, gather information from a range of sources to assess the situation, identify potential responses and then mobilise resources to remove the threat.

A capital program of work 'IT Security Program' involving a number of projects and activities will be delivered in the 2018 to 2022 period. This program, and MG's projects in general, will:

- Enable the progressive deployment and utilisation of intelligent electronic devices whilst maintaining overall network security;
- Ensure that physical security controls applied are appropriate, based on risk and criticality, and that the risk of IT network and system compromise through physical access to field device and the IT environment is mitigated to acceptable levels;
- Enable that the lifecycles and workflows are automated and systemised to manage operational cyber security activities in a consistent and time effective manner, thereby reducing the threat to IT environments from IT software security vulnerabilities and bugs; and
- Ensure that technical cyber security controls remain current and relevant with regard to mitigating network-based attacks IT environments.

The purpose of the IT Security Program is to manage and maintain the operational risks associated with the increased level and sophistication of targeted cyber security threats by maintaining the baseline security environment across the logical, physical and process environments. The program will protect customers from major outages, theft of personal data and other adverse outcomes from potential security breaches.

### **5.6.3. Field monitoring devices and digital meters**

The IT Capital Program for 2018 to 2022 includes the replacement of the central systems that manage the field monitoring devices. This will allow the new generation of field-based devices to be installed and will ensure that network monitoring capability is not disrupted.

The cost of the projects to ensure the ongoing integrity and safety of distribution network, including the security program, network monitoring and remote meter reading, to ensure ongoing performance, resilience and safety in the distribution network is forecast at \$5.5 million over the 2018 to 2022 period.

## **5.7. Meet customers' changing needs and expectations**

As explained in Section 4.2, customer expectations are changing. Customers (including end consumers, retailers, agents and contractors – such as gas fitters) expect to be able to both place and track orders on line through web-based services. In addition, customers expect that key industry processes (for example, changing from one retailer to another) will be efficient and responsive.

MG's IT Capital Program for 2018 to 2022 includes projects to address the expectations of customers including those expectations identified through MG's customer consultation process.

Key customer improvements include:

- **Customer Portal** - Provision of a customer portal providing customers with the ability to register for outage notifications and request services from MG; and
- **Customer Transfers** - to improve the experience of small customers when transferring to new gas retailers and make allowance for switching on estimated reads.

In addition, MG will establish a small IT project to support a limited trial of digital meters. This project will utilise systems already deployed by United Energy for its smart meter deployment.

The costs of these projects are forecast to be \$2.2 million over the 2018 to 2022 period.



## 5.8. Utilise field mobility to automate field work processes with service providers

MG's operations are heavily outsourced. Field work is contracted out to external service providers. These service providers carry out a range of field work in response to:

- Work orders that MG generates as part of capital works programs and maintenance plans;
- Service orders originating from retailers (for example, work related to new connections, abolishments, meter replacements and special meter reads); and
- Trouble orders from retailers and end consumers.

This extensive use of outsourced field service providers has proved to be highly efficient and cost effective. However, the increasing availability of low-cost smart phones, tablets and notebooks, together with workforce management software, creates opportunities for energy network operators to improve the efficiency and effectiveness of their field-based business processes.

In the 2018 to 2022 period, MG will establish a project to implement work scheduling and despatch capability to improve the level of integration with service providers' systems. As a result, MG will be better able to:

- Monitor compliance with guaranteed service levels;
- Monitor the performance of its external service providers against their contractual service levels; and
- Provide field crews with relevant and more accurate asset, customer and location information including previous incidents, hazards and other general details.

The cost of this mobility project is forecast to be \$4.6 million over the 2018 to 2022 Access Arrangement period.

## 5.9. Cloud Computing

As outlined in Section 4, while cloud computing is attractive and presents opportunities for increased efficiency, the adoption of cloud computing is complex. It requires careful consideration of data controls and ownership, back-up, retention and disposal, availability and reliability, disaster recovery, legal compliance, assurance, scalability, security and encryption, auditing and monitoring, and tax implications.

Many of the core systems required for the operation of a utility require customisation of vendor products to meet business requirements. This reduces the ability of Cloud service providers to provide standard generic services and thus leverage economies of scale.

Utilities require complex systems integration between SCADA, asset management, billing, works management and GIS. Detailed assessment is required prior to implementing solutions that require significant customisation and integration into a cloud environment. Consideration must be given to the maturity of suppliers' offerings and capabilities and their track record of success with similar systems for similar customers.

MG will adopt a staged approach to cloud computing by initially adopting cloud for applications that are common across industries and where service providers have mature offerings with a sound track record.

Cloud computing has been assessed as an option for all IT capital projects. As a general principle, MG will initially adopt cloud computing for 'commodity' services (such as treasury and payroll applications) which are common across industries and for which there are mature supplier offerings. This targeted adoption will allow MG to gain a greater understanding of the impact of cloud computing on business processes and also to identify business benefits for its deployment.

## 5.10. Sharing with United Energy

MG has a shared management team with its sister business United Energy and shares office facilities. As a result, the companies also have an opportunity to share some IT systems.

MG and UE share information systems in a way that delivers synergies (mostly in reduced operating costs) but does not compromise the ability of the two companies to be separated in the future. The arrangements for sharing are well defined with clear principles and rules.

In general, the two companies operate separate IT application software so that the two companies' data are kept separate. However, the following categories of IT infrastructure are shared across the two organisations:

- Local Area Networks (LANs);
- Wide Area Networks (WANs);
- Server hardware;
- Storage;
- Infrastructure services (active directory, management and monitoring, backup/restore and security)
- Infrastructure applications (for example, email, intranet platform, internet platform and document management); and
- Data centres.

Any opportunities for sharing of IT capital costs between MG and UE are assessed on a case-by-case basis. Where benefits can be obtained by each organisation as a result of a joint project or sharing of infrastructure, an equitable cost allocation approach is defined.

The following capital projects provide an opportunity to share costs and / or leverage expertise. However, only the MG costs are presented in this document, further detail for each project is available in Attachment 1: Capital Program Project Justifications:

- Mobility Integration – improved integration with service providers leveraging a works planning and scheduling solution being implemented for UE;
- SCADA Refresh – refresh of the SCADA platform;
- EDMS Refresh – Electronic Document Management System shared with UE;
- Application Enhancement Factory – addresses a range of smaller application change requests under a fixed contract arrangement;
- Client Device Lifecycle Refresh – refresh of desktop personal computers, tablets and mobile devices;
- IT Infrastructure Refresh – lifecycle refresh of MG and UE-owned hardware, servers, communications, telephony and data centre equipment; and
- Security Program (IT) – a program of smaller projects and activities to address IT security in the face of increasing threats.



