



# Asset Management Plan

## **Corporate IT – Software Asset Management Plan**

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# Document Control

## Authorisation

Action	Name and title	Date	Signature
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- Compliance All group managers.

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# Table of contents

<b>1</b>	<b>GLOSSARY .....</b>	<b>5</b>
<b>2</b>	<b>INTRODUCTION .....</b>	<b>7</b>
2.1	PURPOSE OF THIS PLAN.....	7
2.2	BENEFITS OF IT INVESTMENT .....	8
2.3	CHALLENGES IN THE MANAGEMENT OF IT SOFTWARE ASSETS .....	9
<b>3</b>	<b>SCOPE .....</b>	<b>10</b>
3.1	IN SCOPE .....	10
3.2	OUT OF SCOPE .....	10
<b>4</b>	<b>THE JOURNEY .....</b>	<b>11</b>
4.1	REGULATORY CONTROL PERIOD 2017-2019.....	11
4.2	REVENUE RESET 2019-2024 (RR19).....	11
4.3	BEYOND 2024 (RR24) .....	12
<b>5</b>	<b>OPERATING PRINCIPLES .....</b>	<b>13</b>
5.1	ENTERPRISE PRINCIPLES.....	13
5.2	BUSINESS PRINCIPLES.....	18
5.3	DATA PRINCIPLES.....	18
5.4	APPLICATION PRINCIPLES.....	19
5.5	TECHNOLOGY PRINCIPLES.....	21
<b>6</b>	<b>ASSET MANAGEMENT .....</b>	<b>22</b>
6.1	TOGAF AT TAS NETWORKS .....	22
6.2	APPLICATION TYPES.....	23
6.2.1	<i>Software</i> .....	23
6.2.2	<i>Web application</i> .....	23
6.2.3	<i>System interface</i> .....	24
6.2.4	<i>SharePoint application</i> .....	24
6.2.5	<i>Software-as-a-Service</i> .....	24
6.3	MONITORING.....	24
6.3.1	<i>Proactive monitoring</i> .....	25
6.3.2	<i>Reactive monitoring</i> .....	27
6.4	DEFECT MANAGEMENT .....	27
6.5	METHODOLOGY TO CREATE PROGRAM OF WORK FOR RR19.....	27
<b>7</b>	<b>INITIATIVES (2017).....</b>	<b>30</b>
7.1	DRIVERS .....	30
7.1.1	<i>Asset End-of-Life / requires technology uplift</i> .....	30
7.1.2	<i>Compliance</i> .....	32
7.1.3	<i>Business as usual – “Keep the lights on”</i> .....	33
7.1.4	<i>Strategic / Transformational</i> .....	34
7.2	MAJOR INITIATIVES BY FUNCTIONAL AREA .....	34
7.2.1	<i>Business System Upgrades</i> .....	34
7.2.2	<i>Customer Information Systems</i> .....	35
7.2.3	<i>Data Warehouses, Business Intelligence and Analytics</i> .....	35
7.2.4	<i>Digital Customer Engagement</i> .....	36
7.2.5	<i>Enterprise Architecture Evolution</i> .....	37
7.2.6	<i>Enterprise Information Management</i> .....	37
7.2.1	<i>Finance, HR, Asset and Works Systems</i> .....	37
7.2.2	<i>IT Infrastructure, Security &amp; Support</i> .....	38
7.2.3	<i>Market Systems</i> .....	38
7.2.4	<i>Mobility</i> .....	39
7.2.5	<i>Outage Management</i> .....	39
<b>8</b>	<b>PROGRAM OF WORK.....</b>	<b>40</b>
8.1	REVENUE RESET 19 PROGRAM OF WORK .....	40
8.1.1	<i>RR19 Roadmap</i> .....	40
8.1.2	<i>Total Proposed Non-Network IT Program by Functional Area</i> .....	41

8.1.3	Previous Capital Expenditure vs. Proposed - Transmission.....	42
8.1.4	Previous Capital Expenditure vs Proposed - Distribution .....	42
8.1.5	Non-Network IT Operational Expenditure - Transmission .....	43
8.1.6	Non-Network IT Operational Expenditure – Distribution.....	43
8.2	REVENUE RESET 24 PROGRAM OF WORK .....	44
8.2.1	Total Proposed Non-Network IT Program by Functional Area .....	44
8.2.2	Non-Network IT Operational Expenditure - Transmission .....	45
8.2.3	Non-Network IT Operational Expenditure - Distribution.....	45
8.3	INITIATIVE LIST.....	46
<b>APPENDIX 1 – NON-NETWORK IT APPLICATION ROADMAP .....</b>		<b>48</b>

## List of Figures

Figure 1 – Representation of TOGAF ADM.....	22
Figure 2 – Health assessment process .....	27
Figure 3 – RR19 Corporate IT methodology to create program of work .....	28
Figure 4 – TasNetworks application health assessment summary.....	31
Figure 5 – 2019-2024 Roadmap .....	40
Figure 6 – Graph of Proposed Expenditure for Functional Area/Year.....	41
Figure 7 – Table of Proposed Expenditure for Functional Area/Year.....	41
Figure 8 - Previous Expenditure vs. Proposed - Transmission .....	42
Figure 9 - Previous Expenditure vs. Proposed - Distribution.....	42
Figure 10 – RR19 Opex step change by year for Transmission.....	43
Figure 11 – RR19 Opex step change by year for Distribution.....	43
Figure 12 – RR24 Total expenditure by Functional Area / Year.....	44
Figure 13 – RR24 Total expenditure by Functional Area / Year.....	44
Figure 14 – RR24 Opex step change by year for Transmission.....	45
Figure 15 – RR24 Opex step change by year for Distribution.....	45
Figure 16 – Initiative List.....	47
Figure 17 – 2017 – 2019 Predicted State of Core Applications.....	48

## List of Tables

Table 1 - Document glossary.....	5
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# 1 Glossary

Table 1 - Document glossary

Term	Definition
ADM	Architecture Development Method. A detailed, step-by-step method on how to develop enterprise architecture by TOGAF.
AEMO	Australian Energy Market Operator. Delivers an array of gas and electricity market, operational, development and planning functions.
AMP	Asset Management Plan
CAPEX	Capital Expenditure
CENO	Customer Engagement and Network Operations business division
COTS	Commercial off the shelf. Usually refers to ready-made packaged software that can be deployed with configuration rather than customisation.
CRM	Customer Relationship Management system
DNISP	Distribution Network Service Provider
EDW	Enterprise Data Warehouse. A central data repository of key business information assets that can be used for integration, reporting, data-mining and business intelligence.
EIM	Enterprise Information Management
ERP	Enterprise Resource Planning system
EWR	Electrical Works Request
GPS	Global Positioning System
HSEQ	Health, safety, environment and quality management
IT	Information Technology
ICT	Information and Communication Technology. This is an industry standard term to recognise the broad range of technologies covering computers, software, mobile and communication devices.
Investment Evaluation Summary (IES)	IES is an investment case articulating the investment reason, business benefits, risks, options considered, NPV and alignment with business strategy
MC	Metering Contestability
MDP	Metering Data Provider
MDMS	Meter Data Management System
MECMS	Major Event Call Management System

Term	Definition
MPB	Metering Provider Type B
NECF	National Energy Customer Framework
NEL	National Electricity Law
NEM	National Electricity Market
NER	National Electricity Rules
NOCS	Network Operation and Control System
OPEX	Operating Expenditure
OT	Operational Technology is technology that is able to cause change (supervisory control) or detect change (data acquisition) regarding physical devices.
OTTER	Office of the Tasmanian Economic Regulator
POW	Program of Work
PROMS	Plant Restriction and Outage Management System. TasNetworks software solution for scheduling and managing network outages.
RCP	Regulatory Control Period
RR19	Revenue Reset July 2019 to June 2024.
RR24	Revenue Reset July 2019 to June 2024.
SaaS	Software-as-a-Service. A software delivery and licensing model that leverages the advantages of cloud computing.
SAM	Strategic Asset Management business division
TESI	Tasmanian Electricity Supply Industry.
TNOCS	Telecommunications Network Operation and Control System
TOGAF	The Open Group Architecture Framework
WSD	Works and Service Delivery business division

## 2 Introduction

Around the world, electricity systems are undergoing fundamental change. At the heart of the change are electricity customers. Across Australia, these customers want more choice and control over their energy use, more renewable energy, lower costs and high levels of electricity system security and reliability.

As the owner and operator of the electricity transmission and distribution systems in Tasmania, TasNetworks is planning its future in this world of change. We are planning how we will continue to serve our customers into the future, and achieve our vision to be ‘trusted by our customers to deliver today and create a better tomorrow’.

Customer benefit is the key driver for the investments we make. We must also ensure our network is safe, reliable and complies with a range of compliance obligations. We are working hard to keep our costs and our prices as low as we sustainably can, while delivering safe and reliable services.

To support our strategy, TasNetworks has developed a roadmap that encompasses the following key goals for our next regulatory period:

- **Business Productivity:** Optimise our program of work and emergency response capability delivering on our promise.
- **Network Capability:** Our network continues to meet demand and power system security systems requirements while accommodating the changing use of our network.
- **Voice of the Customer Program:** Delivering valued services by anticipating and responding to changing customer needs and market conditions.
- **Changing Role of the Grid:** Facilitate customer led technologies and provide complementary services.
- **Culture and Capability Program:** Value chain optimisation and change capability.
- **Predictable and Sustainable Pricing:** Help restore pricing as our comparative advantage.
- **Business Transformation:** Realise our business transformation.

The corporate Information Technology Group is responsible for managing a broad range of corporate information technology services, from desktop and application support to the development and management of specialised business applications and technological capabilities that support core business operations for the enterprise. The IT Group is also in charge of formulating an IT strategy that builds on existing strengths and supports TasNetworks’ strategy roadmap, thus meeting the future needs of the business.

TasNetworks actions its philosophy for asset management through asset management plans (AMP). These documents separate the infrastructure into subsets of like assets with a plan in place for each subset. This Asset Management Plan is concerned with TasNetworks’ corporate IT software solution assets.

The strategies included in this AMP have been developed taking into account past asset performance, industry best practices and the need for prudent investment to optimise cost and asset performance. These strategies also align to TasNetworks’ business strategic goals outlined above.

### 2.1 Purpose of this plan

The purpose of this document is to support the TasNetworks Revenue Reset 2019-2024 submission, and to contribute to the achievement of the company’s business strategic objectives outlined above. This

document makes up part of the overall regulatory proposal that contains details of the TasNetworks corporate IT software assets, the proposed forecast capital expenditure on these assets, expressed in 2017/2018 dollar terms, and the methodology used in developing the program of work.

This document should be read in conjunction with other relevant documents supporting the submission. Supporting documentation further establishes the background, justification, benefits, prudence and prioritisation of the investment decisions covered in this document.

## 2.2 Benefits of IT Investment

In order for the enterprise IT environment to support and drive the organisational strategic goals, it needs to undergo a significant transformation. The initiatives identified by this plan have been carefully selected to enable and support business goals and to deliver on a range of benefits, including:

- Deliver a range of new and enhanced services to TasNetworks' customers that will help them better manage and control their electricity costs, provide additional communication channels (e.g. a digital customer engagement platform), and deliver a range of other services and information that they value;
- Ensure TasNetworks avoids significant risks associated with the end-of-life of related applications, some of which will be unsupported prior to 2024;
- Provide systems, processes and tools to support the introduction of cost-reflective tariffs and the roll-out of advanced meters, enabling customers to better control their energy use and manage peak demand;
- Enable TasNetworks to meet its regulatory and customer obligations in a prudent and efficient way, by delivering efficiencies in the core areas of the business and avoiding the additional expenditure associated with manual processes;
- Minimise threats to security and privacy of personal information that TasNetworks is required to keep in relation to its customers, contractors and employees;
- Empower TasNetworks staff, customers and partners to capture, access and share accurate information when they need it, wherever they may be;
- Enable customers and business to derive maximum value from our increased information collection for improved decision making and reporting;
- Maximise the value from our enterprise platform (ERP) investment by further integrating business solutions within the environment and aligning access to it. This will enhance team members mobility and productivity, allowing TasNetworks to cost effectively respond to external changes;
- Enable TasNetworks to maintain reliability and quality of IT services, in line with agreed service level targets and future business, customer and regulatory requirements;
- Enable TasNetworks to control and, where possible, reduce technology costs in the long term through operational improvements, consolidation of IT applications and improved governance;
- Establish a foundation for the future where more data is collected and analysed through the adoption of advanced technology and further consolidation of systems, optimising flow of information for operational purposes and supporting the understanding of customer needs;

- Enable the long-term convergence of Information Technology (IT) and Operational Technology (OT) through the continual review and alignment of Technology led projects to the 2025 strategy roadmap and Enterprise Architecture evolution.

