Attachment 8.6

IT Investment Plan – South Australia

SA Final Plan July 2021 – June 2026

July 2020

Australian Gas Networks

apa

Contents

Executive summary

As a gas network service provider, we must understand and meet rapidly changing customer needs. This means building a flexible and responsive business that seeks to improve productivity and enhance the way we manage the vital community assets we own. To do this, we must invest in information technology (IT) that allows us manage and monitor our assets, as well as providing consistent and responsive customer service.

This plan outline the key IT investments proposed for the next access arrangement (AA) period (July 2021 to June 2026). The plan covers traditional IT such as enterprise applications, IT hardware, corporate data and managed infrastructure, as well as the operational technology (OT) systems for our Supervisory Control and Data Acquisition (SCADA).

Our IT and OT systems provide the following functionality:

- managing market transactions;
- issuing and controlling field work;
- monitoring and recording gas deliveries to customer sites;
- facilitating emergency response services;
- monitoring network condition;
- analysing network capacity;
- recording the configuration and location of assets;
- providing information to our customers and the community; and
- interacting with our customers.

Combined, these functions all us to provide a safe, reliable and affordable gas supply to our customers.

Like many utilities globally, we are responding to the challenges brought about by changes in customer preferences, new technology, energy efficiency and the price competitiveness of energy resources. These challenges are changing the way gas is used across our network.

In 2017, AGN, Multinet Gas Networks and Dampier Bunbury Pipeline came together to form Australian Gas Infrastructure Group (AGIG). AGIG operates across multiple Australian jurisdictions, bringing together a wealth of expertise and experience that allows its various businesses to share knowledge, information and resources for the benefit of customers.

AGIG's scale and breadth of resources presents opportunity to deliver benefits for AGN's customers in South Australia. Not least, it allows us to review and rationalise our IT systems and infrastructure across the group, moving to shared platforms where practicable. We have already begun the IT rationalisation journey. During the current AA period (July 2016 to June 2021) we have implemented a program to replace state-based IT systems with enterprise-wide equivalents, which we can use to serve all AGN network businesses. We have also started a program to rationalise our IT systems and infrastructure across AGIG where possible.

Under our AGIG IT Strategy & Roadmap, launched in 2019, we will consolidate several IT solutions, including for example moving all AGIG businesses on to a single enterprise resource planning (ERP) system. The 'One ERP' initiative is expected to be completed by 2025 and will achieve an aligned finance environment across AGIG, which will provide supporting tools and standardised processes in line with good industry practice. Information about the AGIG IT Strategy

& Roadmap investments is provided in business case SA138 (Attachment 8.8 Capex Business Cases).

Our aim is to achieve economies of scale, while keeping pace with technology advances. In the short term, this has required national coordination of applications renewals, replacement and upgrades. This initial coordination means there has been an increase in investment during the current AA period compared to historical levels. This is necessary to bring some of our legacy systems up to a reasonable standard, or to invest in the new systems that will replace the multitude of state-based technologies. However, over the longer term we expect coordinating our IT investment into a national program will reduce the overall ongoing cost for our customers, and better support the safe, reliable and efficient operation of our network.

By the end of the current AA period, we will have invested $41[1] million in capital expenditure on our IT systems, including:

- the national consolidation and updates to nine of our critical applications under a more efficient, extended upgrade cadence in line with accepted industry practice and manufacturer requirements;
- major upgrades to our geographical information, SCADA and metering and billing systems;
- the substantial completion of a field mobility integration project;
- the roll-out of a core business intelligence platform;
- website enhancements and development of a web portal to support the customer connections process; and
- cyber security improvements and a new enterprise reporting system for AGN.

In the next AA period, we propose to invest $32 million in our IT systems. Around 44% of this ($14 million) is recurrent investment on maintaining our current levels of service by ensuring our suite of critical applications remain current and fit-for-purpose. The other $18 million is for non-recurrent investment in new IT systems that will:

- systemise our investment planning and optimisation processes;
- continue rationalising our systems and infrastructure across AGIG; and
- deliver more digital customer services.

Table 2.1 following table shows the split of recurrent and non-recurrent IT investment forecast for the next AA period, compared with the total investment expected to be undertaken by the end of the current AA period (July 2016 to June 2021).

[1] Unless otherwise stated, all costs in this document are expressed in real 2019 dollars and excludes overheads and real cost escalation.

Proposed IT investment $'000 2019/20

IT program of work	2021/22	2022/23	2023/24	2024/25	2025/26	Total next AA period	Total current AA period
Maintain current levels of IT services (recurrent)	1,002.8	2,786.7	2,864.2	4,068.9	3,249.3	13,971.9	23,742.0
Efficient and effective service delivery (non-recurrent)	1,094.4	2,128.3	7,012.8	5,796.4	1,993.2	18,025.1	17,033.4
Total	**2,097.2**	**4,915.0**	**9,877.0**	**9,865.3**	**5,242.5**	**31,997.0**	**40,775.4**

Tables may not sum due to rounding

The IT investments in this plan are designed primarily to maintain the existing IT environment and services whilst reducing a range of IT safety and security risks. Though there is a transformational aspect to our AGIG IT Strategy & Roadmap, the primary focus of IT investments over the next AA period is on laying a strong foundation for further improvement. We will renew our critical applications and IT infrastructure to bring them up to a secure and industry-standard level, and implement a number of foundational system improvements that will allow us to transform the AGIG-wide IT environment.

The investment proposed in this plan will build on our digital customer service capabilities by providing targeted digital customer experience improvements tested through our customer engagement program. This will ensure we can continue to meet the customer service expectations of our customers and stakeholders, by investing in the digital services they value and prioritise.

These outcomes align with our vision objectives to deliver quality services that our customers value, to be recognised as a good employer and to remain sustainably cost efficient. More significantly, our proposed investments are informed by and are aligned with what our customers have told us are their top three priorities; price/affordability, reliability of supply, and maintaining public safety.

The end-to-end program of work was developed and will be delivered using a formal governance framework consistent with the industry standard business and technology project management methodology. The overall program of work is comparable to that undertaken over the current access arrangement period, and has been staged to ensure we have a well-balanced resource profile to allow for the most efficient and successful delivery.

This IT Investment Plan sets out the context for our IT investment (Section 1), our plan for the next AA period (Section 2) and consistency with the National Gas Rules (Section 3).