## 6. IT Capital Program

### 6.1. Overview

This section presents an overview of MG's IT Capital program for the 2018 to 2022 period, 26 IT projects have been identified for the program.

The total Non-Network IT capital expenditure sought by MG's GAAR submission to the AER is **\$48.8M**.

All IT projects were identified, categorised, justified, and project expenditure forecast, using the approach described in Section 6.4.

### 6.2. Expenditure Forecasting and Supporting Documentation

This section presents a high-level summary of each project in the IT Capital Program based on the categories of Non-Network Information Communications and Technology (ICT) expenditure defined by the AER:

- Client devices expenditure;
- Recurrent expenditure; and
- Non-recurrent expenditure.

Following a listing of all the projects in MG's IT Capital Program, the section presents a timeline or 'roadmap' showing the sequencing of projects over the five-year period.

No 'in-flight' projects have been included in the cost estimates for 2018 to 2022. All projects in the 2013 to 2017 program are currently planned to be complete by the end of December 2017.

### 6.3. AER Expenditure Categories

The AER's expenditure categories are as follows:

- **Client Devices Expenditure** – expenditure related to a hardware device that accesses services made available by a server. Client Devices Expenditure includes expenditure involved in providing desktop computers, laptops, tablets and thin client interfaces and hand held end user computing devices including smart phones, tablets and laptops;
- **Recurrent Expenditure** – expenditure that returns time after time with respect to the particular category of expenditure. Examples of recurrent IT & Communications expenditure may include cyclic replacement of assets and related costs (hardware, software, training etc.). It excludes any expenditure categorised as Client Device Expenditure; and
- **Non-Recurrent Expenditure** – all expenditure that is not Recurrent Expenditure excluding any expenditure categorised as Client Device Expenditure.

Table 8 presents an overview of the projects in MG's IT Capital Program based on the above expenditure categories.

Table 8: Categorisation of IT Capital Projects

Expenditure Category	Summary of Projects	Cost \$M
<b>Client Device Expenditure</b>	A single project entitled: "IT21 – Infrastructure Refresh - Client Device Lifecycle Refresh" for refreshing MG's client device fleet over the 2018 -2022 period	\$1.1
<b>Recurrent Expenditure</b>	18 projects relating to maintaining the currency and/or capability of MG IT's infrastructure, applications and services	\$35.5
<b>Non-Recurrent Expenditure</b>	7 projects that deliver new and/or enhanced capability to meet customer / business needs.  No regulatory requirements or rule changes have been identified that would require a specific capital project to address	\$12.3

## 6.4. Expenditure Forecasting and Supporting Documentation

Capital IT projects for the 2018 to 2023 GAAR period are identified, categorised, justified and project expenditure forecast as described below.

### 6.4.1. Bottom-up forecast

**Step 1 (April 2016):** - An initial list of projects was identified by IT based on day-to-day interaction with the business, available strategy documents and knowledge of the current MG IT environment and strategy. "Ball-park" estimates were made by IT for each project.

Estimates were, as far as possible, based on experience of previous projects:

- Recurrent projects were generally estimated based on actual costs of previous similar projects (top-down); and
- Non-Recurrent project estimates were based on individual assessment of labour requirements with a standard labour cost (\$1,000 per person day) plus ball-park hardware / software costs (bottom-up).

**Step 2 (May 2016):** - The initial project list was presented, reviewed, revised and confirmed through regular "Business, IT and Customer Technology" forums and detailed workshops held between relevant IT and business representatives. Some projects were combined to reduce costs, whilst others were determined to be unviable or not required.

Estimates were reviewed and revised, taking into account further clarification of projects / requirements. Estimates were validated against past actuals for similar projects as well as vendor indicative quotes, pricelists and/or market experience. Nineteen Recurrent projects were confirmed at an estimated cost of \$36.6M (including Client Device Lifecycle Refresh) and seven Non-recurrent projects were confirmed for more detailed costing.

**Step 3 (May - June 2016):** - Each non-recurrent project was re-estimated, bottom-up, evaluating resources (number and type) that would be required throughout each phase of the project based on the project complexity and taking into account all known requirements. Hardware and software requirements were also re-evaluated and estimated.

#### 6.4.2. Top-down forecast:

In parallel to the bottom-up forecasting, the entire program of projects was subject to a top-down review by senior IT management on a number of occasions over the period April to June 2016. These top-down reviews took the form of a walkthrough project by project to provide a top-down “sanity check” of the forecasts. This top-down approach considered the following and recommended changes to, or reviews of, the bottom-up estimates:

- Comparison with the actual costs of similar recently completed projects (particularly for recurrent projects);
- Comparison with previous capital expenditure programs (including the AER’s final determination of United Energy’s EDPR submission for 2016 – 2020);
- Dependencies, constraints, conflicts and benefits associated with combining and/or separating projects;
- Experience of past projects including cost over-runs, duration and resource requirements; and
- Impact of business transformation initiatives being explored at the time of writing.

#### 6.4.3. Consolidated forecast:

The bottom-up forecasts generated by entering project details into the Financial Cost Model (refer Appendix C – Financial Cost Model) were reviewed and modified in the model taking into account the top-down forecast.

The Financial Cost Model described in Appendix C is based on a model originally developed for the 2010 EDPR submission and subsequently used for the Multinet Gas GAAR 2012 and UE EDPR 2015 submissions. Modifications and improvements have been made to the model to reflect current MG estimating processes and support the 2016 GAAR submission.

The IT capital program is modelled across the 2018 to 2022 period providing an analysis of the capital costs and a roadmap of the project program. The output from the model resulted in the capital spend and program presented in this document and has been presented to and approved by the IT Executive Forum.

Each capital project identified as part of MG IT’s formal planning and IT strategy processes has been assessed for viability and appropriateness based on MG IT’s Business and IT Strategy as described in Section 5 – MG’s Business and IT Strategy Overview.

Supporting documentation provides further details for each project. For every capital project identified, an expenditure justification document has been created. The form of the justification document for an individual project will depend on the size and nature of each project as follows:

- Each project that is forecast to be less than \$2M in capital expenditure and/or a project for which justification for the expenditure is considered straightforward (generally recurrent) is supported by a ‘Project Overview’ – a 1 to 2 page document that provides a high-level description, justification and estimate; and
- Each project that is non-recurrent and forecast to be in excess of \$2M is supported by a ‘Project Justification’ – a 5 to 10 page document that provides a more detailed justification.

Project Overviews and Project Justifications are presented as Attachment 1: IT Capital Program Project Justifications. The Project Overviews and Project Justifications for each project:

- Provide a description of the project;
- Align each project to MG IT’s Business and IT Strategies and the National Gas Rules New capital expenditure criteria (clause 79);
- Describe the impact of not proceeding with the project (the ‘Status Quo’ option) and the viable alternative solutions that were considered (e.g. cloud vs in-house);
- Present, particularly for non-recurrent projects, the project business benefit; and

- Present the proposed solution including the rationale for recommending this solution, approximate timing for delivery of the project and the forecast expenditure that will be incurred implementing the solution.