## 2.3 Challenges in the management of IT software assets

TasNetworks Corporate IT group face a number of challenges with its software asset base. Corporate software assets have significantly shorter lifespans than fundamentally all other corporate assets. Worse still, these lifecycles are often forced even shorter by rapidly evolving technology and business requirements. Many software systems must be regularly maintained or possibly replaced just to meet business, market, functional and performance requirements. Meanwhile, emerging technologies and bodies of knowledge are driving the need for much greater integration of data and functionality between systems including comprehensive business intelligence. The following list summarises the key asset issues:

- Rapidly evolving business and market requirements are driving significant demand on stretched resources and make long-term forward planning of software projects challenging;
- Ongoing evolution of underlying technologies require regular reassessment of TasNetworks' IT architecture;
- Visibility of software vendor roadmaps is often difficult to achieve, making advance planning more difficult. Sometimes TasNetworks has little choice but to implement upgrade or replacement projects when vendors change their product offerings;
- Increasing reliance on IT systems and growing trends in business intelligence and big data are resulting in rapidly increasing demands on TasNetworks IT infrastructure. It is an ongoing challenge to maintain an appropriate capacity in terms of servers, CPUs, memory and storage;
- A rapid increase in the need to integrate disparate systems has led to an exponential increase in system interdependencies, increasing the complexity of managing TasNetworks' software assets;
- Limited internal resourcing results in greater utilisation of external resources, which impacts both costs and retention of intellectual property;
- Limited availability of skilled resources to hire or engage on a short-term basis, can prevent TasNetworks from commencing some projects or require the project to be significantly delayed;
- When national bodies change protocols and procedures TasNetworks is obligated to follow to operate in the National Electricity Market, TasNetworks is obliged to implement the changes in order to remain compliant to regulations.

## 3 Scope

### 3.1 In Scope

This asset management plan (AMP) covers the rationale for Corporate IT initiatives identified for RR19.

This AMP does not cover the management of all software assets at TasNetworks. This document details the management plans for enterprise and business support IT software assets only; some specific line of business IT assets are identified as out of scope.

Business areas in scope of this AMP include:

- Finance and business services. This is inclusive of:
  - Finance;
  - Enterprise Information Management (EIM);
  - Fleet;
  - Tendering and Contracts;
  - Corporate IT.
- People and Performance;
- Strategy and Stakeholder Relations;
- Works and Service Delivery;
- Customer Service Group.

### 3.2 Out of Scope

The following categories of IT Assets are out of the scope of this document and are addressed in separate asset management plans:

- Infrastructure, including: Security, Servers, Desktops (Standard Operating Environment and supporting technologies) and Networking, managed by Corporate IT;
- Network Operation and Control System (NOCS) software assets, managed by the NOCS team;
- Communication software assets, managed by the Telecommunication Network Operation and Control System (TNOCS) team;
- Protection and control software and networks assets, managed by the Protection and Control team;
- Asset management software assets, managed by the Network Information Systems (NIS) team within the Strategic Asset Management Group with the exception of the ERP system.

## 4 The Journey

### 4.1 Regulatory Control Period 2017-2019

The Aurora Energy and Transend business merger – the Tasmanian monopoly distribution and transmission businesses, Aurora Energy and Transend – were merged at the direction of the State Government in 2014 to form TasNetworks. The company was established as an integrated network business to drive efficiencies in the networks and to deliver better outcomes for Tasmanian customers.

However, the merger also resulted in the establishment of a shared Corporate IT function across the businesses, as well as the bringing together of many disparate, duplicate systems. In order to target redundancies and better integrate business processes and systems, TasNetworks has started to transition to a suite of Enterprise Resource Planning (ERP) software. This initiative, which has started in 2015 has gone live early in 2017 with the first release of modules and will conclude early in 2018. The ERP initiative encompasses implementation services, application support services and infrastructure support services, in addition to the ERP solution suite.

In addition, TasNetworks is seeking further consolidation and rationalisation of software assets, and additional investments in customer-facing and asset management systems to support organisational strategic goals and regulatory obligations.

- Regulatory Changes - during the remaining period to the end of RCP 2017-2019, regulatory changes will be made that will impact the Tasmanian jurisdiction in which TasNetworks operates, hence requiring changes to TasNetworks' market and supporting systems. The following have commenced prior to 2019:
  - Metering Contestability (MC) rule changes to be operational by 01/12/17;
  - Transition to cost-reflective tariffs;
  - Ongoing AEMO bi-annual market systems and procedural changes.
- Ongoing upgrades and maintenance – during RCP 2017-2019 there will be ongoing application upgrades and maintenance. The following initiatives are expected to occur:
  - Major Event Call Management System (MECMS) upgrade;
  - Outage and Restoration Management application upgrade.
- TasNetworks has explored options for improving customer-facing systems through a number of strategic ideas, including the introduction of a customer portal for some customer-centric processes, making better use of self-service channels and proactive customer communication mechanisms.
- Definition and implementation of an Enterprise Architecture Strategy for TasNetworks.

### 4.2 Revenue Reset 2019-2024 (RR19)

From 2019 onwards, the Distribution and Transmission businesses within TasNetworks will align with regard to their regulatory determination periods. This allows Corporate IT to develop a consistent strategy upon which to build and execute its Program of Work, and consistently allocate costs between the two regulated streams.

Efforts for RR19 are directed towards software asset consolidation and additional investments in customer-facing and asset management systems, to support organisational strategic goals and regulatory obligations.

Further details of the challenges, objectives and initiatives planned to be undertaken during the RR19 regulatory period are explored later in this document.

### 4.3 Beyond 2024 (RR24)

The POW developed for RR19, identified later in this document, will allow TasNetworks to build a strong base from leveraging its core business capabilities and harness productivity opportunities. This will allow the company to support an easier transition of Tasmania's electricity system, and put it in the best position to grasp the new opportunities as they emerge: TasNetworks will be able to further evolve its service offerings to meet the changing expectations of our customer. The key drivers of the POW are:

- The strategy and vision of the company;
- Further changes to the NEM and its framework;
- 'Power of choice reforms for Metering Contestability' national electricity market reforms;
- The growth of smart metering infrastructure in Tasmania;
- Pressure to reduce electricity prices;
- Evolving customer expectations;
- Adoption of technologies that change use of the network and can advance business productivity;
- Further consolidation through the ERP;
- Further synergies and consolidation that can be achieved between the Transmission and Distribution sides of the business.

In demonstrating prudent expenditure in the upcoming RR19 regulatory period, a number of the initiatives identified were delayed. Although the appetite for these initiatives may change prior to the next determination submission, they have been identified as being on the horizon:

- OMS/SCADA integration with smart meters;
- Alterations to systems to enable support for Network Support Arrangements and Micro-grids;
- Implementation of an Enterprise Customer Relationship Management system;
- Global Positioning System interfacing and improvements.

## 5 Operating Principles

Principles are general rules and guidelines, intended to be enduring and seldom amended, that inform and support the way in which an organisation sets about fulfilling its mission.

Principles are defined to govern a choice between valid alternatives and are relevant to the TasNetworks environment.

The discussion of principles has been broken into several themes including:

- Enterprise principles;
- Business principles;
- Data principles;
- Application principles;
- Technology principles.

### 5.1 Enterprise Principles

Name	<b>Principle 1: Change must be managed</b>
Statement	All changes to architectural applications and technology across the business require formal architectural governance prior to establishing a solution.
Rationale	<p>This principle will give each change proposal due consideration through a formal governance framework.</p> <p>A number of governance gateways are defined during the full life cycle of the change as defined in the endorsed project methodology.</p> <p>An architectural assessment is to be performed to ensure there is full consideration of the impact the solution will have on existing people, process, systems and technology.</p> <p>All legislation, regulation, license and corporate compliance obligations will be satisfied.</p>
Implications	<p><u>Project clarity</u></p> <ul style="list-style-type: none"> <li>• This principle requires that the business problem / issue / opportunity / impact is fully understood.</li> <li>• Gives a clear focus for what is to be changed so that scope and costs can be controlled.</li> <li>• Impact assessments can determine any issues / risks to reduce scope creep and unexpected outcomes.</li> </ul> <p><u>Delivery into production</u></p> <p>TasNetworks' endorsed project methodology is used to deliver changes into the production IT environment.</p> <p><u>Solution architecture</u></p> <p>TasNetworks' Enterprise Architecture framework is used to provide guidance for developing effective solutions within TasNetworks.</p>
How to apply	All projects must be delivered using the endorsed project methodology supported by the Enterprise Architecture framework.

Name	<b>Principle 2: Reduce Unnecessary Diversity and Complexity</b>
Statement	Current systems and new solution proposals will seek to reduce diversity of technology and architecture whilst simplifying integration between applications.

Rationale	TasNetworks' total operational environment of business systems, integration and infrastructure is excessively complex. This increases operational expense burden and hinders flexibility and integration. Limiting the number of supported components will simplify maintainability and reduce costs.
Implications	<u>Standards</u> Standards for technology and architecture must be created as part of the TasNetworks' Enterprise Architecture capability. <u>Reuse</u> <ul style="list-style-type: none"> <li>License costs are reduced through economies of scale and re-use of existing enterprise licenses.</li> <li>Fewer technology options introduced reduces the support skills required and has less work load for support staff to manage.</li> <li>Any application that is replaced must have a plan to be decommissioned.</li> </ul> <u>Rationalise</u> Optimise the number of systems or assets.
How to apply	All projects must follow the endorsed project methodology and consider the solution architecture of proposed solutions through the Architecture design process.

Name	<b>Principle 3: Optimise for Organisational Benefit</b>
Statement	TasNetworks' IT strategy will first strive to leverage common solutions that address multiple needs and that provide enterprise wide benefits over silo solutions. Note: This principle does not imply that individualised solutions are not acceptable. Rather, it is emphasising the benefit of actively seeking to develop standardised solutions to business needs.
Rationale	<ul style="list-style-type: none"> <li>Within the Business, there will always be conflicting and competing projects and initiatives for the limited resources available. Keeping an enterprise wide perspective on this matter and on the allocation of limited resources is the most fair and equitable mechanism for resolving such conflicts.</li> <li>Managing from the enterprise wide perspective (that is, across all groups) provides the best opportunity to identify duplications of effort, as well as to rationalise and reuse solutions.</li> <li>The current autonomous division management within TasNetworks has led to duplications of effort and technology investment.</li> <li>It is more cost-effective to have specialised skills (for example, business system administration, business analysts and project management analysts/programmers) within a central pool that is shared across the enterprise, rather than for the individual groups to carry the costs of such resources within their budgets.</li> <li>The Business requires services that foster operational collaboration, cross-organisation information views, and highly adaptive, flexible enterprise wide solutions.</li> <li>Adopting a holistic view within TasNetworks will maximise the potential synergies across organisational boundaries and increase the reuse potential of solutions developed.</li> </ul>
Implications	<ul style="list-style-type: none"> <li>TasNetworks should review and assess its resources to determine how these resources are structured, in order to optimise their productivity and availability to all groups within TasNetworks.</li> <li>TasNetworks should invest in a governance structure and compliance processes to enhance its investment evaluation, approval and resource allocation processes.</li> <li>TasNetworks' governance processes must ensure that tailored solutions that address unique requirements are strictly managed to avoid incremental divergence from the EA over time.</li> <li>Ensure resource optimisation through shared platforms, implement shared application and database instances where possible. Remove single instance environments through active lifecycle management. Shared platforms are the default. New environments</li> </ul>

	<p>will utilise shared resources, or where capacity is restrained, shared resources will be created. Virtual environments are the default unless technically inappropriate or un-supported.</p> <ul style="list-style-type: none"> <li>Infrastructure is a shared resource that aligns standards and technologies. Centralised storage, utilisation of server and network standards across the enterprise to reduce complexity and varied skill sets, are critical to reducing IT costs. Ensure no standalone systems exist in the environment unless restrained by technical design.</li> </ul>
How to apply	N/A

Name	<b>Principle 4: Enterprise IT Assets Are Managed Through the Entire Life Cycle</b>
Statement	<p>TasNetworks will recognise that assets (including technology assets) have a life cycle and manage the enterprise assets accordingly. It will also ensure that the total cost of acquisitions is defined over the entire life cycle of the asset and included in the business case supporting the acquisition. A simple version of the asset life cycle is as follows:</p> <ul style="list-style-type: none"> <li>Emergence;</li> <li>Mainstream or Core;</li> <li>Replacement;</li> <li>Containment;</li> <li>Retirement.</li> </ul>
Rationale	<ul style="list-style-type: none"> <li>Assets are like any element of an organisation requiring investment and management, and they include business processes, enterprise solutions, IT infrastructure and buildings.</li> <li>Asset operation and maintenance costs often represent a significant percentage of the total cost of ownership over the total life cycle.</li> <li>Assets are expensive and should be properly managed throughout the life cycle to ensure that the maximum return on the investment is achieved.</li> <li>Assets are expensive, and understanding their life cycle expectancy will help TasNetworks to prepare, schedule, budget and plan for their eventual replacement.</li> <li>New assets must be of sufficient maturity and their risks clearly understood before they can be adopted.</li> <li>Every major IT investment is a corporate asset and should be managed accordingly.</li> </ul>
Implications	<ul style="list-style-type: none"> <li>TasNetworks should review its procurement policy, including its business case template, to ensure that it adequately reflects the organisation's adopted asset life cycle and that the total cost of ownership is considered in all acquisitions.</li> <li>TasNetworks should centralise its IT asset procurement processes.</li> <li>Products and technologies used by TasNetworks will be modern solutions already proven by significant adoption in the industry, thereby minimising technological and support risks.</li> <li>If reasons exist to adopt new IT assets, then this is to be done in a controlled environment and in such a fashion that a decision not to adopt the asset produces no ill effects for the business.</li> </ul>
How to apply	N/A

Name	<b>Principle 5: Risk Management</b>
Statement	From time to time, risks must be taken. Risk decisions must consider business need and will be taken based on appropriate architectural governance and stakeholder consultation.
Rationale	All IT investments must have risk assessments and mitigating strategies included to ensure the risk profile is acceptable.