1. Context

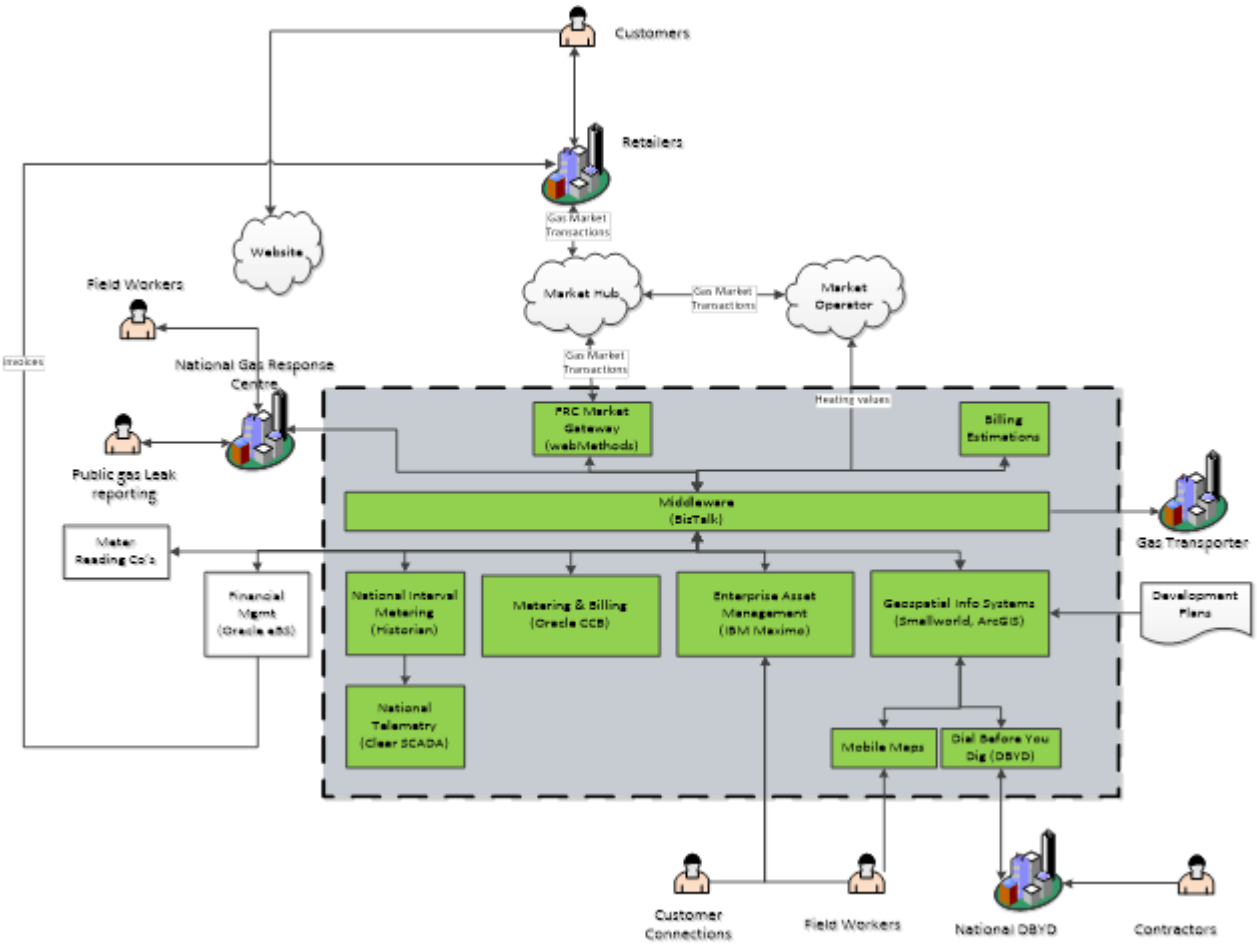
1.1. Core IT architecture

Our IT systems provide the following functionality to allow us to deliver a safe and reliable supply gas to our customers:

- managing market transactions;
- issuing and controlling field work;
- monitoring and recording gas deliveries to customer sites;
- facilitating emergency response services;
- monitoring network condition;
- analysing network capacity;
- recording the configuration and location of assets;
- providing information to our customers and the community; and
- interacting with our customers.

We operate and maintain a highly integrated IT architecture as shown in Figure 1.1.

Figure 1.1: AGN IT infrastructure



Our key business systems are outlined in Table 1.1.

Table 1.1: Overview of key IT and OT business systems

System	Functionality
Geospatial Information System (GE Smallworld, ARCGis)	Provides management of map-based (Cadastre), delivery point lifecycles, network configuration and connectivity, emergency response and mains extension and replacement planning
Networks Interval Metering Data System (Historian OsiPi)	Provides storage of SCADA data and billing information
Billing estimation model (APA custom)	Provides delivery point forward estimates, interval consumer management service and base load and TSF calculations
Dial Before You Dig (Mipela)	Provides management of national Dial Before You Dig enquiries and asset location notifications
Mobile maps (LatLonGO)	Provides the capability to view GIS maps on mobile devices, enabling a geospatial understanding of asset locations in the field
Metering & billing system (Oracle CC&B)	Provides transaction workflows, meter readings and delivery point billing
Enterprise asset management (IBM Maximo)	Provides planning, dispatching work, job completion details, delivery point status management, preventative maintenance, contractor payment and meter management services
FRC market gateway (Web Methods)	Sends and receives order requests, meter fixes and customer transfer requests
Telemetry system (Clear SCADA)	Provides real time data and alarms to enable effective remote monitoring of critical assets
Business intelligence platform	Provide the technology platform to combine multiple disparate sources of data to facilitate analysis and inform business management decisions
Middleware (BizTalk)	Enables tightly controlled data integration between multiple enterprise applications
Field data/mobility systems	Provides capability for real time data capture in the field to drive business efficiency and provision of mobility applications improving safety, compliance and customer service outcomes
Website/web	Portal system
Enterprise resource planning (SAP)	Provides the platform for all accounting, budgeting and planning and tax functionality

In recent years we have introduced a national program to coordinate development and maintenance of our IT systems across all jurisdictions in which we operate. We've done this to achieve economies of scale through streamlined implementation and business processes, standardised data models and data migration techniques, and by utilising existing hardware platforms.

Considerable progress has been made. Major projects initiated during the current AA period include upgrading our geospatial information systems (GIS) and metering & billing applications, mobility integration and developing a business intelligence platform. These core systems will allow us to

leverage efficiencies in business operations through better data consolidation, standardisation of national processes and task automation.

We have also begun coordinating software application upgrades and updates across the AGN businesses. Our application renewal program seeks to bring our existing suite of IT applications up to an acceptable industry standard, and schedule subsequent updates so that the ongoing IT renewal program is delivered in an efficient and seamless manner.

Given the national coordination approach, the majority of IT capex required to deliver the program of work for South Australia over the next AA period has been estimated in total (across all distribution networks) and then allocated to the South Australian gas distribution business on the most appropriate basis. This is consistent with methods adopted in previous regulatory submissions, and has previously been endorsed by the AER[2]. Successful and efficient delivery of the national applications renewal program requires approval of this approach in all jurisdictions.

1.2. Vision objectives

Our vision is to be the leading gas infrastructure business in Australia. To help achieve this vision we have a set of vision objectives, which are to deliver for customers in terms of safety, reliability and quality services, be a good employer, and sustainably cost efficient.

Having fit for purpose and efficient IT systems plays a big part in achieving these vision objectives. IT systems support the day-to-day running of the business and allow us to operate the gas network safely and reliably. The running costs of IT are also a direct contributor to our efficiency. Rapid growth in the IT landscape requires a vigilant, continuous improvement approach to ensure IT systems performance is 'fit-for-purpose', robust, and delivered at the lowest possible cost.

This IT investment plan is designed to support our vision objectives. In particular our IT investments over the next AA period will:

- Deliver for customers:
  - We will maintain and update our critical business systems in line with manufacturer requirements to mitigate the substantial risks associated with IT failure or security breaches of our critical business systems. This in turn minimises safety risks to customers and employees, as well as unplanned outages and disruption of supply for customers.
  - We will improve data capture, collation and analysis to ensure the visibility and mitigation of safety and reliability risks and better enable our business to manage assets in line with our agreed risk profile (e.g. more real time information on asset components identified as showing signs of deteriorating reliability will allow this information to be integrated into the maintenance/replacement prioritisation and scheduling processes).
  - We will improve digital customer services to meet the expectations of our customers, allowing them to interact with us in more ways and get timely access to information about their service and any network activities that might impact them.
- Help us be a good employer:
  - Rationalisation of our IT systems and infrastructure across AGIG will ensure our employees have access to the right tools and systems to undertake their work. This will allow employees to effectively communicate and collaborate across the group, reduce employee

[2] For example in approving the GIS upgrade as part of our previous AA submission, the AER acknowledged that these projects formed part of a national program, with an "appropriate division of costs" between jurisdictions, "*Draft Decision: Australian Gas Networks Access Arrangement 2016 to 2021, Attachment 6 – Capital expenditure*", November 2015, pg. 6-42.

frustration and the potential for errors and support employee engagement and skills development.