Each of these documents will be revisited and a Business Case developed prior to the commencement of each project as part of MG's IT Project delivery methodology (see Project Development Framework – Appendix B - References).

## 6.5. Client Device Expenditure

MG IT maintains a rolling program of Client Device refresh / replacement. This is described as a single project, "IT21 – Infrastructure refresh - Client Device Lifecycle", that is on-going over the duration of the period 2018 to 2022 (refer to the Client Device Lifecycle Project Overview in Attachment 1).

Based on MG's business model which supports a high level of outsourcing and low internal staff numbers the number of Client Devices (~1084) is relatively small compared with our peer organisations and is forecast to remain so. UE and MG's capital cost sharing policy requires this cost to be shared across UE and MG on a 60/40 basis as described in UE's 2016 EDPR Submission and determined by the AER in the final determination in May 2016.

The total forecast IT Capital cost of Client Device Expenditure for MG for the period 2018 to 2022 is **\$1.1M**.

MG's approach to Client Device Lifecycle refresh takes into account the following and occurs on an as-needs basis across the 2018 to 2022 period:

- Device replacement due to faults and failures;
- Replacement of devices reaching "End of Life" and requiring replacement in accordance with MG's 'IT Asset Management Policy v2.0' (see Appendix B – References); and
- New devices for starters (contractors and/or permanent staff) that increase headcount and whose requirements cannot be met from the existing device fleet.

## 6.6. Recurrent Expenditure Projects

Table 9 summarises the projects identified as being required to maintain the currency and/or capability of MG's IT infrastructure, applications and services over the period 2018 to 2022.

The total forecast IT Capital cost of these projects is **\$35.5M**.

Table 9: Recurrent expenditure projects

Project	Project Description	Forecast Expenditure \$M
IT06 - Enterprise Content Management	Refresh of current technologies and processes for management of IP and knowledge including improved interfacing with SAP and business process flow repository	\$1.6
IT07 - Network Monitoring Capability	Provision of IT systems to support replacement of network monitoring devices that need to be retired and improved capability associated with new technology devices	\$0.1
IT12 - IT Infrastructure Refresh	General refresh of servers, storage, network and Data centre related technologies	\$5.0

<b>IT13 - Application Enhancement Factory</b>	A facility to address necessary minor changes to MG's core business applications. Includes mandatory changes for example in Australian Energy Market Operator (AEMO) procedures and other necessary business changes. Shared with, and aligned to, UE's EDPR determination	\$3.5
<b>IT14 - IT Security Program</b>	Program of Security initiatives and deployment of Security tools to address increasing security threats and maintain risk levels. Shared with, and aligned to, UE's EDPR determination.	\$3.3
<b>IT15 - webMethods Refresh</b>	Life Cycle refresh of the webMethods Enterprise Application Integration (EAI) platform.	\$3.4
<b>IT16 - SCADA Refresh</b>	Life cycle refresh of the SCADA platform to maintain Distribution Network Monitoring and Control capability.	\$2.9
<b>IT17 - SAP ERP/ISU Refresh</b>	Lifecycle refresh of MG's core SAP ISU systems.	\$5.3
<b>IT18 - Small Applications Refresh</b>	On-going program to maintain the currency of 17 smaller applications. These include a wide variety of in-house developed and Commercial Off The Shelf (COTS) products	\$2.6
<b>IT19 - GIS Refresh</b>	Refresh of GE Smallworld and associated integration software in 2020. Includes database refresh.	\$1.9
<b>IT20 - EDMS Refresh</b>	Electronic Document Management System refresh. The system is being refreshed in 2015, but will require a major refresh / replacement by 2020. EDMS manages engineering drawings and documents critical to network management.	\$0.9
<b>IT22 - Infrastructure Refresh - Data Protection</b>	Refresh current technology (Hardware & Software) platform for back-ups.	\$1.0
<b>IT23 - SAP CRM Refresh</b>	Refresh / replacement of SAP Customer Relationship Management system.	\$1.3
<b>IT24 - Infrastructure Refresh - Reporting Platform</b>	Refresh of MG reporting platform, Infosphere, Cognos and Oracle	\$0.7
<b>IT29 - Legacy Application Replacement Program</b>	Refresh of two business critical legacy applications that are currently unsupported and have a significant risk of failure - Incidents Database and CAPMAIN.	\$0.4
<b>IT30 - Tableau Refresh</b>	Refresh of the analytical reporting platform using Tableau software. Hardware refresh in 2018, software in 2019 and 2021	\$0.5
<b>IT33 - UAFG - Reconciliation Refresh</b>	Refresh of the mix of technologies that report on UAFG	\$0.6
<b>IT35 - Time Expired Meter Replacement</b>	Replace the old MS access Database system used to manage and upload meter details for replaced meters of which there may be up to 70,000 a year.	\$0.6
<b>TOTALS</b>		<b>\$35.5</b>

The above projects have been determined as being Recurrent in that they are necessary for MG to maintain current capability, they meet MG "IT's Asset Management Policy v2.0" and mitigate business risks associated with operating critical business functions on systems that are either unsupported or for which only limited support is available.

## 6.7. Non-Recurrent Projects

In addition to the projects identified in previous sections above, a number of projects see Table 10: Non-Recurrent Projects have been identified which provide improved and/or new functionality that supports the business in delivering a range of benefits.

The benefits delivered by these projects, which are described in the Project Justification documents (see Attachment 1: IT Capital Program Project Justification) include, but are not necessarily limited to the following:

- Customer Benefits:
  - Improved reliability of supply;
  - Better customer service through the ability to deliver improved outage information;
  - Better identification of customers impacted by network faults; and
  - More accurate determination and timely payment of guaranteed service levels.
- Asset Management efficiencies:
  - Extend asset life through improved asset management and thereby defer network capital expenditure; and
  - Constrain increasing operational costs.
- Distribution Network efficiencies:
  - Faster fault resolution through better analysis and detection of fault cause and location; and
  - Reduction in energy theft through analytics.
- Safety:
  - Reduced equipment failures – through improved asset condition monitoring; and
  - Improved safety as a result of proactive alerts from digital meters installed at customer premises.

The total forecast IT Capital cost of these projects is **\$12.3M**.