Implications	<p><u>Risk Assessments</u></p> <ul style="list-style-type: none"> <li>Change proposals involve benefits, costs and risks assessments. All changes need the risk factors identified so an informed decision can be taken.</li> <li>There are risks associated with implementing change and there are risks associated with NOT implementing change.</li> <li>All risks are manageable with suitable mitigation strategies, trade-offs and finally risk acceptance.</li> <li>The determination of acceptable residual risk is documented in TasNetworks' Risk Management policy.</li> </ul> <p><u>Emerging Technologies</u></p> <p>Risk implications of emerging technologies must be considered and understood.</p>
How to apply	All projects must follow the endorsed project methodology including the risk management process.

Name	<b>Principle 6: Risk-Based Security</b>
Statement	IT assets will be protected with appropriate security based on risk
Rationale	<p>There must be a business reason to access, modify, create and delete business data. All staff will have the access to the systems, information and IT equipment necessary to perform their role.</p> <p>IT systems will have risk assessments to ensure appropriate levels of access.</p> <p>IT systems will ensure the implementation of an audit trail of changes to ensure appropriate control.</p> <p>External organisations that receive and manage TasNetworks' data will have security risk requirements included in contracts.</p> <p>Technology introduced without security risk assessment can have catastrophic effect on the entire IT infrastructure.</p>
Implications	<p><u>Security assessments</u></p> <ul style="list-style-type: none"> <li>Risk based security assessments give consideration to the impact and probability of the loss, so that the cost to implement suitable mitigating strategies is warranted and represents value for money.</li> <li>Security will use role-based access model.</li> <li>Security is to be provided using different methods that should work together to provide the needed control of the business's processes and systems.</li> </ul> <p><u>Government Information Security Policy</u></p> <ul style="list-style-type: none"> <li>TasNetworks and TasNetworks' systems are required to adhere to the Government Information Security Policy and other regulations and compliance obligations.</li> <li>Financial and customer data must be encrypted before being sent to offshore locations.</li> <li>Systems must comply with PCI DSS Reference Guide regulations</li> </ul> <p>Roadmaps are developed to include upgrade plans and refresh cycles – each system will be maintained to ensure it is supportable and has a planned and managed lifecycle. Legacy systems will be replaced by compliant, up to date environments that are standardised and supportable</p> <p>Aligned to the IT strategy, security will be managed by risk. Each system will provide the minimum levels of access to ensure the business can use the system without compromising function. Access to systems will only be granted where it is needed and doesn't expose the business to risk. All systems to be capable of providing inputs to centralised auditing and logging environments, and comply with complex password lifecycle management. New systems will be implemented with security an integral part of the design.</p>
How to apply	All projects must consider the security and identify appropriate measures to minimise risk in the solution definition.

Name	<b>Principle 7: Ensure Effective Corporate Compliance</b>
Statement	TasNetworks will acknowledge its corporate obligations and invest in change programs that are compliant with the corporate requirements imposed upon it
Rationale	<ul style="list-style-type: none"> <li>Corporate breaches have significant political, social, legal and cost implications.</li> <li>TasNetworks must be able to demonstrate how it is socially and economically acquiescent to the process of government and must lead by example in its adherence to legislative requirements.</li> <li>Being a good corporate citizen can enhance credibility.</li> </ul>
Implications	<p>TasNetworks must be cognizant of all its corporate requirements, including:</p> <ul style="list-style-type: none"> <li>Occupational health and safety;</li> <li>Equal employment opportunities;</li> <li>Privacy Act;</li> <li>Right to Information;</li> <li>Religious and cultural expectations;</li> <li>Public Interest Disclosures</li> </ul> <p>TasNetworks must review its current performance against corporate requirements, identify any breaches and address them immediately.</p>
How to apply	All projects must follow the endorsed project methodology including the assessment of any obligations in their scope areas.

Name	<b>Principle 8: Ajilis is a Critical Business Transformation Program</b>
Statement	Core to the TasNetworks Technology Strategy is Ajilis, which will become the central enterprise platform.
Rationale	The Ajilis SAP integrated ERP initiative is a business transformation program, and as such is a fundamental foundation supporting the TasNetworks driver to create “One Business” with global process standards and shared global data. The Ajilis platform is the core of the technology enterprise architecture.
Implications	Failure to fully leverage the Ajilis enterprise platform will likely result in sub-optimal returns on the significant investment. Additionally non-alignment increases the risks of perpetuating technology, process and resource duplication, and higher single point of failure levels.
How to apply	All IT business systems and workflows will either adopt, or integrate with, the Ajilis solution. Any exception to this principle will be approved by the TLT.

Name	<b>Principle 9: IT, OT and Telco Convergence is critical to the 2025 strategy roadmap</b>
Statement	Globally the convergence of IT, OT and Telco Technologies is becoming not just a nice to have, but a must have in the corporate strategy of Utility companies.
Rationale	TasNetworks is leveraging the Carnegie Mellon Smart Grid Maturity Model (SGMM) to align desired 2025 capabilities with current-state capabilities, and in 6 of the 8 domains within this model IT/OT/Telecommunications convergence and alignment is directly required to meet all characteristics of desired level of maturity.
Implications	The Revenue Reset 2019 submission will need to take into account the desired level of capability in the 2025 strategy roadmap and ensure that the development of capabilities that support technology convergence is catered for.
How to apply	Continual review and alignment of Technology led projects to the 2025 strategy roadmap and maturity development monitored.

## 5.2 Business Principles

Name	<b>Principle 1: Primacy of Principles</b>
Statement	These principles of information management apply to all organisations within the enterprise.
Rationale	The only way we can provide a consistent and measurable level of quality information to decision-makers is if all organisations abide by the principles.
Implications	Without this principle, exclusions, favouritism, and inconsistency would rapidly undermine the management of information. Information management initiatives will not begin until they are examined for compliance with the principles. A conflict with a principle will be resolved by changing the framework of the initiative.
How to apply	N/A

Name	<b>Principle 2: Business Alignment</b>
Statement	IT exists to serve the business. IT proposals and decisions must demonstrate support of the Business Strategy, maximising benefit to the enterprise or the Tasmanian Electricity Industry as a whole. Proposals should align with the IT Strategic Plan, Technology Roadmaps and Enterprise Architecture standards and policies.
Rationale	All business as usual IT proposals and decisions must identify measurable return on investment (ROI) over the full life cycle of the investment. (Government or Market reform initiatives will not be required to prove a positive ROI.) IT decisions must consider the long term strategic organisational perspective rather than short term project-specific or local business unit objectives in order to demonstrate a greater long term value.
Implications	Business Outcomes - The business must provide ratified statements of desired business outcomes, aligned to the business strategy. Whole organisational view - IT decisions taken on the basis of short term or local considerations can result in the duplication of technologies and therefore be detrimental to the organisation as a whole and to TESI reforms. Changes to the Strategy - Material external changes may require re-assessment of the IT Strategic Plan.
How to apply	Any project must be aligned to the business and the IT Strategy unless approval is provided by Team Leader Architecture or Information Technology Leader.

## 5.3 Data Principles

Name	<b>Principle 1: Data is an Asset</b>
Statement	Data is an asset. It has value to the end business and must be managed accordingly. Data is the foundation of our decision-making, so we must also carefully manage data to ensure that we know where it is, can rely upon its accuracy and can obtain it when and where we need it. Accurate, timely data is critical to accurate, timely decisions.

Rationale	<p>Business data is a critical asset that can be used throughout the organisation, poor quality can lead to exacerbated issues across business units and processes.</p> <p>The data needs correct interpretation, so it needs to have clear definition and meaningful relationships with other data.</p> <p>Data must have credibility, so it needs to be of high quality. This will require the data to be accurate, up to date with negligible duplicate records.</p> <p>Data is to be duplicated only where necessary. Redundant or duplicated data must be planned and controlled; otherwise the data quality will erode over time resulting in poor data quality. There needs to be reduction in the number of existing duplicate data sources of similar data.</p> <p>Provision needs to be made contractually for outsourced application data to be accessible and correctable.</p>
Implications	<p><u>Authoritative data source</u></p> <ul style="list-style-type: none"> <li>Data must have a primary authoritative source, this is to be well defined and understood. This may not be the raw source, but can be a consolidated data source.</li> <li>Two or more applications cannot control the same data simultaneously. One of the applications has to be the master. Subtle errors / data anomalies will reduce data quality which results costly analysis and correction.</li> </ul> <p><u>Duplication of data</u></p> <ul style="list-style-type: none"> <li>The cost of managing duplicate data is high due to the need to guarantee data integrity. Data synchronisation and transfer infrastructure is also quite expensive.</li> <li>Standalone applications have a major duplication of data. All applications sharing data must be integrated with master data sources.</li> </ul>
How to apply	All projects must consider the data architecture of proposed solutions through the Architecture design process. Where data attributes are not contained within the Logical Business Data Model, these need to be added and defined by the Data Architect to ensure consistent use ongoing.

## 5.4 Application Principles

Name	<b>Principle 1: Use, Buy, Build</b>
Statement	<p>TasNetworks' IT strategy is to use existing investments in systems and infrastructure where possible.</p> <p>If an existing system is not available or appropriate, then a software package with an acceptable level of support designed to be configured and extended by the customer (i.e. not requiring modification to core system code) is second preference.</p> <p>Software development will be approved only where the first two options are not possible or are inappropriate for the business requirements.</p>
Rationale	TasNetworks has a strong preference to re-use existing systems to reduce unnecessary proliferation of technologies, solutions, architectures. Next is a strong preference to use technologies that are compatible with existing technologies, existing integration standards or support systems. This reduces operational support costs and facilitates integration of data and process.
Implications	<p><u>Bespoke Development</u></p> <ul style="list-style-type: none"> <li>Development will be considered only where re-use is not possible and acquisition of suitable, configurable, vendor-supported software packages either does not meet business requirements or timelines.</li> <li>When timeframes or costs are prohibitive to business initiatives, we will deliver tactical solutions using the Microsoft .Net development environment using a methodology that ensures the system and business can be supported effectively.</li> </ul>

How to apply	All projects must follow the endorsed project methodology and consider the solution architecture of proposed solutions through the Architecture design process.
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Name	<b>Principle 2: Manage Vendor Lock-In</b>
Statement	Vendor lock-in happens in many ways as organisations balance solution costs against architectural flexibility. Understanding and managing lock-in are key to optimising TasNetworks' enterprise architecture for current and future needs.
Rationale	<p>It's important to evaluate the potential degree of lock-in associated with any offering.</p> <p><u>Customer Experience</u></p> <p>The promoted value proposition of overall customer experience is that the vendor provides the IT services so that customers can focus on their business.</p> <p><u>Business</u></p> <p>The promoted value proposition of adopting a vendor's business strategy is that the vendor has better ways to support the customer's business than the customer has.</p> <p><u>IT Strategy</u></p> <p>The promoted value proposition of using a vendor-defined IT strategy is that the vendor is considering architecture, and the vendor's services and technology are designed to work together.</p> <p><u>Tactical</u></p> <p>The promoted value to IT managers of using vendor-specific technologies and interfaces at a tactical level is increased interoperability and reuse. The business should consider the specific products, services, architecture, configuration, and licensing terms and conditions that the vendor is offering.</p>
Implications	<ul style="list-style-type: none"> <li>• Understand the potential benefits of aligning with a specific vendor's strategy, technology and services: <ul style="list-style-type: none"> <li>○ Greater and higher degrees of functionality (for example, performance, integration and innovative features);</li> <li>○ High-volume discounts;</li> <li>○ More tightly integrated end-to-end solutions;</li> <li>○ Reduced costs of integration;</li> <li>○ Range of products available from associated vendors providing leverage;</li> </ul> </li> <li>• Understand the potential costs of aligning with a specific vendor's strategy, technology and services: <ul style="list-style-type: none"> <li>○ Reduced ability to integrate other systems (for example, applications, middleware and tools);</li> <li>○ Reduced ability to negotiate for specific discounts because of the limited ability to introduce competitive bids;</li> <li>○ Increased need for specialised technical skills (for example, system managers, programmers and relationship managers);</li> <li>○ Required upgrades based on product dependencies, not direct user value</li> <li>○ Limited choice of associated products;</li> </ul> </li> <li>• Understand the risk/reward relationship between architectural freedom and business volatility and differentiation;</li> <li>• Do not try to define a corporate mandate or policy with respect to architectural vendor lock-in. Rather, weight the cost-benefit of lock-in relative to the organisation's diverse business requirements (a static non differentiated area of the business versus a dynamic and high-value area of the business) and the ability to invest in IT.</li> </ul>
How to apply	All projects must follow the endorsed project methodology and consider the solution architecture of proposed solutions through the Architecture design process.