- Keep us sustainably cost efficient:
  - By maintaining and updating our critical business systems in line with manufacturer requirements we will avoid significantly higher overall lifecycle costs (e.g. needing to hire expensive IT specialists for urgent work to correct system issues) and reduce the potential for compliance breaches and the associated financial penalties and costs (e.g. related to compromised staff and customer data).
  - By maintaining and updating our critical business systems as part of a nationally coordinated program we will achieve economies of scale and scope.
  - By investing in new systems and automated processes, we will provide tangible economic benefits to customers including, for example, through process efficiencies (reducing time and effort) and increasing project optimisation.

1.3. Stakeholder engagement

We are committed to operating our networks in a manner consistent with the long-term interests of our customers. To facilitate this, we conduct regular stakeholder engagement to understand and respond to the priorities of our customers and stakeholders. Feedback from stakeholders is built into our asset management considerations, and is an important input when developing and reviewing our expenditure programs.

Customer preferences and expectations have been explored and assessed through a series of workshops and documented in KPMG's Customer Engagement Report.

Our customers have told us their top three priorities are price/affordability, reliability of supply, and maintaining public safety.[3] Further insights from these workshops found customers expect AGN's communication channels and service options to reflect broader market trends, which increasingly means offering a variety of digital communication channels.

Customers highlighted their interest in online options for engaging with AGN on topics of outages (planned and unplanned), maintenance and works, including mains replacement, establishing new gas connections, raising queries about metering and submitting feedback to AGN.

This plan, and the proposed IT projects outlined in it, are designed primarily to maintain the existing IT environment and services, while mitigating a range of IT safety and security risks. This in turn allows us to operate the network consistent with technical specifications, safety standards and compliance requirements, thereby helping maintain a safe and reliable service to customers. These activities are consistent with stakeholder expectations of our network and the service customers' value.

More online functionality was a key theme in the feedback we received during customer workshops. We are therefore proposing investment in the digital customer experience, which will provide a variety of channels for our customers to interact with AGN. The digital customer experience investment will focus on the key topics customers have told us they want to engage with us on, like outages (both planned and unplanned), and visibility of when their meter will be read.

We will endeavour to deliver the IT projects outlined by this plan for the lowest sustainable cost, thereby minimising impact on distribution network tariffs.

3 See feedback at: https://gasmatters.agig.com.au/SA

Further information on our stakeholder engagement program is available in Chapter 5 of our SA Final Plan.

1.4. Basis of cost estimates

Cost forecasts for IT programs have been developed using a bottom-up methodology utilising a combination of tenders, historical costs for similar programs of work delivered, vendor cost estimates or advice from independent expert consultants.

All costs presented in this plan are direct unescalated dollars of December 2019 (i.e. excluding overheads and escalation) unless otherwise labelled.

2. Our IT investment plan

The program of work planned for the next AA period is designed to:

1 maintain the current levels of IT services; and

2 enable efficient and effective delivery of services in line with our customers' expectations

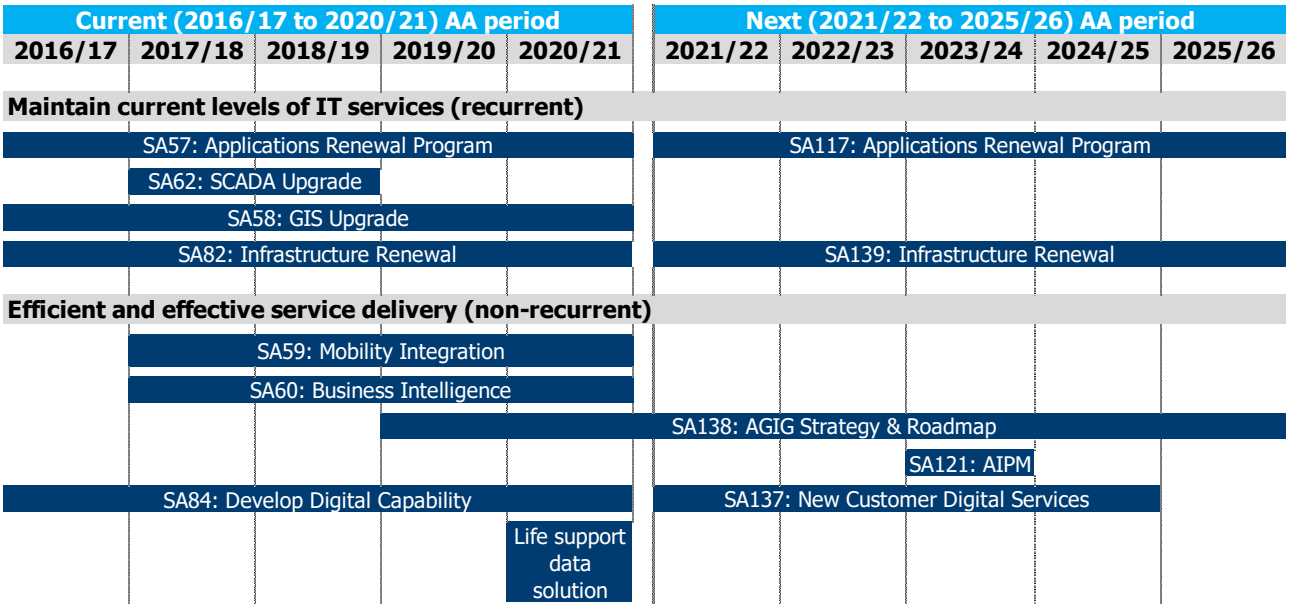
Our expenditure to maintain the current levels of IT services is recurrent in nature. This is because it involves updating/renewing existing software applications that retain substantially the same services, functionalities, capabilities and market benefits as existed prior to the updates.

Expenditure to enable efficient and effective delivery of current services to customers (including offering new digital services in line with their expectations) is non-recurrent. This is because it involves one-off investment in new systems to allow us to operate the network and the broader business.

The focus of the national program of work across AGN networks has now moved to leveraging the existing systems and completing delivery of new systems. This will provide a deliverable IT program that allows us to innovate and improve. We will also continue rationalisation of our IT systems and infrastructure across AGIG.

Figure 2.1 shows the timeline of the full program of work, showing the projects being completed in the current period, as well as those planned for the next AA period.

Figure 2.1: Timeline of the IT program work planned for the next 5 year period



IT capex in the next AA period is projected to be $32 million. This is $9 million less than the $41 million forecast for the current AA period. This is primarily the result of completion of a large

transformation program in the current AA period through our Mobility Integration and Business Intelligence projects, as well as a lower level of recurrent investment.

Table 2.1 shows the split of recurrent and non-recurrent IT investment forecast for the next AA period, and a comparison of the total investment expected to be undertaken by the end of the current AA period (July 2016 to June 2021).

Table 2.1: Proposed IT investment $'000 2019/20

IT program of work	2021/22	2022/23	2023/24	2024/25	2025/26	Total next AA period	Total current AA period
Maintain current levels of IT services (recurrent)	1,002.8	2,786.7	2,864.2	4,068.9	3,249.3	13,971.9	23,742.0
Efficient and effective service delivery (non-recurrent)	1,094.4	2,128.3	7,012.8	5,796.4	1,993.2	18,025.1	17,033.4
Total	**2,097.2**	**4,915.0**	**9,877.0**	**9,865.3**	**5,242.5**	**31,997.0**	**40,775.4**

Tables may not sum due to rounding

These categories of recurrent and non-recurrent investment, and the projects included in each, are discussed in the following sections.

2.1. Maintaining current levels of service

IT traditionally supports the operation of our gas networks by procuring and maintaining hardware and software systems used to collect, organise and store business and network information. Recurrent 'stay in business' investment is required to ensure we maintain the current levels of IT services and mitigate the security and integrity risks associated with our core business systems. This helps mitigate any network risk that could arise from an IT system failure.