**Table 10: Non-Recurrent Projects**

Project	Project Description	Forecast Expenditure \$M
IT01 - Asset Data Quality Program	E2E review, training and business process documentation (SAP). Improve data quality, improve service inside and outside business. Content and knowledge management.	\$0.8
IT03 - GIS Gas Transmission Pipelines	Provides ability to capture additional GIS Asset data for Licenced transmission pipelines to maintain their integrity and safety	\$2.1
IT08 - Mobility Integration	Provides improved end to end integration and consistency across multiple service providers by implementing an MG works scheduling and mobility capability.	\$4.6
IT09 - Digital Meters IT Support	Roll out of remotely read meters to pilot digital meters for hard to access sites. Provides ability to read meters remotely, systems will support the business project and new processes.	\$0.6
IT38 - Customer Experience Improvements Program	A programme of customer focussed initiatives including provision of a Customer portal and improvements to the small customer experience when transferring to new gas Retailers.	\$1.6

Project	Project Description	Forecast Expenditure \$M
IT39 - Enterprise Project and Portfolio Management	Refresh of current project management processes and support tools to provide an enterprise wide capability to improve capital and operational project management	\$1.4
IT40 - Business Intelligence	Initiative to improve quality and accuracy of reporting and automation of RIN Reporting	\$1.2
<b>TOTAL</b>		<b>12.3M</b>

## 6.8. Roadmap

The roadmap contained in this section has been produced to optimise the realisation of benefits while taking into account IT and business unit priorities and ability to deliver.

All projects have been prioritised taking into account, as far as possible, criteria including:

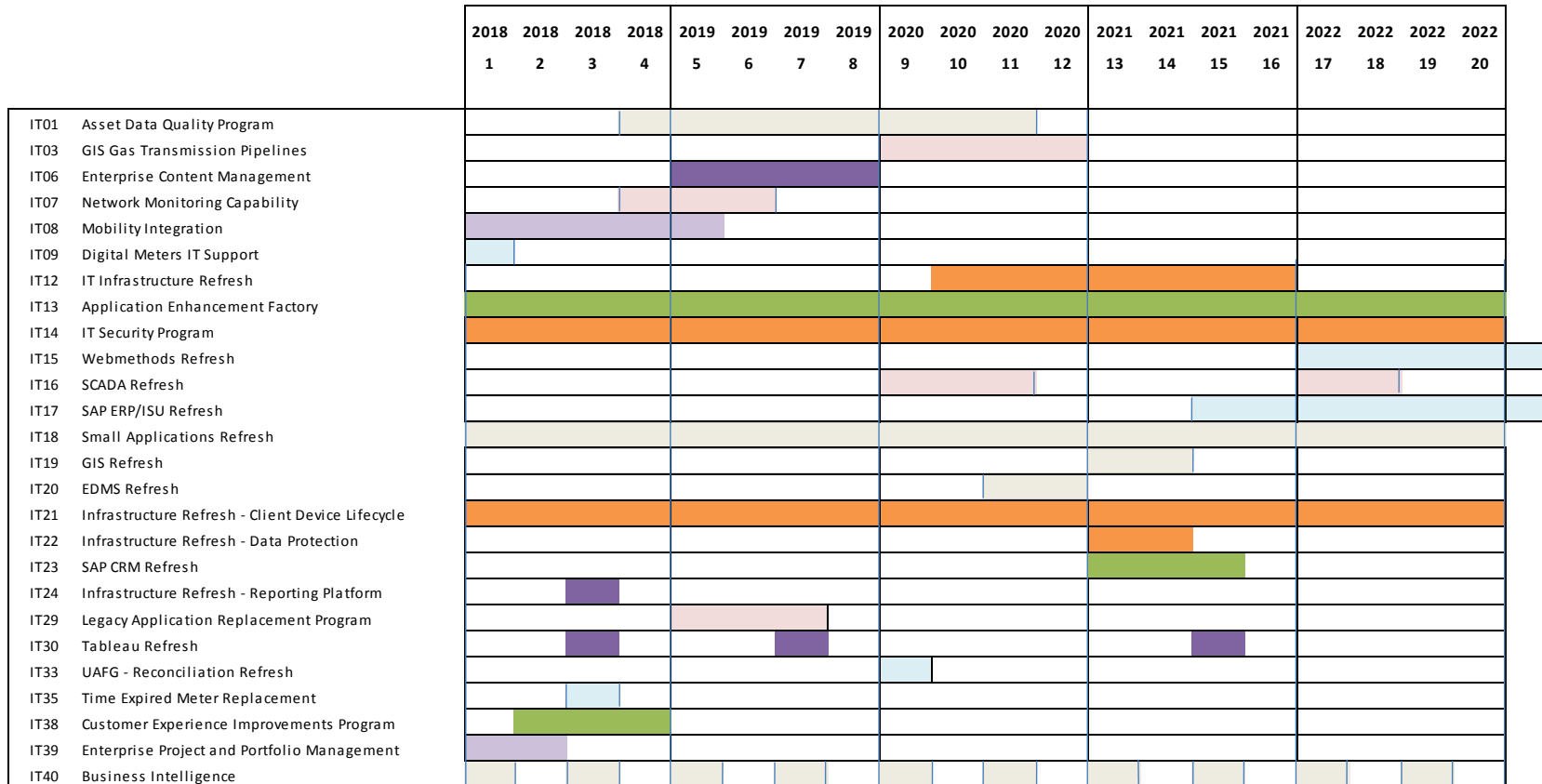
- External factors – for example vendor release dates, alignment to United Energy (for shared projects e.g. GIS Refresh);
- Resource availability – ability of Business Units to provide SMEs to support the projects and IT's ability to provide technical resources;
- Business benefit prioritisation - individual business unit's priorities; and
- Project dependencies and constraints – For example where two or more projects cannot proceed in parallel or must be completed in a particular sequence.

The resulting roadmap provides a view of the forecast program of work over the 5 year period. The following should be noted when considering this roadmap:

- Recurrent projects are generally about “keeping the lights on”. These projects are scheduled based on vendor release programs and current system states. Any delay to these projects may increase the business risk and operational cost to MG;
- Projects may be re-scheduled based on one or more of the following:
  - Changing business priorities;
  - External factors outside MG's control; and
  - Resource constraints (e.g. availability of Subject Matter Experts).

Figure 3 provides a high-level roadmap of the key projects over the period 2018 to 2022.

Figure 3 - IT Capital Program Roadmap 2018 to 2022





## 7. Financial Details

### 7.1. Summary

This section presents an overview of the cost model used to forecast and consolidate the individual project costs into a program of work over the period 2018 to 2022 (refer to Appendix C – Financial Cost Model) for further detail.

The model's principles have been used since 2010 to support UE and MG's IT Capex forecasting, the 2011 and 2015 EDPR submissions and MG's 2012 GAAR submission.