## 5.5 Technology Principles

Name	<b>Principle 1: Infrastructure is Reliable</b>
Statement	Information and services are reliable, accurate, relevant and timely.
Rationale	Effective and efficient business and IT systems that provide consistent outcomes will enable the organisation to deliver value to our customers.
Implications	Redundancy and availability is core to design and build. Each system will ensure relevant levels of redundancy for the criticality of the system. Each system will be recoverable without loss of transactions or data. Business critical systems will use the standard TasNetworks' disaster recovery processes that utilise the data centre capabilities. Core infrastructure will have a planned and managed lifecycle that ensures technology stays current and capacity aligns to business requirements.

Name	<b>Principle 2: Infrastructure that is Affordable and Sustainable</b>
Statement	Provide fit for purpose, cost-effective infrastructure solutions that return a business benefit.
Rationale	In order to deliver on our strategy to deliver real value to customers, the value and cost of infrastructure investments must be measurable in objective terms. Infrastructure that does not have either an understood return on investment, or align clearly to a strategic objective is unlikely to be sustainable.
Implications	Provide an environment that ensures scalable, low-unit-cost solutions; an environment that delivers what is required in an efficient manner. Infrastructure that is fit for purpose and is aligned to the type and size of the business needs and technology standards. Standardised, best-practice infrastructure with a proven support framework.

Name	<b>Principle 3: Infrastructure that has Consistent Interoperability</b>
Statement	Deploy systems that use widely accepted standards and integrate easily, creating an environment in which information can be readily exchanged and shared.
Rationale	A high degree of natural integration between systems can reduce complexity, increase skills availability and reduce support costs.
Implications	Infrastructure should be designed to be interoperable and consistent. Interoperable capabilities will be available across all areas including business processes, information, applications and technical assets. Seek to reduce integration complexity.

Name	<b>Principle 4: Infrastructure is Managed and Automated</b>
Statement	All systems and environments are monitored and managed with standard, integrated and centralised platforms, Processes are automated to reduce support costs and remove manual processes.
Rationale	Effective monitoring will assist to improve the reliability of services, and automating that monitoring where possible will help to keep support costs down.
Implications	Appropriate toolsets will be provisioned to ensure that total visibility and control of the infrastructure assets is possible. Assets are managed and audits routinely conducted.

## 6 Asset Management

### 6.1 TOGAF at TasNetworks

TasNetworks uses the approach provided by 'The Open Group Architecture Framework' (TOGAF) to provide a structure to plan and manage its Corporate IT assets.

TOGAF is a framework including a detailed architectural development method and a set of supporting tools for developing an enterprise architecture (for a high level description of TOGAF see link [High level description of TOGAF](#)).

TasNetworks has created architectural processes, repositories and artefacts for its in-house tailored implementation of TOGAF. The TasNetworks process is described in the section 'Methodology to Create Program of Work for RR19 below.

Core to TOGAF is its Architecture Development Method (ADM) which is a detailed, step-by-step method on how to build, maintain and implement enterprise architecture. It consists of 8 different steps in a design cycle as shown in the following diagram.

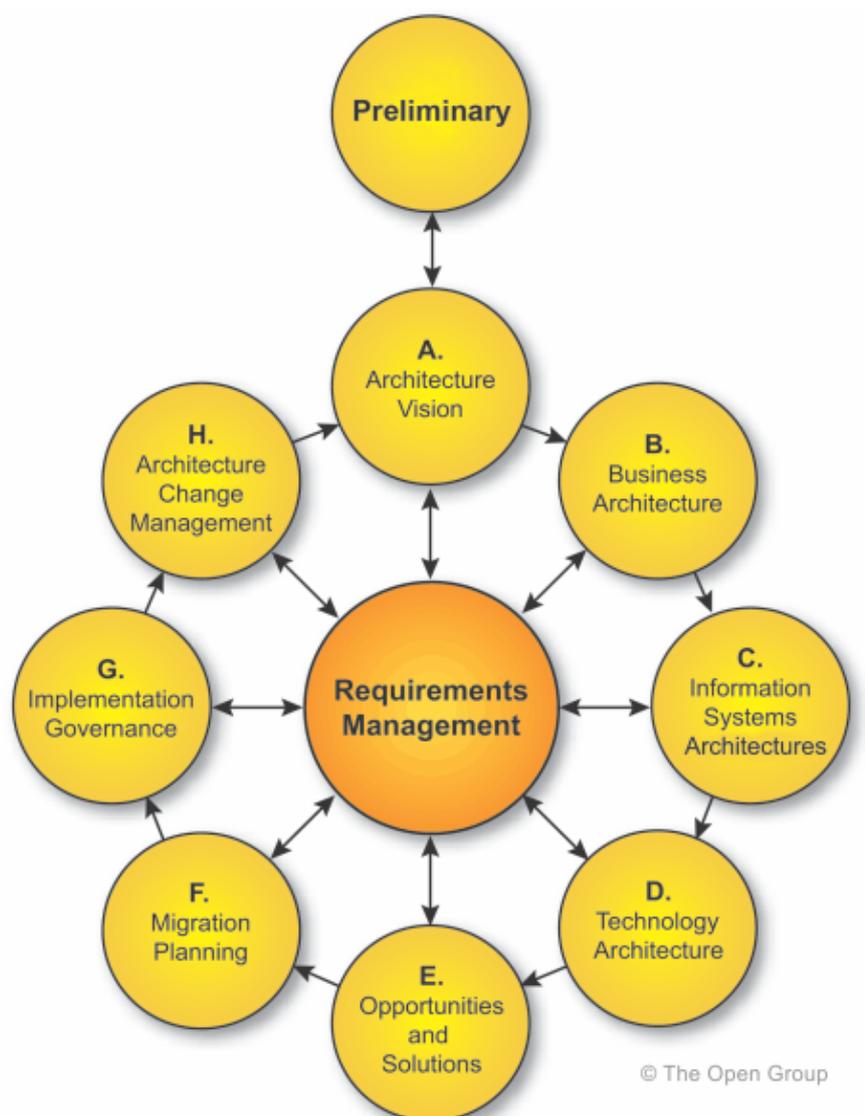


Figure 1 – Representation of TOGAF ADM

## 6.2 Application types

TasNetworks categorises its applications into six different types:

- Software (includes server software and desktop clients);
- Web applications;
- Server software;
- System interfaces;
- SharePoint applications;
- Software-as-a-service.

### 6.2.1 Software

Software encompasses desktop clients and server software.

Desktop clients are all those software packages that must be installed locally on a business user's computer. Software installed on a user's computer that communicates with server components, including databases, are still considered desktop clients. However, the server components may be separately registered as 'server software' depending on their nature.

The critical asset management considerations for desktop clients are:

- Packaging and deployment of the software and any updates to user computers;
- Compatibility with other desktop software and driver requirements;
- Communication requirements, particularly with server components.

Server software packages are any software packages designed to be installed on a server operating system rather than on a user's computer, but for the purposes of this asset management plan exclude web applications. Server software can be accessed directly by users, accessed indirectly by users of web applications and desktop clients that connect to the software, or may not be accessed by users at all.

Critical asset management considerations of server software are:

- OS version, software and database dependencies;
- Compatibility with other server systems, including compatibility of pre-requisite components;
- Integration capabilities (API etc.);
- Capacity management of server bandwidth, storage, memory and CPU.

### 6.2.2 Web application

TasNetworks manages a wide range of web applications. Web application are built using internet technologies, installed on a server and accessed by users using a web browser client. In most cases, it is the preference of the Corporate IT department to procure and implement solutions that are web applications. This is due to the high-level of internal skills available to support and develop systems built on web technologies, the simplified deployment model and the ability to make systems mobile device-friendly without excessive additional costs.

Critical asset management considerations for web applications are:

- Whether the business requirements can be met by web technology. Some solutions still need to be implemented as a fully featured desktop client;

- Capacity management of server bandwidth, storage, memory and CPU;
- System security and protection, especially for any systems exposed outside the Corporate IT network.

### 6.2.3 System interface

System interfaces connect disparate software systems to provide functional integration. At TasNetworks they are predominantly built using web services, ██████████ and Microsoft SQL Server ██████████. Appropriate use of system interfaces enables TasNetworks to reuse components and functions, extend software features and reduce the cost of development, support and maintenance.

Critical asset management considerations of system interfaces are:

- Appropriate governance of system changes and utilisation;
- Strong change management to protect against the much greater level of complexity born of system interdependencies;
- System security and protection, especially for any interfaces exposed outside the Corporate IT network.

### 6.2.4 SharePoint application

Microsoft SharePoint is used by TasNetworks as a comprehensive application platform.

Critical asset management considerations for SharePoint applications are:

- Capacity management of server farm bandwidth, storage, memory and CPU;
- Software update requirements; SharePoint platform upgrades may be driven by considerations external to specific systems implemented on SharePoint, affecting the software lifecycle.

### 6.2.5 Software-as-a-Service

An ever-increasing number of vendor software solutions are being offered as Software-as-a-Service. SaaS is provided via a secured internet site rather than installed locally on the TasNetworks Corporate IT network. This service model has the potential to save the business money under certain circumstances, but also introduces a range of new challenges to the management of IT.

Critical asset management considerations for Software-as-a-Service are:

- Vendor reliability and Service Level Agreements;
- Physical location of data centres and jurisdictional or legal requirements;
- Privacy and security of data;
- Integration requirements with other systems;
- Transition planning: ability to safely or securely transition to a different solution in the future;
- Risk to operational processes, including staff or customer safety or electricity supply.

## 6.3 Monitoring

Corporate IT has adopted a strategy of implementing both proactive and reactive condition monitoring of IT assets, including physical assets, virtualised or physical infrastructure assets and software assets. Proactive monitoring practices actively check the condition of IT assets to identify developing condition

issues before they could result in an incident<sup>1</sup>. Reactive monitoring detects incidents once they have occurred so that normal service can be restored.

### 6.3.1 Proactive monitoring

The goal of proactive monitoring is to predict likely incidents with sufficient notice and information to enable IT staff to take corrective action and avoid an incident.

TasNetworks implements two strategies for proactive monitoring:

1. Continuous system monitoring - Corporate IT has implemented condition monitoring for software assets to detect defects and issue early warning of developing issues. TasNetworks has an operational monitoring system that displays system and infrastructure statuses and alerts on dashboards in the IT area as well as email and SMS alerts to infrastructure personnel in real-time.

This system tracks:



In addition to the operational monitoring system, the underlying virtualised infrastructure is monitored using [REDACTED], and daily checklists are followed to confirm systems are operating within expected parameters.

2. Periodic application health checks – TasNetworks routinely conducts application health checks with business representatives. This process is represented in Figure 2 – Health Assessment Process. The process has 3 main steps which result in a business and technical health scores and an overall application health score.

**Step A** - To evaluate the business health a set of key users are asked to score a set of standard questions which ultimately roll up to an average health score. Users were asked to rate the following questions on a scale of 1-5 where 5 represents optimum health:

- What is the quality of the data in the system?
- How accessible is the data in the system?
- How well does this application meet the business requirements?
- How well will this system meet future business needs?

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<sup>1</sup> Under ITIL, an incident is identified as any unplanned event that results in a loss or degradation of service.

- How would you rate user satisfaction?
- How efficient is the system at completing operations?
- How responsive is the system to user actions?
- How available is the system (in reference to SLA requirements)?
- How reliable is the system?
- How many manual processes or 'workarounds' are used, and what is the FTE cost of these?
- How much revenue is at stake during a system outage?

**Step B** - In parallel to the business health evaluation, an assessment of the health of the supporting infrastructure is undertaken. Each of the following topics is considered and rolled up into an overall technical health score for each application:

- Recoverability;
- Hardware warranty;
- Operating System currency;
- RDBMS / platform currency;
- Storage conformance;
- Backup strategic alignment;
- Support contract;
- Hardware currency;
- Software/firmware currency;
- Redundancy;
- Monitored;
- Strategic Alignment.

**Step C** - Each key application is then given an overall application health based on:

- Business health;
- Technical health;
- Criticality;
- Vendor health/roadmap;
- Regulatory obligations;
- Emerging and potential technologies.