Maintaining current levels of services is largely achieved via our national, recurrent IT applications and infrastructure renewal programs. These applications and infrastructure renewal programs deliver a prudent cycle of major and minor system upgrades and infrastructure replacements as required.

2.1.1. Forecast recurrent IT capex overview

Over the next AA period we propose to invest $14 million on recurrent initiatives. This is a reduction from the $24 million we expect to invest in the current AA period, and accounts for 44% of the total IT capex forecast.

Table 2.2 profiles the forecast recurrent IT investment over the next AA period and includes a comparison with the total recurrent IT investment we expect to make by the end of the current AA period.

Table 2.2: Proposed recurrent IT investment $'000 2019/20

Recurrent expenditure	2021/22	2022/23	2023/24	2024/25	2025/26	Total next AA period	Total current AA period
Applications renewal	978.7	2,775.5	2,829.6	4,044.8	3,195.6	13,824.2	6,772.2
GIS	-	-	-	-	-	-	13,787.1
SCADA	-	-	-	-	-	-	2,920.4
Infrastructure renewal	24.1	11.2	34.7	24.1	53.6	147.7	262.4
Total	**1,002.8**	**2,786.7**	**2,864.2**	**4,068.9**	**3,249.3**	**13,971.9**	**23,742.0**

The following sections provide an overview of the applications and infrastructure renewal programs.

2.1.1.1. Applications renewal (SA117)

The applications renewal program is recurrent 'stay in business' expenditure that involves periodic updates to critical business software applications, in particular, vendor version updates. The updates ensure we have reliable, resilient, compliant and efficient business processes and systems, which preserves the ongoing integrity of our services. It includes ensuring any known issues, including security vulnerabilities, can be addressed.

Benefits of the applications renewal program include increased scalability, flexibility and reliability, while also ensuring we continue to meet our regulatory and customer obligations. These updates are recurrent in nature as they result in the software retaining substantially the same services, functionalities, capabilities and market benefits.

Applications renewal is a national IT program. It delivers major and minor system upgrades and replacements as required for the following applications:

- GIS
- Networks interval metering data system
- Billing estimation model
- Dial Before You Dig
- Mobile maps
- Metering & billing system
- Enterprise asset management
- FRC market gateway
- Telemetry system
- Business intelligence platform
- Middleware - BizTalk
- Field data/mobility systems

In the current AA period we have incurred lower costs on the applications renewal program than anticipated. This is due to a combination of efficiency improvements and reprioritisation of resources to focus on critical updates. In summary, during the current AA period we have:

- prioritised technical and business resources to focus on the customer-critical SmallWorld GIS system update. This application was significantly outdated and required substantially more effort to bring it up to standard than we originally anticipated, having not been updated for many years, with vendor support ceased in 2010;

- changed the originally anticipated upgrade cadence. The original profile of works was based on a current minus one (n-1)[4] rate of change. During delivery of upgrade projects it we realised n-1 could be achieved with fewer upgrades. This was verified against vendor technology roadmaps and allowed us to defer some investment;
- optimised works under the application lifecycle framework; and
- achieved efficiencies by finding new and consolidating existing service providers, as well as negotiating preferable procurement rates.

As a result, our expenditure during the current AA period is expected to be around $7 million, compared to the $19 million originally forecast.

In the next AA period, we will continue the good practice of updating our critical IT systems on an ongoing basis via our applications renewal program. The reprioritisation of resources and subsequent update deferrals during the current period means there will be some uplift in expenditure across the next AA period. As a result, the applications renewal expenditure forecast for the next AA period is $14 million.

While the $14 million forecast for the next AA period is an uplift compared with the $7 million current period actuals, it is considerably lower than the $19 million originally estimated for the current AA period. We consider the forecast for the next AA period represents a prudent and deliverable program that more closely reflects the likely ongoing cost of maintaining our critical applications. Table 2.3. shows the expenditure profile by application.

Table 2.3: Proposed applications renewal program investment $'000 2019/20

Applications renewal	2021/22	2022/23	2023/24	2024/25	2025/26	Total
Metering & billing system (Oracle)		678.8		2,801.9		3,480.7
Works management system (Maximo)			1,880.9		705.0	2,585.9
GIS (Smallworld)		377.6		377.6		755.3
Dial Before you Dig	216.3			216.3		432.7
Historian system	143.5		788.6			932.0
FRC market gateway (WebMethods)	476.6			476.6		953.3
Middleware (Biztalk)		397.1			1,134.7	1,531.8
Mobility/planning & scheduling applications		1,171.8			1,171.8	2,343.6
Licences	142.3	150.2	160.1	172.3	184.1	809.0
Total	**978.7**	**2,775.5**	**2,829.6**	**4,044.8**	**3,195.6**	**13,824.2**

Totals may not sum due to rounding

[4] n-1 Refers to the specific software version number associated with a specific vendor software, where "n" represents the current version of the released and supported software, and -1 refers to an older version of the same vendor software which would still be supported. This ensures ongoing vendor support and mitigates the risk of security breaches, system outages and potential regulatory non-compliance. This enables appropriate levels of operation, data integrity and inter-operability between various vendor-provided technologies

The applications renewal program proposed for the next AA period deliver a number of benefits. In summary the investment program will:

- substantially reduce the risk of system(s) failing or the integration between systems not operating as intended;
- ensure upgraded applications continue to provide required integrated functionality to support business processes;
- manage alignment with other co-existing applications;
- maintain systems security, protecting information assets from confidentiality, integrity and availability risks;
- improve software performance and efficiency and stability of IT systems over time;
- provide for the continuation of technology vendor support (this requires movement to a recent version of the software);
- improve the security and integrity of business information as vendors place greater emphasis on these solutions; and
- enable compliance with updated market requirements.

This applications renewal program has been designed using an industry-standard application lifecycle management methodology and a practical framework to determine upgrade timelines and priorities. Estimation assumes version upgrades are applied every three years. This encompasses a combination of major and minor upgrades, and reflects vendor technology roadmaps.

Further detail on this program is available in the Applications Renewals Business Case (SA117) provided in Attachment 8.8 to the SA Final Plan[5].

2.1.1.2. Infrastructure renewal (SA139)

The infrastructure renewal program is a 'stay in business' program that involves periodic renewal of network and end-user devices such as laptops, audio/visual equipment, telephony, internet links and servers that support critical business functions. The updates ensure we continue to maintain reliable, resilient, compliant and efficient network and end-user devices, and preserve the ongoing integrity of our services. It includes ensuring that any known issues, including security vulnerabilities, can be addressed.

The forecast cost of infrastructure renewal over the next AA period is $0.15 million. This investment provides for retention of the current managed services agreement that supports the 50 current AGN IT users, allowing for hardware upgrades according to our lifecycle management plan.

The program also includes undertaking a number of general improvements around cyber security and the Intelligent Information Management System (IIMS). This includes annual penetration testing, enhancing controls in live with the ASD Essential Eight, improved backup/restore capabilities, improved mobile device management and enhanced wireless security. These improvements will mitigate cyber and productivity impact risks. It will also improve operational efficiency, delivering timely support for customers, improved working conditions for employees, and the lowest long-term cost for AGN and our customers.

[5] AGN, Five year plan for our South Australian network July 2021 – June 2026, Final Plan, July 2020.

2.2. Enabling effective and efficient delivery of services to customers

Fundamental to our vision objective of remaining sustainably cost efficient is our ability to identify ways of delivering services at a lower cost or in a more efficient manner. IT investments play a major role in this, as technological developments can often help us manage the network or provide customer service more efficiently.

We therefore adopt a continuous improvement approach in our technology environment, seeking to invest in IT improvements where practicable. Typically these investments involve developing new IT systems undertaking large scale overhauls of existing systems, meaning the expenditure is non-recurrent.