The latest version of the model:

- Calculates an initial estimate of the cost of each capital project based on high level project criteria using industry sourced benchmarks (referenced in the model);
- Captures and analyses the costs (Labour, Hardware, Software etc.) of a portfolio of projects over a defined time period; and
- Supports IT capex forecasting providing the ability to revise or overwrite initial project estimates with more detailed estimates of individual project costs where these are available (e.g. from supplier / vendor quotes).

In line with the AER's definition of 'Non-network IT and communications expenditure', this document does not include plans or costs for communications network or devices within the distribution network that are monitored or controlled by network management systems. Costs and plans are therefore not included for implementation of remote monitoring elements of the network control or SCADA systems throughout the distribution network. Costs are however included for the centralised components of the SCADA systems which are housed in MG's data centres.

Some UE and MG applications / infrastructure are shared between the organisations. In these instances costs are shared on a case-by-case basis depending on the nature of the specific project. These shared projects are aligned (for example, a single GIS upgrade project will upgrade the system for both organisations) but only MG costs are captured in this IT Capex Program and cost model.

### 7.2. IT Capital Expenditure Summary

Over the period beginning 2018 until end 2022, MG IT capital expenditure is estimated at \$48.8M (in 2017 dollars). Labour estimates (excluding PMO) are the highest cost category and account for approximately 67% of total program expenditure. Hardware accounts for approximately 16% of program expenditure, whilst software contributes 10%.

The MG total capital expenditure over the GAAR submission period 2018 to 2022 peaks in 2021 with capital expenditure estimated at \$11.3 million.

The previous section presenting the inventory of projects was categorised in accordance with the AER expenditure categories of recurrent, non-recurrent and client device.

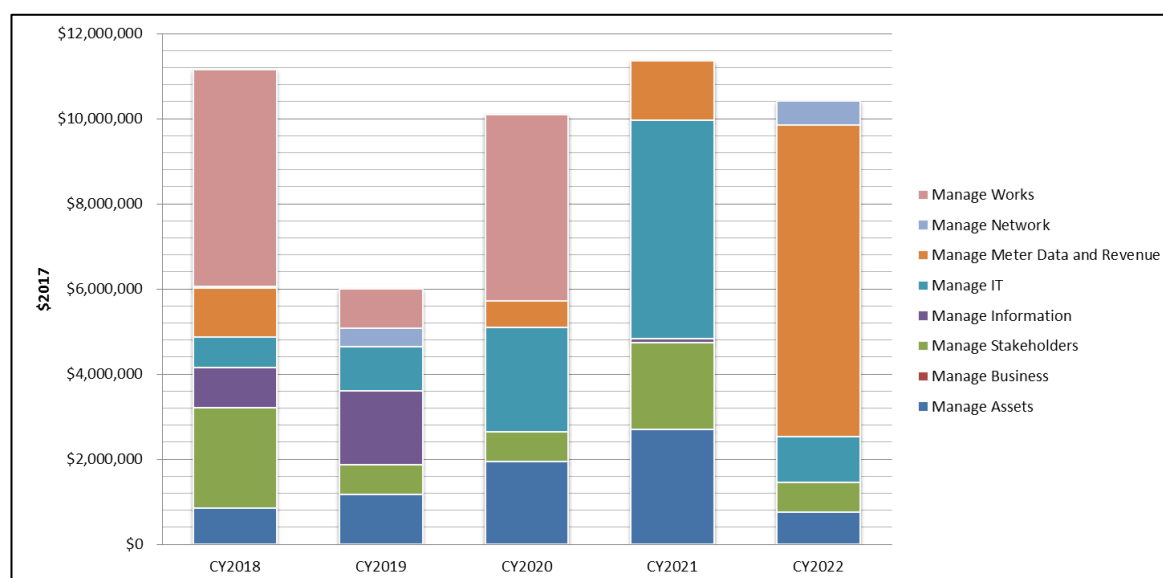
This section presents detailed financial information about the IT Capital Program in accordance with MG's Functional Model. This model identifies MG's core business functions such as managing assets and managing the distribution network (as described below in Table 11. This model was used for the previous EDPR and GAAR submissions).

Table 11: MG's Functional Model

Function	Explanation
<b>Customer and Stakeholder Management</b>	Provision of services and/or information to internal and external stakeholders (including customers, retailers, government agencies, regulator, partners and employees).
<b>Network Management</b>	Management, monitoring and control of the gas distribution network including responding to faults/emergencies, and analysis and optimisation of the network.
<b>Asset Management</b>	Strategic planning and management of assets, work programs and resources, including network extensions, inspections, maintenance and construction.
<b>IT Management</b>	IT capabilities enabling operations and supporting planning and management of the business, including managing applications, IT portfolio, infrastructure, architecture, security and IT services.
<b>Works Management</b>	Management of work programs and resources for network extensions, inspections, maintenance and construction.
<b>Meter Data and Revenue Management</b>	Management of meter data, connection points and meter services, including the provision of data to market and management of service orders and metering faults.
<b>Information Management</b>	Capabilities required to effectively manage large amounts of structured and unstructured information across the business.
<b>Business Support Management</b>	Corporate capabilities required to support the business including finance, HR, risk and audit, legal, supply chain and logistics and occupational health and safety.

Figure 4 presents a year-by-year breakdown of expenditure by functional area. This demonstrates the initial focus on the 'manage stakeholders' category (which includes the management of customers) followed by an increased focus on management of the distribution network including assets.

Figure 4: Capex distribution by functional area



The following section provides an overview of the cost breakdown of MG capital expenditure between capability areas and cost categories, as well as a listing of all projects and their total Capex expenditure for the period 2018 to 2022.

Table 12 contains the breakdown of total Capex between MG capability areas over the next five years (CY2018 to CY2022).

**Table 12: Total program cost breakdown between capability areas (\$ Real 2017)**

Capability Area	CY2018	CY2019	CY2020	CY2021	CY2022	GAAR Total
Manage Assets	\$851,476	\$1,162,030	\$1,935,233	\$2,676,056	\$745,405	\$7,370,200
Manage Business	\$0	\$0	\$0	\$0	\$0	0
Manage Customers and Stakeholders	\$2,334,194	\$693,066	\$694,965	\$2,033,636	\$691,167	\$6,447,028
Manage Information	\$944,776	\$1,726,205	\$0	\$102,057	\$0	\$2,773,037
Manage IT	\$708,992	\$1,042,018	\$2,455,435	\$5,118,293	\$1,091,464	\$10,416,201
Manage Meter Data and Revenue	\$1,154,126	\$0	\$602,918	\$1,392,128	\$7,276,959	\$10,426,131
Manage Network	\$27,042	\$433,342	\$4,371,748	\$0	\$568,411	\$5,400,634
Manage Works	\$5,079,829	\$921,938	\$0	\$0	\$0	\$6,001,767
<b>Total</b>	<b>\$11,100,435</b>	<b>\$5,978,689</b>	<b>\$10,060,299</b>	<b>\$11,322,170</b>	<b>\$10,373,406</b>	<b>\$48,834,999</b>

*Differences are due to rounding.*

Table 13 contains the breakdown of total Capex between cost categories.