These activities result in an architectural blueprint of Corporate IT's business applications in their current and future predicted state where each application is diagrammatically represented by an elongated oval with colour coding to represent the overall application health (see Figure 12 – 2019 - 2024 Predicted State of Core items).

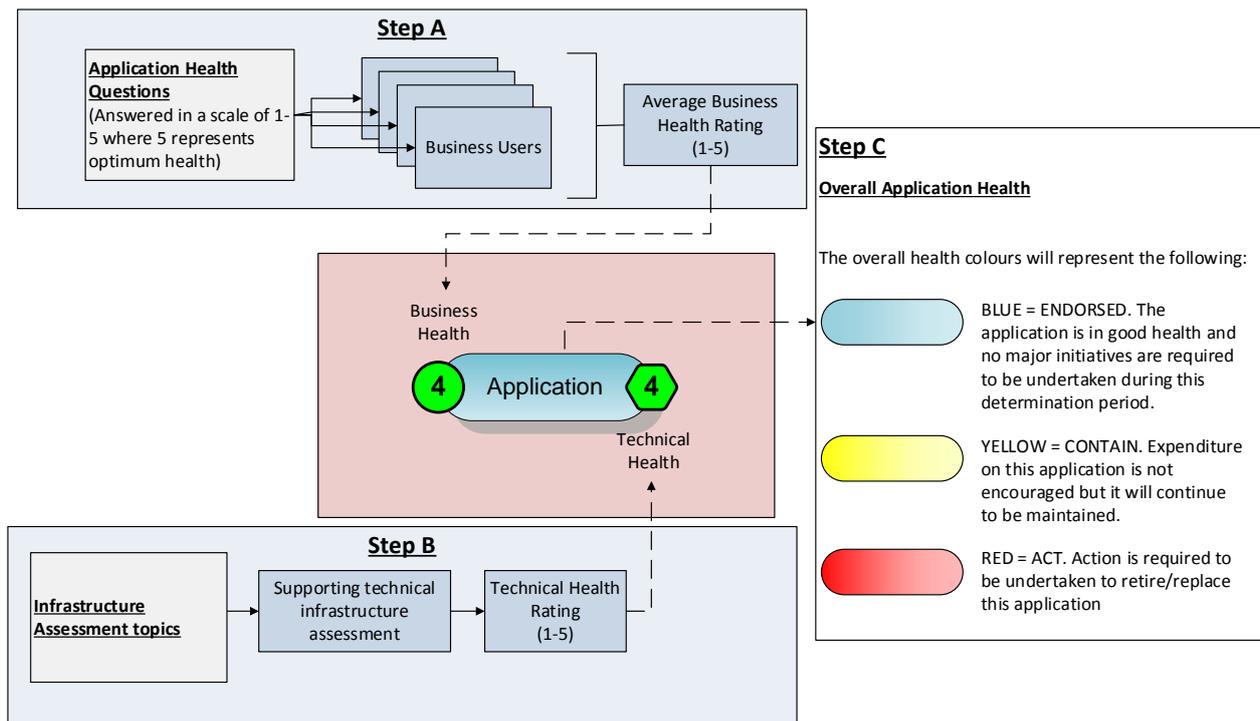


Figure 2 – Health assessment process

### 6.3.2 Reactive monitoring

Reactive monitoring aims to detect incidents affecting IT assets as quickly as possible during or after they occur, to capture sufficient information for the incident to be rectified in the shortest practical timeframe, and also provide that information to an appropriate person/system in a form that initiates the TasNetworks incident management procedure.

Corporate IT has adopted multiple layers of reactive condition monitoring, which in addition to providing proactive alerts, also issues incident alerts. Separate to this, most software assets are configured with error logging and alerting, in most cases sending alerts to the Service Desk when an incident occurs.

Finally, Corporate IT operates a manned Service Desk and a self-service portal for staff to report incidents as they occur.

## 6.4 Defect management

The Corporate IT department has implemented ITIL compliant incident and problem management processes that are applied to detect defects (incidents) in software assets.

## 6.5 Methodology to Create Program of Work for RR19

TasNetworks has employed the TOGAF Architecture Development Method (ADM) as the methodology for guiding and determining IT Systems capital expenditure decisions.

TasNetworks' methodology to create the RR19 Program of Work follows the TOGAF ADM top down approach of identifying opportunities by starting with the corporate vision. The method is also supplemented/cross matched with bottom up approaches such as application health checks and maintenance regimes to ensure all 'change drivers' or issues are identified.

The methodology to create the program of work for RR19 is represented in the following diagram.

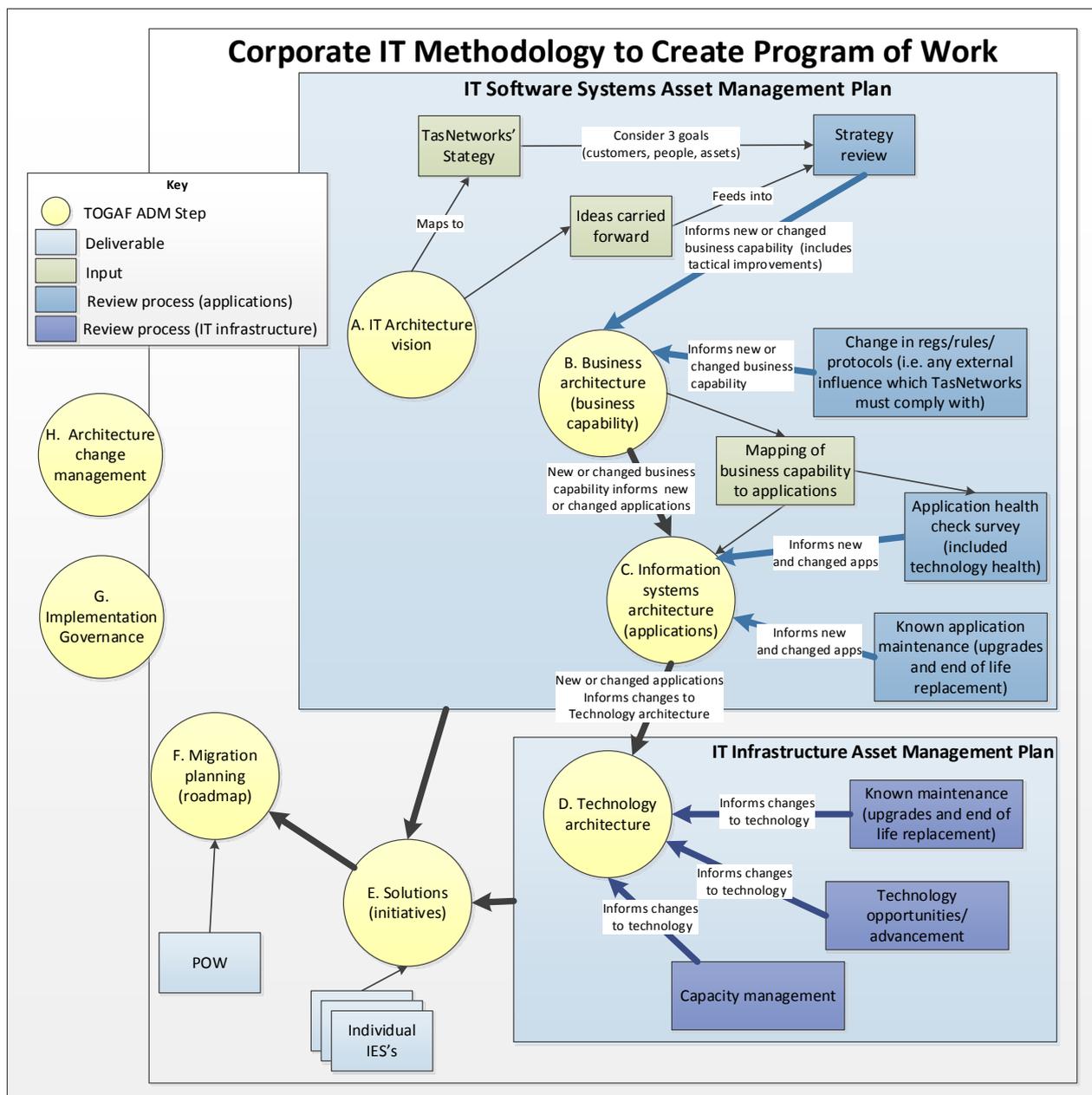


Figure 3 – RR19 Corporate IT methodology to create program of work

The individual steps comprising the TasNetworks methodology to create the RR19 program, an adaption of the TOGAF ADM, are further elaborated below:

- **‘A. IT. Architecture Vision’** – This is a top-down approach to identify new/changed business capability requirements. The business strategy review primary objective was to engage with the business and senior management in aligning IT strategic planning with current and future business needs. It was an opportunity to ensure the business had an understanding and appreciation of the potential value of IT to the business and to then consider the current IT capabilities and asset performance, with a view to what will be required in the future. Using a list of ideas that had been compiled since the last regulatory documentation process, Corporate IT conducted workshops with various parts of the business to confirm the ideas were still valid and to also explore other new ideas. The list of ideas was evolved and rationalised.

The top down approach also included an analysis of changing Distribution Network Service Provider (DNSP) and Transmission Networks Service Provider (TNSP) regulatory related rules that TasNetworks operates within and is obligated to conform with<sup>2</sup>.

- **‘B. Business architecture’** - The outcome of the top down approach was a number of identified new or changed business functions that would need to be supported by Corporate IT applications.
- **‘C. Information systems’** - TasNetworks also employed bottom up approaches to supplement the top down approach.

Business and technical health of applications classed as critical, major and important were reviewed. The changed business architecture identified from the top down approach was distilled with known maintenance regimes<sup>3</sup> and the health check to identify a number of applications that need to be considered for change. It also identified gaps where new business capability had been identified without an obvious supporting application.

- **‘D. Technology architecture’** - Changes to the application landscape is evaluated as part of the Information Systems review which is documented separately in the IT Infrastructure Asset Management Plan (see document titled ‘Corporate IT - Infrastructure Asset Management Plan’).
- **‘E. Solutions’** - Using the IT operating principles, the new/changes to business capability and applications was used to identify a number of ‘change drivers’ or issues, which was rationalised into a list of potential initiatives.
- **‘F. Migration Planning’** - The potential list of initiatives is evolved, prioritised<sup>4</sup> and costed<sup>5</sup> as a means of building the program for RR19. Some initiatives have been identified as being necessary before the regulatory period starts, and after the application of prudence, some are identified as being aspirational and for consideration in the next regulatory period.

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<sup>2</sup> TasNetworks utilises a number of bespoke (internally developed) and commercial off the shelf (COTS) systems to support mission and business critical Network and Customer Management business processes. These systems are required to operate and comply with the requirements of the following regulations and legislation:

- Australian Energy Market Operator (AEMO) and National Electricity Market (NEM) regulations;
- Distribution License - Issued by the Regulator (Otter) under the Electricity Supply Industry Act 1995
- National Energy Customer Framework (NECF);
- Commonwealth Taxation Law; and
- The National Electricity Law and the National Electricity Rules (NER) legal framework.

<sup>3</sup> Maintenance regimes of small to medium are formally captured in a ‘business management systems’ register. Maintenance for large applications are negotiated and scheduled far in advance after close liaison with vendors.

<sup>4</sup> Initiative prioritisation was based on classifying initiatives (in order of priority) as ‘regulatory’, ‘must have’, ‘need to have’, or ‘nice to have’. Within each categorisation, the initiatives are ranked.

<sup>5</sup> Costs were estimated on combination of vendor costing, historic spend and internal estimates.

## 7 Initiatives (2017)

In the context of this Asset Management Plan, initiatives are prospective individual packages of work that ultimately form the RR19 Program of Work, and 2019-2024 IT Roadmap. Although the intention is that these initiatives are undertaken during the timeframes proposed, a more detailed business case and evaluation process is still expected to be undertaken.

### 7.1 Drivers

The following is a brief discussion on the primary drivers for expenditure within the Non-Network Program of work.

#### 7.1.1 Asset End-of-Life / requires technology uplift

As previously described, a health assessment was conducted for the purposes of RR19. As a result of the health assessment, the business, technical and overall health of the major business applications at TasNetworks was established. This enabled Corporate IT to build an architectural depiction of the current state of the business applications, as well as identify the following:

- Applications not supporting business needs;
- Current issues and defects with functionality and business processes;
- Manual workarounds in place due to software deficiencies;
- Performance and availability issues;
- Applications at risk of not being able to meet future needs;
- Opportunities for integration;
- Under-utilised/under-deployed applications.

The following initiatives are examples of being driven primarily through Asset End-of-life:

- Market Systems – MDMS Replacement/Major Upgrade [REDACTED]
- Servicing Works Mgt. Tool Replacement [REDACTED]
- Replacement of the Enterprise Document & Records Mgt. System (EDRMS);
- Outage Management – System Replacement/Major Upgrade;
- Outage Management – Outage Message System Upgrade;
- Customer process tools (GSL payments, Customer Connection Application Tool);
- Market Systems - Billing - Transmission Upgrade;
- Transitional CRM Upgrade.