Our IT improvement investments aim to:

- reduce the cost of asset management – we look to drive further efficiencies in current business activities through improvements in asset management, including by introducing more sophisticated tools for planning expansion and replacement programs and for network operations;
- improve our analytical capability – we will build our analytical capability to better connect operational data with core business data by improving the collation, integration and organisation of data from multiple systems and developing tools to facilitate data access and interpretation for forecasting and operational insights;
- increase efficiency through greater automation of our processes – we will continue to develop our field mobility and process automation programs to further automate current manual tasks and allow improved monitoring, more accurate data capture and improved integration of data into necessary systems; and
- meet changing customer expectations – we will upgrade our systems to enable us to deliver a greater number of customer services digitally in line with customer expectations of a modern utility and insights gained through our recent customer workshops.

Our recent focus has been on the potential for IT to enable more efficient operations. In the current AA period, we commenced and implemented standalone IT projects to improve our field mobility and to establish a business intelligence platform. We will continue to leverage, develop and build these capabilities over subsequent AA periods.

2.2.1. Forecast non-recurrent IT capex overview

Over the next AA period we proposed to spend $18 million non-recurrent initiatives. There are three new IT initiatives planned for the next AA period. These are:

- an Asset Investment Planning & Management (AIPM) tool that is designed to enable more effective and efficient delivery of services to customers;
- new customer digital services to deliver more of our customer services digitally; and
- our AGIG IT Strategy and Roadmap that will continue rationalisation of our corporate IT systems and infrastructure across AGIG where possible.

Table 2.4 profiles the forecast non-recurrent IT investment over the next AA period and includes a comparison with the total non-recurrent IT investment we expect to make by the end of the current AA period.

Table 2.4: Proposed non-recurrent IT investment $'000 2019/20

Non-recurrent expenditure	2021/22	2022/23	2023/24	2024/25	2025/26	Total next AA period	Total current AA period
AIPM	-	-	2,361.3	-	-	2,361.3	n/a*
New Customer Digital Services	364.1	1,151.0	347.4	294.3	-	2,156.8	
AGIG IT Strategy & Roadmap	730.3	977.3	4,304.1	5,502.1	1,993.2	13,507.0	
Total	**1,094.4**	**2,128.3**	**7,012.8**	**5,796.4**	**1,993.2**	**18,025.1**	**17,033.4**

* Note these non-recurrent initiatives are new for the next AA period, therefore a line-by-line comparison of projects between periods is not applicable.

Totals may not sum due to rounding

The following sections provide an overview of the non-recurrent IT investment initiatives.

2.2.1.1. AIPM tool (SA121)

This project involves improving our asset investment planning and optimisation processes and systems, while removing the amount of manual intervention currently required. The AIPM tool will allow us to leverage the large volume of data that has now become available following completion of key projects in the current period such as the GIS updates and the new mobility system. By allowing greater consolidation and analysis of data, the AIPM tool will help us improve decision making in areas such as:

- asset replacement and asset design;
  - for example, improved access to data would assist capacity modelling ensure that asset design and timing of construction is optimised;
- asset maintenance versus asset replacement;
  - for example, improved access to the additional asset data made available through the AIPM will allow maintenance frequencies to be optimised and scheduled maintenance activities to target specific asset components that are identified as showing signs of deteriorating reliability; and
- prioritisation and prudent deferral of investments.

The AIPM tool will cost approximately $2.4 million and will be fully delivered in the next access arrangement period. The tool should result in positive economic benefits to customers, with substantial amounts of capex being avoided and deferred, mostly in the following regulatory period.

For more detail on the AIPM tool, refer to business case SA121 in Attachment 8.8 Capex Business Cases.

2.2.1.2. New digital customer services (SA137)

This project involves continuing work started during the current period to enhance the scope of digital communication with our customers. We will develop a flexible customer relationship management (CRM) solution with self-service capability. In particular, this includes:

- catering for tailored responsive support, confidentiality and proactive reporting for life support and vulnerable customer segments. This is driven by increased customer needs as well as an increasing regulatory expectation of communication with vulnerable customers (accelerated in more recent times due to COVID-19); and
- updating customer communications and notification from the predominantly one-way, highly manual and paper-based processes, to digital communication. This is consistent with regulatory and customer expectations. The new digital services will increase the likelihood customers are aware of information relating to works at their premises or in their community, enable our customers to engage with us as and when they want, and ensure contemporary data security and privacy standards are met.

This CRM solution will cost approximately $2 million in capex[6] and will be fully delivered in the next access arrangement period.

For more detail on the new digital customer services, refer to business case SA137 provided in Attachment 8.8 Capex Business Cases.

2.2.1.3. AGIG IT Strategy & Roadmap (SA138)

In 2019, AGIG developed the AGIG IT Strategy and Roadmap to stabilise and align our IT management processes, IT architectures, acquisition methods and certain core technology platforms across the Group. The objectives of this program were to:

- better deliver the AGIG corporate strategy and individual business unit operating strategies and plans;
- support feedback from our stakeholders, regulators and customers that they value reliable and safe delivery of energy to our customers backed up by timely support when they need help;
- address specific issues and risks common to all AGIG businesses, including cyber security, likelihood of errors and poor management decisions based on the incorrect or untimely information, and employee frustration due to lack of access to data and ability to collaborate effectively; and
- achieve economies of scale in purchasing and support costs.

To facilitate this, a two stage program was developed. Stage 1, which started in 2019, involved delivering a foundational program to ensure effective use collaboration, appropriate management of cyber risks and leveraging economies of scale. This included initial components of a larger program to improve reporting capabilities, empowering management with more accurate and timely information.

Stage 2 plans to build on and leverage the foundational program via several transformational initiatives. In particular, this includes the 'OneERP' project – development of a standardised enterprise resource planning (ERP) system across the AGIG group. Having a standard ERP system

[6] This project also requires $1 million in non-recurrent opex.

will allow us to remove the heavy customisation, and therefore the substantial risks, associated with local finance systems.

We will also continue the foundational Stage 1 program to improve reporting capabilities by adopting standardised reporting tools and data structures, which will provide access to the 'right' information quickly, reliably and dynamically.

The majority of Stage 1 work is being completed in the current AA period. The remainder of Stage 1, along with the more transformational Stage 2, is planned for the next AA period. This requires approximately $14 million investment in the next AA period and is expected to be completed by 2025/26

For more detail on AGIG IT Strategy and Roadmap, refer to business case SA138 provided in Attachment 8.8 Capex Business Cases.

2.3. Deliverability of the IT plan

The end-to-end program of work was developed, and will be delivered using a formal governance framework consistent with our industry standard business and technology project management methodology. The program and project governance for business and technology projects provides a decision making framework that is logical, robust and repeatable. This not only increases the opportunity for success, but also allows us to prioritise (and reprioritise if necessary) projects to ensure prudent and efficient use of IT resources.

We have a successful track record of delivering programs of work of similar size during the current and previous access arrangement periods, including delivering significant standalone projects such as the enterprise asset management, SCADA, GIS and metering & billing system projects.

We consider the overall program of work is comparable to that undertaken over the current access arrangement period, and has been staged to ensure we have a well-balanced resource profile to allow for the most efficient and successful delivery. We have robust controls and vendor arrangements in place to ensure successful delivery of the planned program in its entirety, including:

- executive management support and strong program/project governance;
- a sound project management methodology including robust risk analyses which are revisited regularly throughout the life of the project;
- stakeholder engagement in planning phases; and
- internal and external capacity with the appropriate skills and experience.

2.4. Summary of the current AA period

In the current AA period we forecast we will invest $41 million in IT. This is around $20 million (32%) below our approved allowance of $60 million. As discussed in section 2.1.1.1 (and below), this lower-than-forecast expenditure is due to a combination of efficiency improvements and prudent deferral of projects while we focused on more customer-critical systems.