**Table 13: Total program cost breakdown between cost categories**

Cost Category	CY2018	CY2019	CY2020	CY2021	CY2022	GAAR Total
Labour	\$8,322,824	\$4,024,633	\$6,906,448	\$7,081,856	\$6,245,155	\$32,580,915
Software	\$1,010,460	\$636,312	\$999,865	\$1,162,498	\$1,158,660	\$4,967,796
Hardware	\$974,615	\$906,044	\$1,476,920	\$2,290,975	\$2,245,775	\$7,894,328
Security	\$82,010	\$38,406	\$68,621	\$67,685	\$60,820	\$317,542
PMO	\$710,526	\$373,294	\$608,445	\$719,156	\$662,997	\$3,074,418
<b>Total</b>	<b>\$11,100,435</b>	<b>\$5,978,689</b>	<b>\$10,060,299</b>	<b>\$11,322,170</b>	<b>\$10,373,406</b>	<b>\$48,834,999</b>

*Differences are due to rounding.*

The following tables (Table 14 to 20) present detailed information on expenditure for each of the projects within the MG IT Capital Program 2018 to 2022.

**Table 14: IT Program Costs – Manage Assets**

Area / Project	CY2018	CY2019	CY2020	CY2021	CY2022	GAAR Total
IT01 - Asset Data Quality Program	\$104,655	\$415,209	\$310,554	-	-	\$830,418
IT18 - Small Applications Refresh	\$516,795	\$516,795	\$518,210	\$516,795	\$515,379	\$2,583,973
IT19 - GIS Refresh	-	-	-	\$1,929,235	-	\$1,929,235
IT20 - EDMS Refresh	-	-	\$875,179	-	-	\$875,179
IT40 - Business Intelligence	\$230,026	\$230,026	\$231,290	\$230,026	\$230,026	\$1,151,395
<b>Total Manage Assets</b>	<b>\$851,476</b>	<b>\$1,162,030</b>	<b>\$1,935,233</b>	<b>\$2,676,056</b>	<b>\$745,405</b>	<b>\$7,370,200</b>

Table 15: IT Program Costs – Manage Customers and Stakeholders

Area / Project	CY2018	CY2019	CY2020	CY2021	CY2022	GAAR Total
IT13 - Application Enhancement Factory	\$693,066	\$693,066	\$694,965	\$693,066	\$691,167	\$3,465,330
IT23 - SAP CRM Refresh	-	-	-	\$1,340,570	-	\$1,340,570
IT38 - Customer Experience Improvements Program	\$1,641,128	-	-	-	-	\$1,641,128
<b>Total Manage Customers and Stakeholders</b>	<b>\$2,334,194</b>	<b>\$693,066</b>	<b>\$694,965</b>	<b>\$2,033,636</b>	<b>\$691,167</b>	<b>\$6,447,028</b>

Table 16: IT Program Costs – Manage Information

Area / Project	CY2018	CY2019	CY2020	CY2021	CY2022	GAAR Total
IT06 - Enterprise Content Management	-	\$1,624,148	-	-	-	\$1,624,148
IT24 - Infrastructure Refresh - Reporting Platform	\$695,360	-	-	-	-	\$695,360
IT30 - Tableau Refresh	\$249,415	\$102,057	-	\$102,057	-	\$453,530
<b>Total Manage Information</b>	<b>\$944,776</b>	<b>\$1,726,205</b>	<b>\$0</b>	<b>\$102,057</b>	<b>\$0</b>	<b>\$2,773,037</b>

Table 17: IT Program Costs – Manage Information Technology

Area / Project	CY2018	CY2019	CY2020	CY2021	CY2022	GAAR Total
IT12 - IT Infrastructure Refresh	-	-	\$1,909,986	\$3,092,389	-	\$5,002,375
IT14 - IT Security Program	\$521,742	\$733,205	\$358,199	\$831,813	\$904,214	\$3,349,172
IT21 - Infrastructure Refresh - Client Device Lifecycle	\$187,250	\$308,812	\$187,250	\$187,250	\$187,250	\$1,057,812
IT22 - Infrastructure Refresh - Data Protection	-	-	-	\$1,006,842	-	\$1,006,842
<b>Total Manage IT</b>	<b>\$708,992</b>	<b>\$1,042,018</b>	<b>\$2,455,435</b>	<b>\$5,118,293</b>	<b>\$1,091,464</b>	<b>\$10,416,201</b>

Table 18: IT Program Costs – Manage Meter Data and Revenue

Area / Project	CY2018	CY2019	CY2020	CY2021	CY2022	GAAR Total
IT09 - Digital Meters IT Support	\$590,971	-	-	-	-	\$590,971
IT15 - webMethods Refresh	-	-	-	-	\$3,356,215	\$3,356,215
IT17 - SAP ERP/ISU Refresh	-	-	-	\$1,392,128	\$3,920,745	\$5,312,873
IT33 - UAFG - Reconciliation Refresh	-	-	\$602,918	-	-	\$602,918
IT35 - Time Expired Meter Replacement	\$563,155	-	-	-	-	\$563,155
<b>Total Manage Meter Data and Revenue</b>	<b>\$1,154,126</b>	<b>\$0</b>	<b>\$602,918</b>	<b>\$1,392,128</b>	<b>\$7,276,959</b>	<b>\$10,426,131</b>

Table 19: IT Program Costs – Manage Network

Area / Project	CY2018	CY2019	CY2020	CY2021	CY2022	GAAR Total
IT03 - GIS Gas Transmission Pipelines	-	-	\$2,069,305	-	-	\$2,069,305
IT07 - Network Monitoring Capability	\$27,042	\$79,364	-	-	-	\$106,406
IT16 - SCADA Refresh	-	-	\$2,302,444	-	\$568,411	\$2,870,855
IT29 - Legacy Application Replacement Program	-	\$354,068	-	-	-	\$354,068
<b>Total Manage Network</b>	<b>\$27,042</b>	<b>\$433,432</b>	<b>\$4,371,748</b>	<b>\$0</b>	<b>\$568,411</b>	<b>\$5,400,634</b>

Table 20: IT Program Costs – Manage Works

Area / Project	CY2018	CY2019	CY2020	CY2021	CY2022	GAAR Total
IT08 - Mobility Integration	\$3,692,510	\$921,938	-	-	-	\$4,614,448
IT39 - Enterprise Project and Portfolio Management	\$1,387,319	-	-	-	-	\$1,387,319
<b>Total Manage Works</b>	<b>\$5,079,829</b>	<b>\$921,938</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$6,001,767</b>

## 8. Operating Cost Impacts

Every capital project has a potential impact on either, or both, business and IT operating costs. These impacts are not the subject of this Capital Plan. However, every project justification has considered and captured the forecast operating cost impacts which have then been taken into account in the relevant MG Operating Cost (OPEX) budgets.