The current health of the key applications in the business is illustrated in the following diagram.

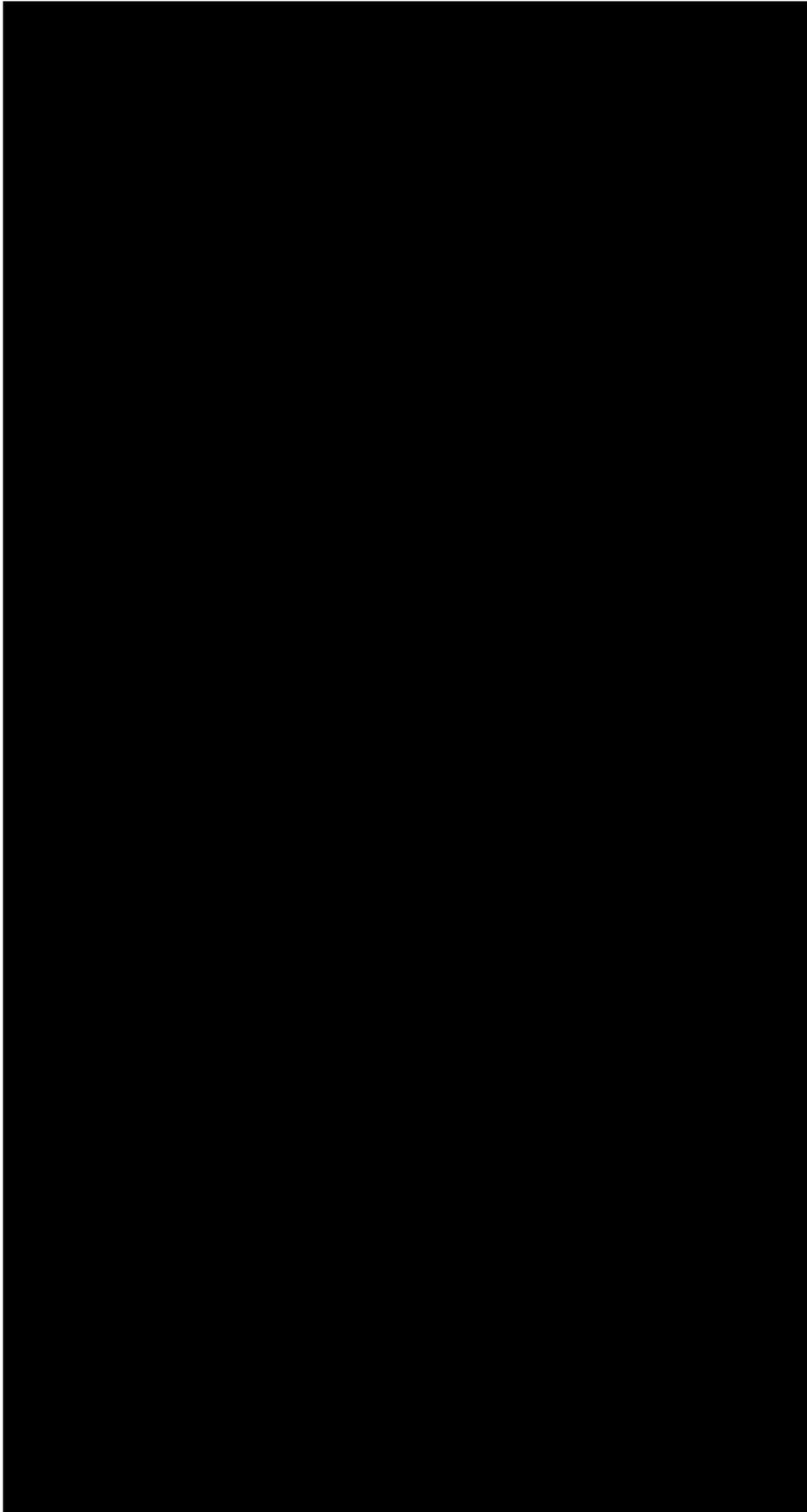


Figure 4 – TasNetworks application health assessment summary

## 7.1.2 Compliance

TasNetworks is required to maintain systems and procedures at a market-compliant level under the National Electricity Law (NEL) and is audited for this market compliance in at least Metering Provider (MPB) and MDP roles on a bi-annual basis to ensure compliance to market rules, procedures and service level requirements. Failure to maintain market compliance can result in the loss of accreditation to operate in these roles under the market.

During the next determination period, a number of regulatory and legislative changes are expected to occur that will require investment in our current market-facing and support systems to ensure ongoing compliance:

- Metering Contestability (2017) - this rule change is likely to require further changes in systems to ensure processes are efficient and compliant under the new rules over time;
- Life Support arrangements (2018) – there are ongoing discussions regarding changes to Life Support arrangements that may result in changes to B2B procedures;
- Ongoing procedural changes (Bi-annual) – incremental market rule changes are generally implemented on a bi-annual cycle that are normally required to be effective as of May and November, in some cases implementation timeframes are included but this is generally not the case;
- Multiple Trading Relationships (Unknown) - a rule change currently on hold to the National Electricity Law to allow for multiple trading relationships (MTR) at a single site;
- National Billing Protocol (Unknown) - AEMC plan to institute a national billing protocol. There will be differences to the NSW protocol TasNetworks currently use. Processes and systems will need to be adjusted to comply.

The following initiatives have been identified as being required to satisfy the anticipated regulatory changes:

- Market Systems – MDMS Upgrades;
- Market Systems - Billing capability for Smart Streetlights.

By endeavouring to ensure that TasNetworks' business applications and processes remain compliant with the regulatory framework in which it operates, the following benefits may be realised:

- Deliver a range of new and enhanced services to TasNetworks' customers that will help them better manage and control their electricity costs, provide additional communication channels (e.g. for outage reporting) and deliver a range of other services and information that they value;
- Provide systems, processes and tools to support the introduction of cost-reflective tariffs and the roll-out of advanced meters to enable customers to better control their energy use and manage peak demand;
- Enable TasNetworks to meet its regulatory and customer obligations in a prudent and efficient way by delivering efficiencies in the core areas of the business and avoiding the additional costs associated with manual processes;
- Enable TasNetworks to maintain reliability and quality of IT services, in line with agreed service level targets and future business, customer and regulatory requirements.

### 7.1.3 Business as usual – “Keep the lights on”

In addition to the business-driven investment described in the previous sections, continued investment is also required in our existing IT environment to maintain the technical currency, scalability and capacity of existing ICT systems and assets, in order to provide services in a prudent and efficient manner, reducing the risk of potential failure and/or unplanned production outages. Failure to maintain these platforms would potentially lead to:

- Increased business and technical operational cost to support regulatory and statutory processes;
- Failure to meet specific regulatory processing requirements and introduce potential errors in processing resulting in erroneous data with ICT Systems and data being released into the market;
- The stability of systems is potentially compromised where patches and upgrades are not applied in a timely manner. This includes requesting support from vendors who will require systems to be at the latest patch versions prior to providing assistance;
- Maintenance costs may be higher when implementing workarounds to issues resulting from unpatched systems where the issues have been addressed in current releases;
- Upgrade costs may be higher due to out-dated systems requiring a more complex upgrade process;
- Less functionality is available from existing systems due to out-dated software, providing lower value to the business.

Initiatives in this category are:

- IT Infrastructure, Security, Support and smaller business systems;
- Outage Management – Map Migration (aligned to GIS replacement).

Some of the IT benefits to customers, people and assets include:

- Deliver a range of new and enhanced services to TasNetworks’ customers that will help them better manage and control their electricity costs, provide additional communication channels (e.g. for outage reporting) and deliver a range of other services and information that they value;
- Enable TasNetworks to meet its regulatory and customer obligations in a prudent and efficient way by delivering efficiencies in the core areas of the business and avoiding the additional costs associated with manual processes;
- Empower TasNetworks staff, customers and partners to capture, view and share accurate information when they need it, wherever they may be;
- Enable customers and business to derive maximum value from our increased information collection for improved decision making and reporting;
- Enable TasNetworks to maintain reliability and quality of IT services, in line with agreed service level targets and future business, customer and regulatory requirements;
- Enable TasNetworks to control and, where possible, reduce technology costs in the long term through operational improvements, consolidation of IT applications and improved governance.

This investment in the existing IT systems and infrastructure will:

- Ensure TasNetworks avoids significant risks associated with the end of life of related applications some of which are going to be out of support by 2019;
- Enable TasNetworks to meet its regulatory and customer obligations in a prudent and efficient way by delivering efficiencies in the core areas of the business and avoiding the additional costs associated with manual processes;
- Reduce risks associated with increased vulnerability of national critical infrastructure to cyber-attacks;
- Minimise threats to security and privacy of personal information that TasNetworks is required to keep in relation to its customers, contractors and employees;
- Empower TasNetworks staff, customers and partners to capture, view and share accurate information when they need it, wherever they may be;
- Enable TasNetworks to maintain reliability and quality of IT services, in line with agreed service level targets and future business, customer and regulatory requirements;
- Enable TasNetworks to control and, where possible, reduce technology costs in the long term through operational improvements, consolidation of IT applications and improved governance.

#### 7.1.4 Strategic / Transformational

The primary objective of the business strategy review was to engage with the business and senior management in aligning IT strategic planning with current and future business needs. It was an opportunity to ensure the business had an understanding and appreciation of the potential value of IT to the support business functions and then to consider current IT capabilities and asset performance. It also encompassed a view of what will be required in the future.

A number of business pain points were identified leading to the following major initiatives:

- Digital customer engagement – facilitating customers accessing services via web;
- Building data warehouse, business intelligence and analytics;
- Mobility and Workforce Optimisation;
- Enterprise Architecture evolution;
- Warehouse barcoding and Supplier B2B.

## 7.2 Major Initiatives by Functional Area

The following section outlines proposed expenditure described by the business functional area.

### 7.2.1 Business System Upgrades

TasNetworks has considered a number of smaller business applications that will need to be upgraded during this regulatory period. Generally speaking, these are considered to be secondary applications and have therefore not warranted their own initiative.

TasNetworks is continuously exploring ways to increase its efficiency and improve effectiveness. These are often being achieved through the strategic implementation of software solutions to streamline and automate business processes, or even make some processes obsolete. As such, demand from the

business for Information Technology (IT) application services remain consistently high and is not expected to decrease during the forthcoming regulatory period.

The consolidated initiative for of upgrades and/or replacement of various small applications is:

- Business Systems Maintenance.

Stand-alone initiatives relating to Business Systems Upgrades for the Distribution Business include:

- Outage IVR Message Management system upgrade;
- GPS Vehicle tracking system improvements.

## 7.2.2 Customer Information Systems

In this area various applications that involve complaint handling, connection applications and customer interaction tracking require uplift mainly due to technology becoming unsupported, and requirements for consolidation.

## 7.2.3 Data Warehouses, Business Intelligence and Analytics

TasNetworks does not currently have a single enterprise data warehouse/reporting platform. The current reporting landscape is a mixture of technologies and single purpose databases. It is a legacy born out of numerous historical organisational splits and mergers and also many short term solutions to solve an immediate reporting need. This has led to a complex reporting framework which does not effectively allow reporting across data sets and is complex to maintain. This issue lead to several gaps in business processes and reporting, which include:

- Information Silos;
- Time consuming data gathering/compilation processes;
- Low quality/consistency of data;
- Limited business intelligence;
- Limited historical intelligence.

TasNetworks seeks to address these challenges through the following initiative:

- Building data warehouse, business intelligence and analytics.

This initiative will address the issues above by creating a single Enterprise Reporting and Business Intelligence (BI) environment and implementing an Enterprise Data Warehouse store (EDW), which will provide easier access to structured data and enhanced reporting capabilities to TasNetworks' internal customers. Costs of this initiative are shared across Distribution and Transmission.

The initiative is:

- Driven by need to leverage ERP foundational technologies and migrate fragmented reporting and analysis functions to a modern, business wide reporting and business intelligence platform;
- Will allow increased visibility, improved access and drill-down capability into data across departments and financial periods;
- Overall increased support for better, data driven decision-making.

## 7.2.4 Digital Customer Engagement

TasNetworks customer strategy aims to enhance its ability to interact with customers via Web and Mobile channels. This includes information coming into the business from customers (i.e. ability for customers to register more issues via the web) as well as information out to customers (for example SMS outage notifications).

The TasNetworks website is a cost shared across Distribution and Transmission. Website systems require upgrade due to components reaching end of life and in need of technology uplift.

Customer expectations of a contemporary business are for greater personalisation, more options, quicker turnaround time and better customer contact.

In the previous period, gains were made in areas such as Connection Application portal enhancing the process for customers to apply electronically for new applications and make required payments online.