Though delivery of some projects was delayed, by the end of the current period we will have:

- completed major upgrades to our geographical information, SCADA and metering and billing systems; and minor updates to several other critical applications;
- completed a field mobility integration project to enhance the mobile communications within our field workforce. This includes integrating enhanced mobile communications into the EAM System

(Maximo) and GIS; and implementing prudent and efficient end to end business processes that automate EAM and GIS functionality through mobility;

- rolled-out a core business intelligence platform to provide core functionality on which future capabilities can be developed and benefits realised;
- developed digital capabilities by improving our website and providing a web portal system to support the customer connections process; and
- enhanced cyber security and developed a new enterprise reporting system for AGN.

Our IT investment in the current AA period, by project, is summarised in Table 2.5.

Table 2.5: Summary of IT investment in the current AA period, $'000 2019/20

Project	BC #	Approved	Actual 2016/17	Actual 2017/18	Actual 2018/19	Forecast 2019/20	Forecast 2020/21	Total
Geospatial Information System	SA58	16,288.6	170.2	555.6	838.2	3,955.2	8,267.9	**13,787.1**
Applications Renewal	SA57	19,220.6	-	1,224.3	1,675.7	3,147.2	725.0	**6,772.2**
SCADA & Historian systems upgrade	SA62	3,641.8	-	954.5	1,965.9	-	-	**2,920.2**
Infrastructure Renewal	SA82	1,112.7	23.6	64.9	30.7	38.4	104.9	**262.4**
Business Intelligence	SA60	9,324.0	-	215.8	222.7	196.9	2,329.0	**2,964.4**
Mobility Integration	SA59	9,752.9	-	144.4	465.0	907.1	8,971.4	**10,488.0**
Develop Digital Capability	SA84	940.7	362.7	84.2	-	281.6	51.4	**780.0**
AGIG Strategy & Roadmap	-	-	-	-	-	278.3	2,098.9	**2,377.2**
Life Support data solution		-	-	-	-	-	423.3	**423.8**
Total		**60,281.4**	**556.5**	**3,243.8**	**5,198.2**	**8,804.7**	**22,972.3**	**40,775.4**

The lower-than-expected investment during the current AA period is driven by:

- a reduced number of upgrades required to maintain n-1 currency of systems compared to forecast;
- further optimisation achieved under the Application Lifecycle Framework; and
- efficiencies achieved as a result of finding new, and consolidating existing service providers, as well as negotiating preferable procurement rates.

There was also an element of discovery during the current period, whereby we used our business and technology project management methodology to review and reprioritise resources where prudent to do so. The current AA period saw the commencement of AGIG's nationwide IT rationalisation program. A vital component of this program was a detailed assessment of current legacy systems, many of which were outdated and required more work than originally anticipated.

For example, upon assessment we found the SmallWorld GIS system had not been updated since 2010 and was no longer supported by the vendor. Given the importance of the GIS system to our operations, we diverted time and resources to make the GIS fit for purpose and bring it up to industry standard. As a result, we had to defer some other works where safe and prudent to do so.

We have adopted the lessons learnt from the current period and built them into our forecasts for the next AA period. As such, the forward-looking program is more conservative than the original forecast for the current AA period. We consider the IT investment plan for the next AA period is deliverable, represent a prudent balance between recurrent and non-recurrent works, and that the recurrent IT investment is more reflective of expected ongoing capital costs.

3. Consistency with the NGL and NGR

Our networks are operated in accordance with the National Gas Law (NGL) and NGR. The overarching objective of the NGL is set out in the National Gas Objective (NGO), which states that the objective of the NGL is to "*promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply*".

Our proposed investment in the next AA period is consistent with this objective because it will enable us to maintain and prudently extend our IT systems and business processes in a manner that will ensure the ongoing safety, reliability and security of supply is managed in a cost effective way, which is in the long-term interests of consumers.

The proposed expenditure also complies with the NGR.

It is compliant with the new capex criteria in rule 79 of the NGR because it is:

- such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice to achieve the lowest sustainable cost of providing services (rule 79(1)(a)); and
- Justifiable under rule 79(1)(b) and 79(2), because:
  - the Asset Investment & Planning Management project is justifiable under rule 79(2)(a) because it yields a positive economic value.
  - the other proposed projects are necessary to maintain and improve the safety of services, maintain the integrity of services or to comply with a regulatory obligation or requirement (rule 79(2)(c)(i)-(iv)) as described in the table below.

Table 3.1: Consistency of the proposed IT program with rule 79(2)(c) of the NGR

#	NGR criteria	Justification of the proposed expenditure
79(2)(c)	**The capital expenditure is necessary:**	
(i)	to maintain and improve the safety of services	SA117 Applications Renewal Program – Ongoing updates to key operational IT systems reduces their risk of failure or security breaches. For many of these systems, failure could result in significant risk to safety for both employees and the general public. SA137 New digital customer services – Developing digital methods of customer communication, including critical tailored and confidential support for life support and vulnerable customer segments, will ensure that services are able to be provided efficiently in a safe manner.
(ii)	to maintain the integrity of services	SA117 Applications Renewal Program - Ongoing updates to key operational IT systems reduces their risk of failure or security breaches. Failure of any of these systems will risk the integrity of our pipeline services SA138 AGIG IT Strategy and Roadmap - Addressing cyber risks will reduce the likelihood and impact of a cyber incident. A major cyber incident could result in a loss of operational control and an inability for AGN to recover on its own. SA139 Infrastructure Renewal – Renewing basic IT services allows employees to effectively perform their duties, thereby ensuring that core operational functions continue to be performed in a timely manner.

#	NGR criteria	Justification of the proposed expenditure
79(2)(c)	**The capital expenditure is necessary:**	
(iii)	to comply with a regulatory obligation or requirement	SA117 Applications Renewal Program - Ongoing updates to key operational IT systems reduces their risk of failure or security breaches. This therefore ensures that regulatory obligations (e.g. Retail Market Procedure requirements for processing timeframes) are not breached due to system unavailability. SA137 - The planned CRM solution is necessary to allow us to comply with our regulatory obligations, particularly with regard to communicating with vulnerable customers in line with the AER Statement of Expectations of energy businesses: Protecting consumers and the energy market during COVID-19 (and an anticipated continuation of these expectations going forward). SA139 Infrastructure Renewal enables compliance with regulatory obligations, particularly data provision requirements under the RMP.
(iv)	to maintain the capacity to meet existing levels of demand for services	SA137 Improved CRM is necessary to enable us to service existing levels of customer demand.

Forecast costs are based on the latest market rate testing and reflect the lifecycle management and estimation approach described in the following sections. The estimate has therefore been arrived at on a reasonable basis and represents the best estimate possible in the circumstances.

3.1. Project management and application lifecycle methodologies

We utilise an industry standard business and technology project management methodology, which is managed through formal governance. This methodology divides the projects into key stages – concept, develop, plan, deliver and close. Each stage consists of key tasks and activities to ensure consistency and standardisation across projects. The project methodology provides a consistent, standard and quality assured project implementation framework, ensuring that the work is carried out in a prudent and efficient manner.

The business and technology project management methodology is provided in Appendix A.

We also follow an industry standard application lifecycle framework to manage applications through the implementation, operations, optimisation and retirement phases of their lifecycle. This framework provides an efficient and effective approach to maintaining the security and stability of the applications while optimising lifecycle stages. This framework includes the project management methodologies to implement the applications, and ongoing lifecycle activities to operate and optimise the applications - including upgrade cycles.

The application lifecycle management framework is provided in Appendix B.

3.2. Estimation approach and cost allocation

To ensure project estimates are developed in a consistent manner, we use an estimation tool (aligned with the project methodology) to forecast the work effort and cost estimates for all projects included in this IT investment plan. The tool uses actual values from the current AA period for resource work effort estimates, with all actual values used being sanity checked to ensure any changes to the way historical projects were carried out are taken into account.