The IT Operating costs consider and reflect the following:

- Hardware support and maintenance (including infrastructure support provided by MG's service provider);
- Software support and maintenance;
- Application support (as provided by MG's Applications service provider);
- Cloud service fees as appropriate; and
- Cost reductions arising from decommissioning of hardware and/or software.

In general, the implementation of new IT systems (as opposed to replacement or refresh of existing systems) will increase opex. However, in the past three years, IT opex has been largely contained through:

- Procuring new IT infrastructure with increased capacity and processing power per unit – which enables maintenance and support costs to be contained or reduced;
- Retendering and restructuring outsourced IT service provider contractual arrangements; and
- Consolidating applications to reduce the number of solutions and products and the associated costs of management, maintenance and support.

These activities will continue in the next Access Arrangement period and will offset the increases in IT opex arising from the IT capital projects.

## Appendix A: Assumptions

### A.1. Technology

1. Commercial Off the shelf Software (COTS) products will be favoured over custom built.
2. Cloud solutions are considered on a case by case basis for each project during development of the Business case.

### A.2. Cost Model

1. The cost model contains MG IT Strategy project estimates 2018 – 2022 (calendar years) inclusive.
2. Operating expenditure, depreciation and price inflators are not included in the model. All Capex estimates are calculated in real dollars, as at January 2017.
3. Information for Capex estimation was sourced from previous actuals / estimates, MG stakeholders, industry benchmarks and research, current as at January 2016.
4. Allocations for individual project software and hardware costs were applied where detailed information was not available at the time of estimation. Allocations for delivery (Project Management Office – PMO and security) were also applied to total project costs.
5. Hardware and Software costs are generally distributed evenly across the entire duration of each project.



## Appendix B: References

- Technology & Digital 2016 Hudson Salary Guide
- MG IT Asset Management Policy – Version 2.0
- IT Project Delivery Framework – Version 1.0

## Appendix C: Financial Cost Model

MG IT uses a project estimating and cost model that is based on principles adopted from a model originally developed for UE's 2010 EDPR submission by Deloitte. The principles in the original model have subsequently been used for the Multinet Gas 2013 GAAR submission, UE's 2015 EDPR submission and with further modifications provided cost inputs for the new estimating and cost model and ultimately the costs presented in this document.

This appendix provides a high level description of the model, its key features and use.

### C.1. Model Overview

The model's primary function is to model the forecast IT capital expenditure of a number of projects across a five year period. It provides the ability to:

- Calculate an initial estimate of capital expenditure for each project based on a number of core project criteria including project duration, perceived complexity and the percentage split of on-shore /off-shore labour. Using these criteria, the model:
  - Applies industry sourced benchmarks to calculate the labour effort profile across the duration of the project;
  - Calculates labour costs based on the effort profile and unit labour costs;
  - Calculates hardware and software costs for each project based on default percentages; and
  - Calculates "Project Costs" for project-related components (e.g. Security and Project Management Office) based on default percentages.
- Overwrite and/or revise the initial estimate where costs:
  - Are known (e.g. supplier quotes are available);
  - Are expected to differ from estimates (e.g. actual cost of previous similar projects is known); and
  - Are expected to differ from defaults (e.g. project is known to require less hardware than default calculates).
- Allows individual project start dates to be changed, modelling the resulting year by year impact on the program capital expenditure over the five year period.

### C.2. Model Parameters

The model provides for a number of unit and project cost parameters to support the expenditure forecasts for each project:

- 'Unit costs' include Labour rates (fixed) and default hardware and software costs. The defaults can be, and generally are, overridden for each project based on more accurate estimates (or quotes) than those provided by the defaults; and
- 'Project Costs' include defaults for the projects share of overall program costs such as Project Management Office (PMO) which are shared across every project.

Both unit and project costs are derived from MG's SAP system and reflect actual current costs, incurred for undertaking similar investment in hardware, software and projects.

Importantly most IT services are provided by third party providers under contract terms and conditions that were subject to competitive market principles. Under these contracts Labour rates are clearly defined and known for the duration of the contract.

### C.3. Cost Escalators

A default cost base year is set in the model such that all Labour rates in the model are in base year \$ (i.e. a default cost base year of 2016 means that all cost parameters are in \$2016 and any costs directly entered into the model must be in \$2016). The model provides the ability to override the default cost base year which will then apply the appropriate cost escalator to the default labour rates to adjust these to the new base year. The default cost base year is set to 2016, but has been overridden such that all costs are in \$2017.

The model also allows individual cost to be applied to each Calendar year in the model. No individual cost escalators have been applied meaning that all figures are in \$2017.

### C.4. Labour Rates

MG's IT Labour costs fall into one of the following:

- Internal Labour;
- Contract / Outsourced resources (On-shore); and
- Contract / Outsourced resources (Off-shore).

For forecasting purposes each of the above categories are split into three levels of resource (High, Medium and Low). The rationale and daily rates associated with each is described below.

#### Internal Labour

Internal labour rates in the model are based on current (2016) MG IT staff costs (salary plus 25% on-costs and overheads excluding training).

These rates assume 220 working days per annum, 7.5 hours per day and have been benchmarked favourably against the Hudson "Technology and Digital Salary Guide" report 2016 for Melbourne. The following provides an example:

Role Internal Labour	Hudson – Base Salary (Max)	Annual Model (actual) Cost including On-costs (2016 \$s)	Equivalent Base Salary (2016 \$s)
Enterprise Architect	\$200,000	\$282,040	\$225,632
Business Systems Manager	\$160,000	\$199,980	\$159,984
Database Administrator	\$130,000	\$118,800	\$95,040

It should be noted that MG's outsourcing model means that MG retains only a small number of permanent IT staff, and uses predominantly contracted and outsourced resources to deliver its IT Capital Program. As a result, permanent staff are typically more highly skilled and remunerated at the high end of the Hudson Benchmarks.

### Contract / Outsourced Resources

MG has a number of contracts with external third parties for the provision of a variety of IT services. In particular, MG has Master Service Agreements (MSAs) in place (due to expire in December 2021) with two major service providers.

These MSAs include daily rates for the provision of both on and off-shore resources for ad-hoc project work. The model applies the average of the contracted MSA rates with each of the two major service providers.

## C.5. Hardware and Software

The model provides the ability to apply a standard default cost for both Hardware (25% of labour) and Software (15% of labour) to each project. These defaults have been set based on MG experience, but are generally overridden for each project based on specific project estimates and/or quotes.