A number of issues have been identified that can be addressed by TasNetworks making better use of customer facing technology in the next period. Some of these issues include:

1. An online reporting mechanism could be enabled to handle low risk issues/problems that perhaps do not need immediate consideration and dispatch. There is no mechanism for customers to record issues/problems online, meaning that customers need to phone the problem through to the 'Customer Service Centre'.

Delays in being able to get through to someone from 'Customer Service Centre' promptly can lead to frustration, and potentially important issues that TasNetworks needs to know about don't get recorded due to the customer giving up.

From a TasNetworks staff perspective, allowing customers to register certain issue/complaints will lessen the load on the 'Customer Service Centre'.

2. TasNetworks customers expect access to accurate, relevant information in a timely manner using a variety of channels that don't involve 'speaking to someone'. Communication channels could include receiving pro-active notifications (via a subscription process) about a current or future event or the customer obtaining information directly from an online service platform.

TasNetworks has explored options for improving customer-facing systems through a number of strategic ideas ranging from introducing a customer portal for some customer-centric processing and making better use of self-service channels and proactive customer communication mechanisms.

A customer service portal would open several opportunities for customers to conduct their business with TasNetworks online, including:

- Allowing TasNetworks customers to register low risk issues/problems online. This will allow rapid reporting of issues/problems without being held up in phone queue meeting the customer expectations for more options, more convenience and better customer contact.

There is as a significant opportunity to make use of self-service channels and proactive customer communication mechanisms for meeting customer expectations for contemporary and user-friendly abilities to interact with us.

- Examples of messages/information that could be pro-actively distributed include:
  - Outages in customer area – Planned;
  - Outages in customer area – Unplanned;
  - Vegetation works in customer area;
  - Streetlight faults in customer area;

- Line works in customer area;
  - Environmental incidents;
  - Radio/TV interference;
  - Complaints;
  - Vandalism;
  - General Information (e.g. newsletters);
  - Power quality and reliability.
- Examples of information distribution/dissemination channels that could be utilised include:
    - Customer navigating to the TasNetworks Website and pulling the information for their area or NMI location;
    - Customers on demand accessing a report of activity in their area via mobile devices (smartphone and tablet);
    - Customer subscribing for SMS notifications about their location;
    - Customer subscribing for e-mail notifications about their location;
    - Customer receiving general social media broadcast channels such as Twitter posts, Facebook posts, and Instagram posts. Functionality could be developed to broadcast the same message to several channels simultaneously.

## 7.2.5 Enterprise Architecture Evolution

Following the formation of TasNetworks, there is a gap in architectural repositories that need to contain information on many hundreds of systems and applications impacting:

- Ability to plan and forecast change to the technology landscape;
- Ability to identify further opportunities for application rationalisation;
- Ability to design solutions.

The advancement of technology over recent years, especially the ability to integrate systems seamlessly is leading to the convergence/crossover of IT and OT. This allows the bringing together of applications and devices in new ways and tying together systems that have primarily operated in isolation. Along with the growth in numbers of devices and increased IT and OT functionality, bringing the systems together introduces integration on a greater scale. TasNetworks will develop the Enterprise Architecture to appraise and guide alignment in initiatives identified in this and other Asset Management Plans.

The cost of building this resource is shared across Distribution and Transmission.

## 7.2.6 Enterprise Information Management

Following the formation of TasNetworks, the business has a collection of Information Management systems which require consolidation. There are inefficiencies involved in multiple systems, gaps around drawing management and system components are reaching end-of-life.

The cost of this initiative is shared across Distribution and Transmission.

### 7.2.1 Finance, HR, Asset and Works Systems

For the Distribution Business this topic includes:

- Replacement of Meter Reading Handheld equipment due to end-of-life of assets;
- Replacement of the Customer Connections Works Management Tool  
This system is past end-of-life, it will be [REDACTED] years old in 2021 and there is no upgrade path. The work is vital to ensure customer facing connection services continue unaffected including;
  - [REDACTED] customer connections, [REDACTED] customer alterations / year
  - [REDACTED] customers moving in and out / year;
- No proposed expenditure in this area for Transmission in this period.

## 7.2.2 IT Infrastructure, Security & Support

This area involves various expenditures due to asset end-of-life or increased capacity requirements in the areas of End-user computing, IT Management and toolsets, IT Network Core Services, Collaboration Tools and Application Delivery Mechanisms.

The costs of these initiatives are shared across Distribution and Transmission.

## 7.2.3 Market Systems

Significant initiatives in this area include:

- MDMS Replacement  
The Market Data Management System is the primary repository of Installation, Customer, Metering and Metering Data. The Market Data Management System will be [REDACTED] years old and at end-of-life in [REDACTED] when this initiative completes its replacement. The initiative needs to follow the initiative to replace the Customer connection works management tool.  
The cost based on [REDACTED] implementation scenario is split across RR19 [REDACTED] and RR24 [REDACTED]. Vendor costs estimated by [REDACTED] based on information currently available, Internal costs estimated using detailed cost modelling methodology used for all complex IT projects at TasNetworks.  
The system is instrumental in the processes of gathering and validating readings for the billing of Tasmanian basic metered customers.  
This aging system holds significant market operability and compliance risks related to;
  - Cash flow [REDACTED] of revenue processed through market systems)
  - [REDACTED] million collected meter readings and [REDACTED] million generated reads for unmetered sites / year
  - Compliance / operator licensing – higher risk we can't achieve regulatory changes as technology ages.
- Billing System Upgrades  
The Distribution Billing system requires upgrades to address emerging technologies in Smart Streetlights.
- MDMS Upgrades  
The MDMS requires ongoing upgrades to address requirements from the biannual change program from AEMO. This change program alters procedure or data requirements for market participants. This is a compliance driven initiative.

## 7.2.4 Mobility

Various parts of TasNetworks have an increasing need for access to data and systems when 'mobile'. The TasNetworks technology strategy includes increased support for this requirement. Initiatives in this area include provision of technology, security and administration of mobile devices. The costs of this initiative are shared across Distribution and Transmission.

The strategy includes:

- Focus on increasing interaction, collaboration and work efficiency by enabling field workforce mobile access to more system functions and by modernising existing access;
- Benefits around staff engagement, improved efficiency, increased quality and speed of information exchanged as well as better cross function collaboration.

## 7.2.5 Outage Management

There are two key initiatives in this area:

- **Upgrade of Map Migration**  
The connectivity model of the distribution grid is authored in the GIS (Geospatial Information System) and is pivotal to the Outage Management processes. The model is exchanged between the GIS and the Outage Management System by a tool know as Map Migration. Replacement of the Distribution GIS system in 2019 necessitates corresponding work to the Map Migration Tool to ensure the connectivity model can be maintained in the OMS;
- **Upgrade/Replacement of the Outage Management System**  
The current Outage Management System will reach end-of-life in 2019 and will require major upgrade works or replacement.

## 8 Program of work

The presentation of the 10-year program of work has been broken into the program of work for RR19 (July 2019 to June 2024) and RR24 (July 2024 to June 2029).

### 8.1 Revenue Reset 19 Program of Work

#### 8.1.1 RR19 Roadmap

The following roadmap demonstrates the major initiatives proposed to be undertaken as part of the Revenue Reset 2019 to 2024 Program of Work. The estimated commencement and duration of each initiative is shown, grouped by functional area.

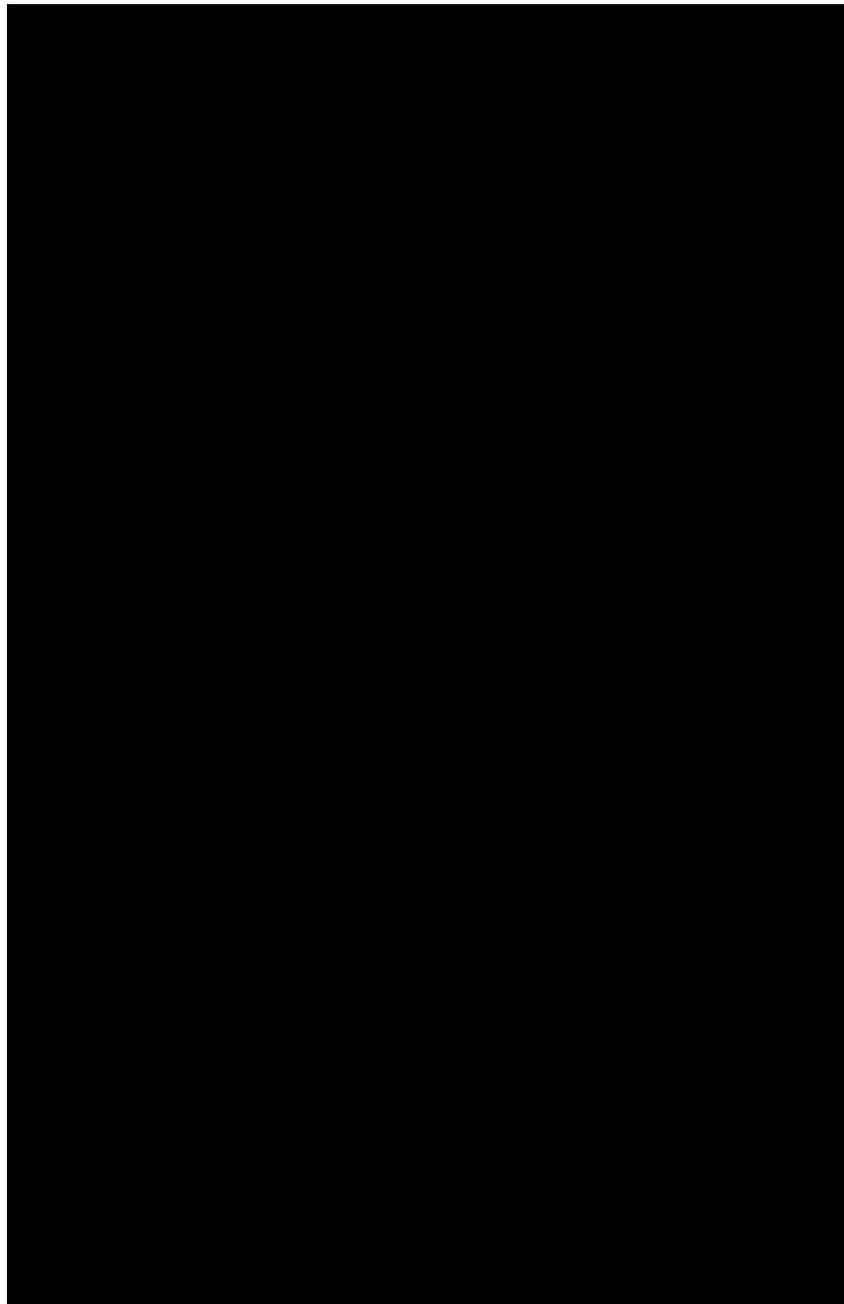


Figure 5 – 2019-2024 Roadmap

### 8.1.2 Total Proposed Non-Network IT Program by Functional Area

The following information shows the profile across the RR19 determination period based on the cost size of each functional area. Efforts have been made to smooth the program where dependencies and risks allowed.