The material and direct labour costs, and applicable planning, design and commissioning charges, are based on historical actual costs of similar projects and on vendor quotes that are subject to a competitive tendering process[7]. This assumes the use of an efficient combination of internal and external resources to deliver each project.

The historical values and work effort estimates are then used as inputs into the final estimates, which are subject to stringent review and endorsement by members of the IT Estimates Review Committee. The work effort, cost and timing of projects are monitored throughout the project lifecycle to ensure on time and on budget delivery. Further information on this governance process is provided in Appendix A.

Once the total project cost has been determined, the forecast costs are then allocated to the AGN businesses that use each system on the most appropriate basis available. We consider the most appropriate basis for this is the number of customers served. This is same method adopted in previous regulatory submissions, and has previously been endorsed by the AER[8].

For this submission, the IT capex required to deliver the program of work for South Australia over the next AA period has therefore been allocated to the South Australian gas distribution business based on the number of customers served, relative to the total customers for all AGN businesses. As at 31 December 2019, South Australia accounted for 35.8% of AGN's total customer numbers, and as such, forecasts in this plan generally include 35.8% of the total costs of each project[9].

[7] in accordance with the APA Procurement policy and guidelines - available upon request.

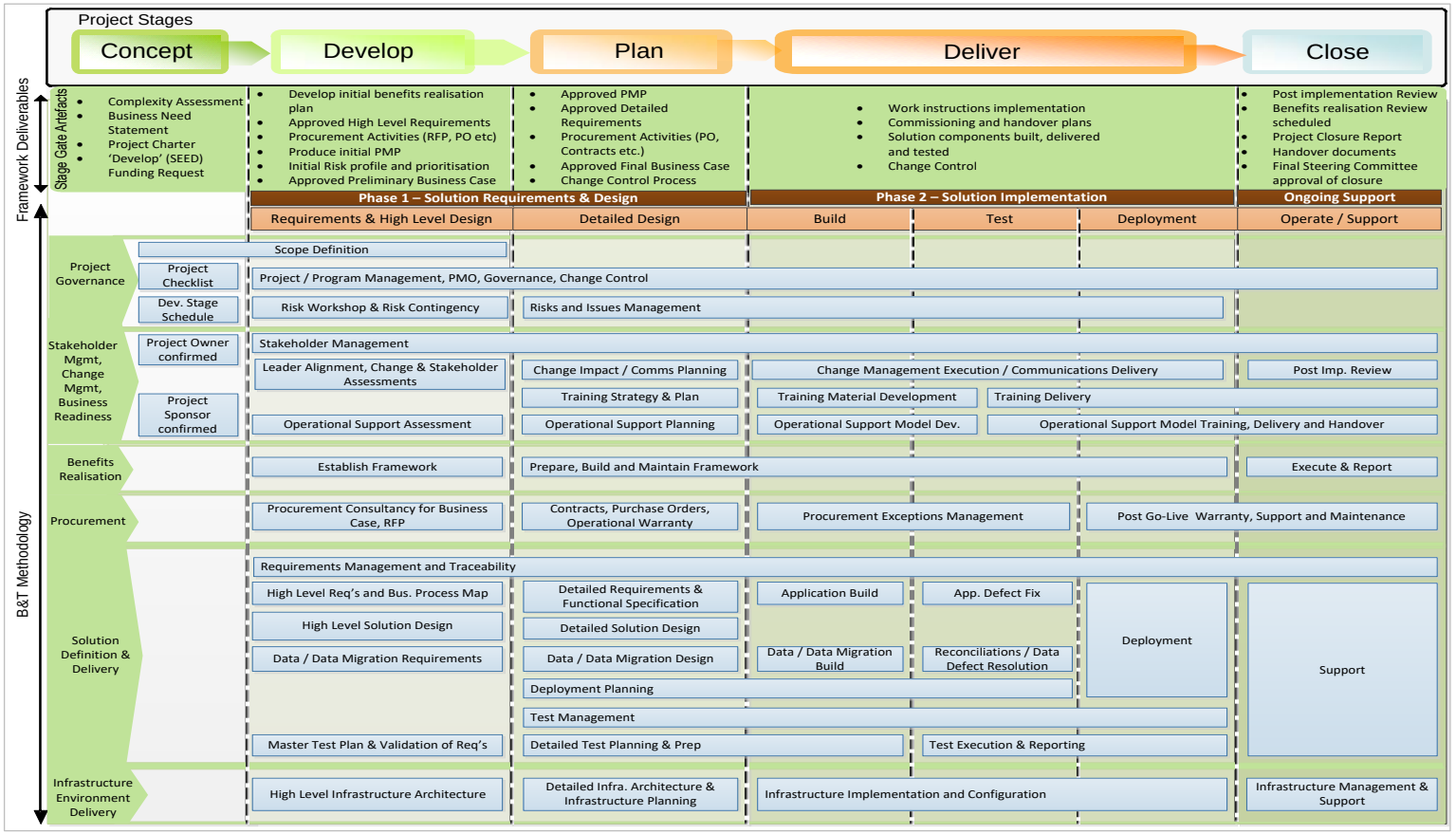
[8] For example in approving the GIS upgrade as part of our previous AA submission, the AER acknowledged that these projects formed part of a national program, with an "appropriate division of costs" between jurisdictions, "*Draft Decision: Australian Gas Networks Access Arrangement 2016 to 2021, Attachment 6 – Capital expenditure*", November 2015, pg. 6-42.

[9] There are two exceptions to this. 1) The Historian system, where the allocation is based on the number of telemetered customers data points. The AGN SA allocation for this system is 49.8%. For Historian there is no allocation of costs to the Victorian and Albury networks, as the Australian Energy Regulator receives data directly from the SCADA system and the Historian system is not utilized. The AGN SA allocation for this system is therefore higher than for our other systems; 2) The AGIG IT Strategy and Roadmap. This is an AGIG wide project, and as such, costs are allocated to across all AGIG businesses. Costs for this system are allocated on an FTE basis, with 38.5% being attributed to AGN SA to reflect our proportion of total AGIG FTEs.

Appendix A – Business and technology project management methodology

A1: Project methodology

To manage all its IT projects, AGN utilises an industry standard business and technology project management methodology, which is managed through formal governance. The key aspects of this methodology are outlined in the diagram below.



A2: Project approvals

Executive management support and program and project governance

As will be seen from the composition of the various governance forums below, the most senior people in APA and AGN, from Board members to the CEO to Executive Committee members, are involved in approving and monitoring B&T projects.

The following mandatory review and assessment points exist within the governance framework:

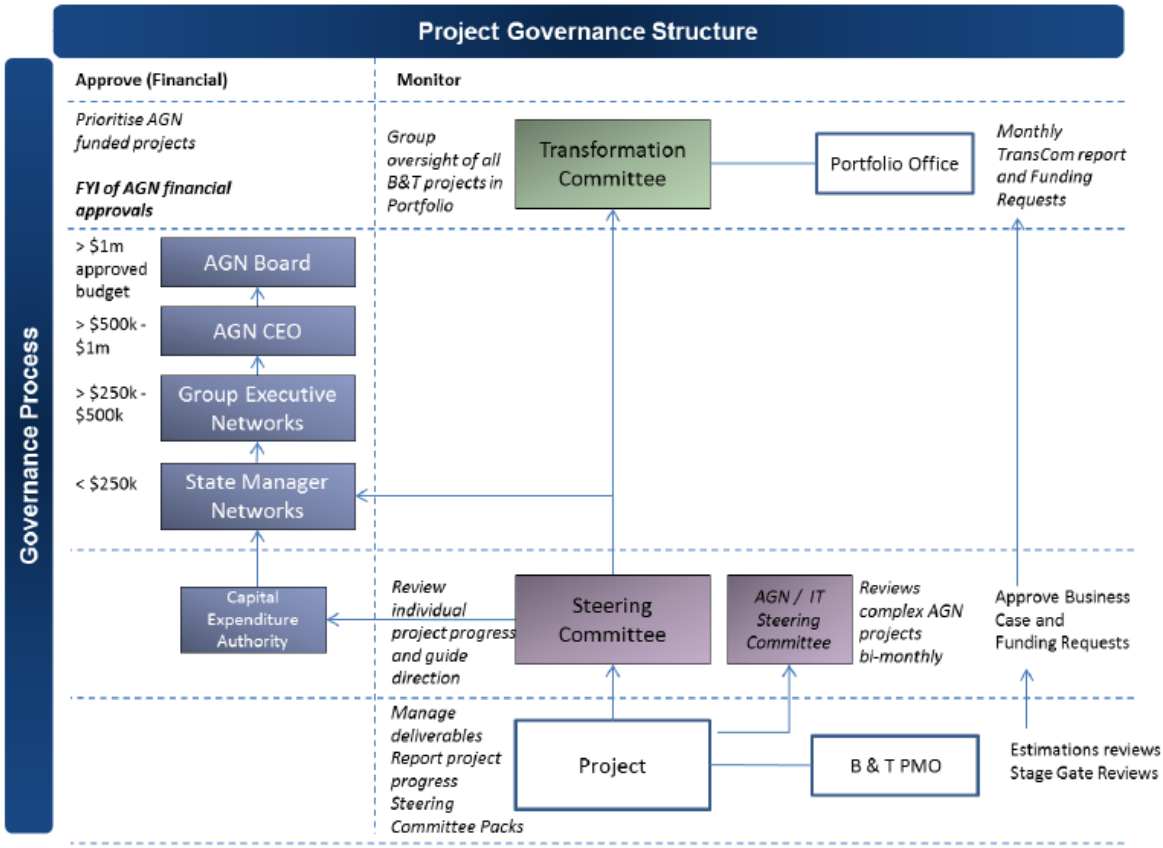
1. Formal approval by an independent governance forum, e.g. the full AGN and APA Board or the Group Transformation Committee, depending of the size of the project.
2. Stage gate assessment of key deliverables, schedules and processes.
3. Risk assessment in each stage.
4. Progress review by Project Steering Committee (at least monthly).
5. Review of business case, to ensure benefits are still attainable.
6. Spot-check assessments.
7. Formal user acceptance testing and sign-off.
8. Post implementation reviews identifying lessons learned and enhancing the corporate methodology.
9. Closure reports.

Business and technology project governance structure

The business and technology project governance structure ensures the projects undertaken are the most appropriate, support the Network business and IT strategy and provide business benefits and risk mitigation.

The governance structure is scaled to ensure approvals occur at the right level of the organisation, and smaller projects are not unnecessarily burdened with onerous governance processes.

Project governance structure



A3: IT governance forums

The following forums are required to support the effective operation of IT governance and help facilitate the IT decision making process for all business and technology projects.

Board

Any projects that have an expected end-to-end budget of over a policy-agreed amount must be approved at AGN Board level.

Transformation Committee

The Transformation Committee consists of the executives and the chief executive officer. The Transformation Committee provides strategic direction and facilitates decision making around IT. All B&T projects must be approved by the Transformation Committee, which is essentially the investment committee for B&T projects.

The Committee:

- prioritises business and technology projects;
- approves funding;
- verifies project alignment with strategic objectives; and
- has authority to start and stop projects/initiatives.

AGN / IT Steering Committee

The AGN / IT Steering Committee acts as the progress review committee for business and technology projects approved to be delivered in the current budget period and are responsible for.

- endorsing all new projects;
- endorsing all requests to Transformation Committee;
- ensuring project alignment with strategic objectives;
- the governance of all projects and initiatives; monitoring overall spend/savings, benefits, project health and dependencies;
- monitoring overall risks;
- starting and stopping projects/initiatives; and
- identifying productivity and business improvement opportunities, including the leverage of initiatives across the business, and drives out best practice initiatives

Steering Committee

The Steering Committee comprises relevant senior stakeholders from AGN and APA who regularly review the project's progress and guide its direction, to ensure it is in line with strategic objectives and is delivering according to agreed business need, priority, objectives, benefits and success criteria.

The Committee:

- provides timely thought leadership (decisions / advice / guidance);
- engages the business at executive level;
- champions stakeholder support of internal resources and management of resource constraints;
- facilitates business buy-in and commitment;
- acts as an escalation path and decision making forum for critical issues, risk and scope changes;
- originates and maintains organisational links within APA and with external constituencies;
- oversees conflict resolution by providing assistance to project/program manager as required;
- initiates appropriate communication and information flows within the committee and relevant governing bodies;
- monitors the progress according to defined project performance criteria (scope, schedule, costs, funding, stakeholder commitment, benefits, risks, issues, resourcing, dependencies, change management, vendor management); and
- ensures project objectives and critical success criteria are met.

A4: Good industry practice project management methodology

An organisational-wide project management framework underpins the program delivery. Risk assessments are required as part of the business case development, and are revisited at each stage of the project to ensure changes in the project, the business operating environment and/or the regulatory environment are always considered and addressed. This overall approach is supported by three core frameworks:

- The Project Management Framework (PMF) - providing a consistent and scalable approach to project management including artefacts and processes.
- The Change Management Framework (CMF) – providing guidance for the activities and artefacts required for change at each stage of the project lifecycle.
- The Project Assurance Framework (PAF) - providing guidance for health checks, stage gate reviews and post implementations reviews.

Project Management Framework (PMF)

The PMF is made up of five project management stages:

Each stage has distinct areas of focus and key artefacts for completion. To exit each stage, stage gate criteria must be met to ensure key deliverables and processes within a stage are completed satisfactorily before the next stage can commence, and to ensure the project is still viable.

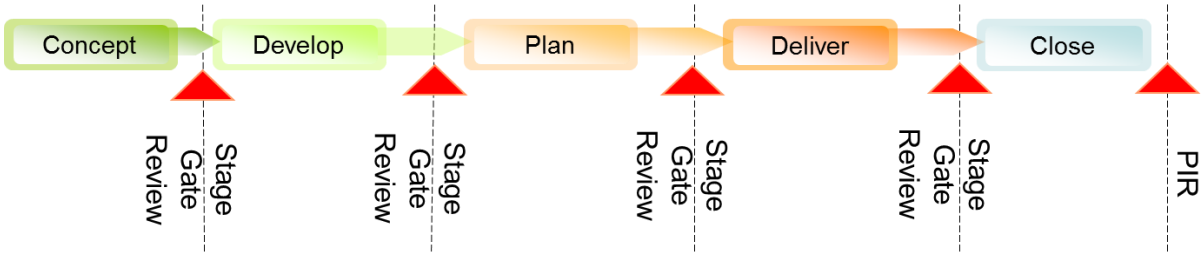
Change Management Framework (CMF)

The CMF is a structured approach to transitioning individuals, teams and the organisation from the current state to the desired future state and aims to maximise the value and likelihood of achieving business outcomes and minimising disruption for our people and customers.

Similar to the PMF, it is a disciplined methodology and follows a staged approach as per the diagram below:

The Project Assurance Framework (PAF)

The PAF ensures consistent application of the project management governance, artefacts and methodologies required to progress a project from stage to stage.



In addition to providing the basis for progression of a project, the Project Assurance Framework will guide

- Health checks
- Internal and external audits
- Post implementation reviews.

Appendix B: Application lifecycle management

We utilise an industry-standard application lifecycle management methodology and a practical framework to determine upgrade timelines and priorities. The diagram below outlines the key aspects of this framework.