## C.6. Project Costs

Expenditure is estimated for each project using a bottom up expenditure forecasting approach as described above.

Project expenditure is allocated over time in the cost model according to the timing and duration of each project. Detailed forecast project costs are composed of:

- **Labour costs:** resources (FTEs) required for project delivery for example: IT consultants, Developers, Testers, procurement and SMEs);
- **Software costs:** purchase and licensing costs according to the specific requirements of each project; and
- **Hardware costs:** Specific hardware required for application projects for development, testing, production, Disaster Recovery and on-going production support. With most environments now being virtual, infrastructure can be “spun up” for development and returned post deployment so these costs are taken into account accordingly.

Labour costs for each project are initially calculated based on FTE effort across the duration of the project. This effort is derived from a standard “waterfall” project model that assumes resource types and levels by phase dependent on the project complexity. This model was originally provided by Deloitte and has been improved and validated against actual MG project experience (and costs) as providing a reasonable first estimate for the majority of MG IT projects.

Software and hardware allocations are applied to project costs based on actual MG experience. In projects where software and hardware costs are known to be different to standard allocations, these are applied as an alternative to the default allocations.

## C.7. Program Costs

Program costs are applied to every individual project within the portfolio. They represent expenditure related to program management activities for the entirety of the 2018 - 2022 period. These are applied to the total of individual project costs using benchmark allocations.

1. **Program Management Office** – applied as a percentage (7%) of total project cost (Labour, Hardware, Software and Security):
  - a. **Direct PMO costs:** allocation for program and project management office team with end to end visibility across all projects. Efficiencies and synergies through central office overseeing multiple programs of work, full-time commitment of resources;
  - b. **Program Change:** allocation for change and communications activities, business process engineering, process changes, job description updates and function reviews. Efficiencies and synergies through central program team managing change programs across multiple programs of work. Full-time commitment of resources; and
  - c. **Internal Governance:** allocation of internal IT management overheads for governance and control associated with the IT Capital Program by senior IT management.
2. **Security:** cost of ensuring that all projects consider and address MG security policies and requirements, applied as a percentage (1%) of labour cost.

Industry benchmarks are used as input to the default percentage allocations used in the cost model. All default allocations take into account MG experience and benchmark favourably against industry leading practice. However, these have been substantially overridden on a project by project basis in favour of more accurate and more prudent estimates.

## C.8. Using the Model

The Model Start Date determines the period of the IT capital program being modelled, in this case it is set to 1<sup>st</sup> January 2018 for the GAAR 2018 to 2022 period.

Each project is entered into the model providing core project criteria (e.g. Project Start Date) allowing the model to calculate an initial project estimate using the model parameters described above.

Once entered into the model, the initial estimate for each project is reviewed and the estimate may be revised based on improved information (e.g. supplier quotes).

The model provides a detailed view of forecast spend for the entire IT Capital Program by quarter and Calendar Year over the 2018 to 2022 period with various views and graphs showing summaries of project costs by cost categories or project types. Key model worksheets are briefly described below:

- **Original Programme Worksheet** – shows the complete list of projects entered in the model including capital spend by project by quarter and calendar year;
- **Roadmap Summary Worksheet** - provides a visual representation of the program showing the duration of each project. It allows the start date for any project to be changed, displaying the impact of that change on the overall program. Graphs show the comparison between the original program spend profile and the revised program spend profile (i.e. the impact of the changed start dates).
- **Proposed Programme Worksheet** – similar to the Original Programme Worksheet, but showing the impact on the program of any project Start Dates revised in the Roadmap Summary Worksheet.
- **Parameters** – contains all parameters used by the model

## C.9. Model Redundancy

The model has a number of functions that are still under development (and not used), these include:

- Modelling IT Opex impacts of the IT capital program – this calculates the increased IT opex costs based on ongoing support of new Software and hardware purchased as part of a capital project. It does not make allowance for any reduced IT opex costs associated with decommissioning Hardware and/or Software.
- Modelling of forecast Project Business Benefits, Total Forecast FTEs and System Impacts.
- MG % Cost Shared – if a project is identified as having shared costs between UE & MG then the model calculates the total project cost and the shared cost for both UE and MG. For shared projects the costs by quarter are shown for MG only.
- Labour Cost Inflation – an annual labour cost escalator can be applied to the model. This, if entered, will apply an annual inflation factor to all labour costs, but has not been used for this submission.

## Appendix D: Glossary of Terms

Term	Description
<b>AER</b>	Australian Energy Regulator
<b>Capex</b>	Capital Expenditure
<b>COTS</b>	Commercial Off The Shelf software
<b>CY</b>	Calendar Year
<b>EDPR</b>	Electricity Distribution Price Review
<b>ERP</b>	Enterprise Resource Planning
<b>FTE</b>	Full Time Equivalent
<b>GAAR</b>	Gas Access Arrangement Review
<b>GIS</b>	Geographical Information System
<b>ICT</b>	Information and Communications Technology
<b>IT</b>	Information Technology
<b>MG</b>	Multinet Gas
<b>Opex</b>	Operating Expenditure
<b>PC</b>	Personal Computer
<b>PMO</b>	Project Management Office
<b>RIN</b>	Regulatory Information Notice
<b>RTS</b>	Real Time System
<b>SCADA</b>	Supervisory Control and Data Acquisition
<b>SME</b>	Subject Matter Expert
<b>SMS</b>	Short Messaging Service
<b>UE</b>	United Energy

## Attachment 1: IT Capital Program Project Justifications

### Project Overviews:

- IT01 - Asset Data Quality Program
- IT06 - Enterprise Content Management
- IT07 - Network Monitoring Capability
- IT09 - Digital Meters IT Support
- IT15 - WebMethods Refresh
- IT16 - SCADA Refresh
- IT18 - Small Applications Refresh
- IT19 - GIS Refresh
- IT20 - EDMS Refresh
- IT21 - Infrastructure Refresh - Client Device Lifecycle
- IT22 - Infrastructure Refresh - Data Protection
- IT23 - SAP CRM Refresh
- IT24 - Infrastructure Refresh - Reporting Platform
- IT29 - Legacy Application Replacement Program
- IT30 - Tableau refresh
- IT33 - UAFG - Reconciliation Refresh
- IT35 - Time Expired Meter Replacement
- IT39 - Enterprise Project and Portfolio Management

### Project Justifications:

- IT03 - GIS Gas Transmission Pipelines
- IT08 - Mobility Integration
- IT12 - IT Infrastructure Refresh
- IT13 - Application Enhancement Factory
- IT14 - IT Security Program
- IT17 - SAP ERP/ISU Refresh
- IT38 - Customer Experience Improvements Program
- IT40 - Business Intelligence