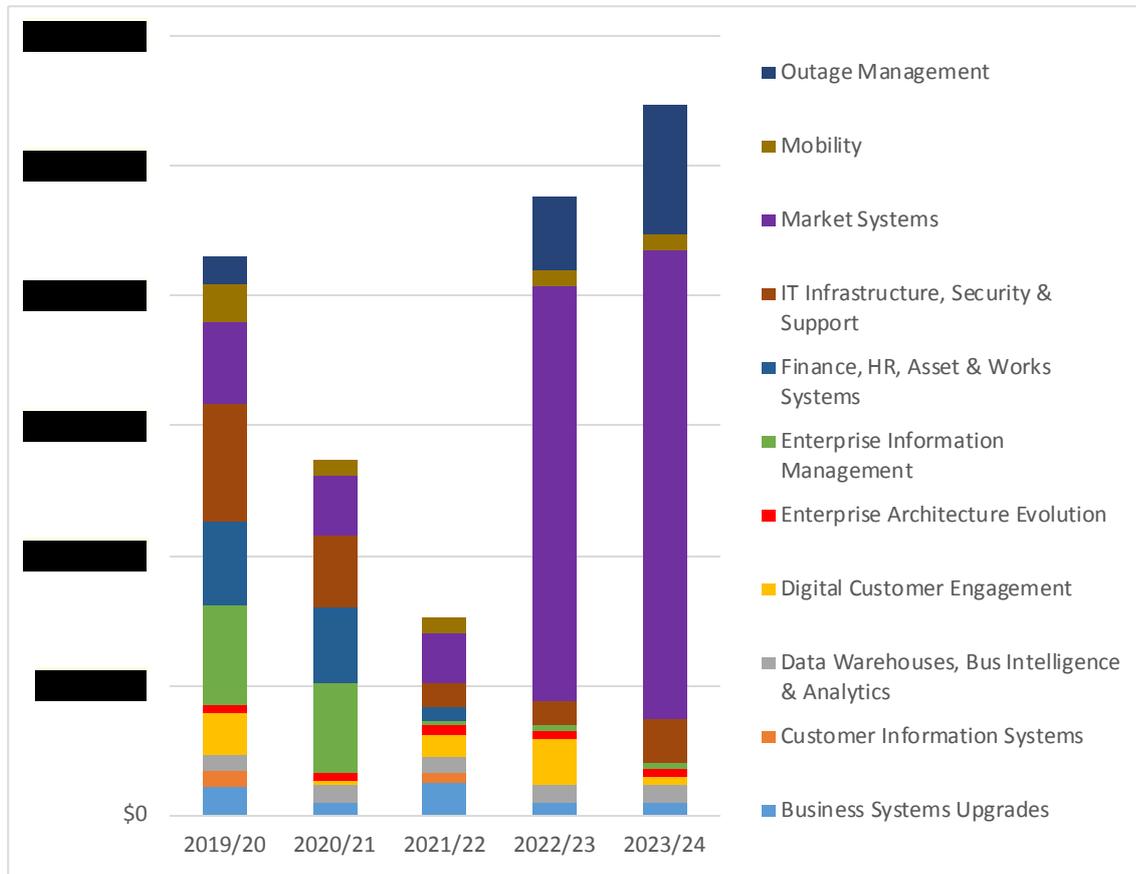


Figure 6 – Graph of Proposed Expenditure for Functional Area/Year

Functional Area	2019/20	2020/21	2021/22	2022/23	2023/24	Grand Total
Business Systems Upgrades	████████	████████	████████	████████	████████	████████
Customer Information Systems	████████	████████	████████	████████	████████	████████
Data Warehouses, Bus Intelligence & Analytics	████████	████████	████████	████████	████████	████████
Digital Customer Engagement	████████	████████	████████	████████	████████	████████
Enterprise Architecture Evolution	████████	████████	████████	████████	████████	████████
Enterprise Information Management	████████	████████	████████	████████	████████	████████
Finance, HR, Asset & Works Systems	████████	████████	████████	████████	████████	████████
IT Infrastructure, Security & Support	████████	████████	████████	████████	████████	████████
Market Systems	████████	████████	████████	████████	████████	████████
Mobility	████████	████████	████████	████████	████████	████████
Outage Management	████████	████████	████████	████████	████████	████████
<b>Grand Total</b>	████████	████████	████████	████████	████████	████████

Figure 7 – Table of Proposed Expenditure for Functional Area/Year

### 8.1.3 Previous Capital Expenditure vs. Proposed - Transmission

When comparing the proposed Transmission capital expenditure totals to historic expenditure, the following pattern can be observed; the previous 5 years annual IT expenditure average for Transmission was ██████ per year as compared to a proposed ██████ per year in this proposal. Note: for initiatives that affect both Transmission and Distribution, costs have been apportioned using percentage allocations appropriate for each year.

Sub-category	2014-15	2015-16	2016-17	2017-18	2018-19	Totals	2019-20	2020-21	2021-22	2022-23	2023-24	Totals
<b>Transmission</b>												
Business Systems Upgrades												
Customer Information Systems												
Data Warehouses, Bus Intelligence & Analytics												
Digital Customer Engagement												
Enterprise Architecture Evolution												
Enterprise Information Management												
Finance, HR, Asset & Works Systems												
IT Infrastructure, Security & Support												
Market Systems												
Mobility												
<b>Totals</b>												

Figure 8 - Previous Expenditure vs. Proposed - Transmission

### 8.1.4 Previous Capital Expenditure vs Proposed - Distribution

When comparing the proposed Distribution capital expenditure totals to historic expenditure, the following patterns can be observed: The previous 5 years annual IT expenditure average for Distribution was ██████ per year as compared to a proposed ██████ year in this proposal. Note: for initiatives that affect both Transmission and Distribution, costs have been apportioned using percentage allocations appropriate for each year.

Sub-category	2014-15	2015-16	2016-17	2017-18	2018-19	Totals	2019-20	2020-21	2021-22	2022-23	2023-24	Totals
<b>Distribution</b>												
Business Systems Upgrades												
Customer Information Systems												
Data Warehouses, Bus Intelligence & Analytics												
Digital Customer Engagement												
Enterprise Architecture Evolution												
Enterprise Information Management												
Finance, HR, Asset & Works Systems												
IT Infrastructure, Security & Support												
Market Systems												
Mobility												
Outage Management												
<b>Totals</b>												

Figure 9 - Previous Expenditure vs. Proposed - Distribution

## 8.1.5 Non-Network IT Operational Expenditure - Transmission

The table below outlines the step change in Transmission operating expenditure from the base year 2016/2017. The changes are all related to altered costs in maintenance, support of software and infrastructure assets. Note: for assets utilised by both Transmission and Distribution, costs have been apportioned using percentage allocations appropriate for each year.

Functional Area	2019/20	2020/21	2021/22	2022/23	2023/24	Grand Total
Digital Customer Engagement	█	█	█	█	█	█
Enterprise Information Management	█	█	█	█	█	█
IT Infrastructure, Security & Support	█	█	█	█	█	█
Finance, HR, Assets and Works	█	█	█	█	█	█
Finance, HR, Assets and Works	█	█	█	█	█	█
Mobility		█	█	█	█	█
<b>Grand Total</b>	█	█	█	█	█	█

Figure 10 – RR19 Opex step change by year for Transmission

The negative values for Finance, HR, Assets and Works represent the support and maintenance costs avoided in applications replaced by the ERP. The positive values are the additional costs, apportioned for Transmission.

## 8.1.6 Non-Network IT Operational Expenditure – Distribution

The below table outlines the step change in Distribution operating expenditure from the base year 2016/2017. The changes are all related to altered costs in maintenance & support of software & infrastructure assets. Note: for assets utilised by both Transmission and Distribution, costs have been apportioned using percentage allocations appropriate for each year.

Functional Area	2019/20	2020/21	2021/22	2022/23	2023/24	Grand Total
Digital Customer Engagement	█	█	█	█	█	█
Enterprise Information Management	█	█	█	█	█	█
IT Infrastructure, Security & Support	█	█	█	█	█	█
Finance, HR, Assets and Works	█	█	█	█	█	█
Finance, HR, Assets and Works	█	█	█	█	█	█
Mobility		█	█	█	█	█
<b>Grand Total</b>	█	█	█	█	█	█

Figure 11 – RR19 Opex step change by year for Distribution

The negative values for Finance, HR, Assets and Works represent the support and maintenance costs avoided in applications replaced by the ERP. The positive values are the additional costs, apportioned for Distribution.

## 8.2 Revenue Reset 24 Program of Work

### 8.2.1 Total Proposed Non-Network IT Program by Functional Area

When looking forward across the next two determination periods, the graphs below illustrates the RR19 and RR24 total expenditure profile.

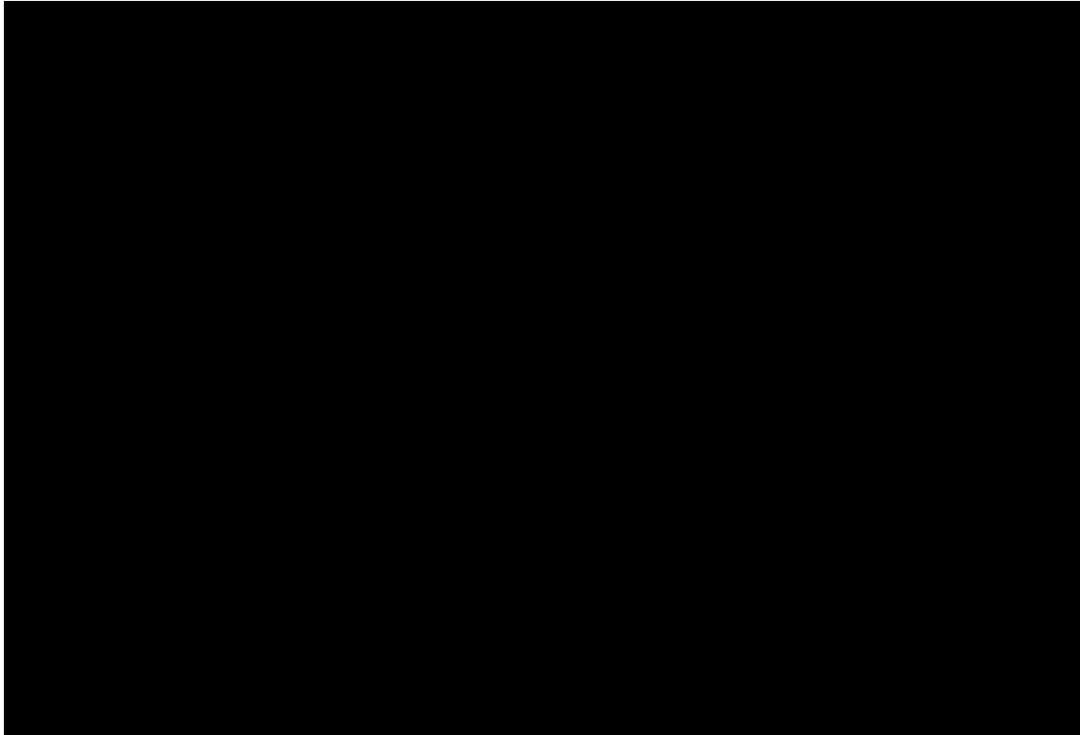


Figure 12 – RR24 Total expenditure by Functional Area / Year

The higher expenditure in 2024/25 and 2025/26 represent large initiatives. MDMS Replacement spans the two periods with CRM and Billing Upgrades early in RR24.

The table below outlines the total RR24 expenditure by functional area. Note the higher values in year 1 and 2 result from the completion of MDMS Replacement, initiation of CRM and Billing.

Functional Area	2024/25	2025/26	2026/27	2027/28	2028/29	Grand Total
Business Systems Upgrades	██████████	██████████	██████████	██████████	██████████	██████████
Customer Information Systems	██████████	██████████	██████████	██████████	██████████	██████████
Data Warehouses, Bus Intelligence & Analytics	██████████	██████████	██████████	██████████	██████████	██████████
Digital Customer Engagement	██████████	██████████	██████████	██████████	██████████	██████████
Enterprise Architecture Evolution	██████████	██████████	██████████	██████████	██████████	██████████
Enterprise Information Management	██████████	██████████	██████████	██████████	██████████	██████████
Finance, HR, Asset & Works Systems	██████████		██████████	██████████	██████████	██████████
IT Infrastructure, Security & Support	██████████	██████████	██████████	██████████	██████████	██████████
Market Systems	██████████	██████████	██████████	██████████	██████████	██████████
Mobility	██████████	██████████	██████████	██████████	██████████	██████████
Outage Management	██████████				██████████	██████████
<b>Grand Total</b>	██████████	██████████	██████████	██████████	██████████	██████████

Figure 13 – RR24 Total expenditure by Functional Area / Year

## 8.2.2 Non-Network IT Operational Expenditure - Transmission

The table below outlines the step change in Transmission operating expenditure from the base year 2016/2017. The changes are related to altered costs in maintenance and support of software along with infrastructure assets. Note: for assets utilised by both Transmission and Distribution, costs have been apportioned using percentage allocations appropriate for each year.

Functional Area	2024/25	2025/26	2026/27	2027/28	2028/29	Grand Total
Customer Information Systems						
Digital Customer Engagement						
Enterprise Information Management						
IT Infrastructure, Security & Support						
Finance, HR, Assets and Works						
Finance, HR, Assets and Works						
Mobility						
<b>Grand Total</b>						

Figure 14 – RR24 Opex step change by year for Transmission

The negative values for Finance, HR, Assets and Works represent the support and maintenance costs avoided in applications replaced by the ERP. The positive values are the additional costs, apportioned for Transmission.

## 8.2.3 Non-Network IT Operational Expenditure - Distribution

The table below outlines the step change in Distribution operating expenditure from the base year 2016/2017. The changes are related to altered costs in maintenance and support of software along with infrastructure assets. Note: for assets utilised by both Transmission and Distribution, costs have been apportioned using percentage allocations appropriate for each year.

Row Labels	2024/25	2025/26	2026/27	2027/28	2028/29	Grand Total
Customer Information Systems						
Digital Customer Engagement						
Enterprise Information Management						
IT Infrastructure, Security & Support						
Finance, HR, Assets and Works						
Finance, HR, Assets and Works						
Market Systems						
Mobility						
<b>Grand Total</b>						

Figure 15 – RR24 Opex step change by year for Distribution

The negative values for Finance, HR, Assets and Works represent the support & maintenance costs avoided in applications replaced by the ERP, and the positive values are the additional costs, apportioned for Distribution.

## 8.3 Initiative List

Functional Area	Project Title	Start	End	CAPEX	OPEX	Grand Total
<b>Business Systems Upgrades</b>						
1851	Business Systems Maintenance	1/07/2019	30/06/2024	██████████		██████████
1904	Outage Management - Message Mgt. System Upgrades	1/07/2021	30/04/2022	██████████		██████████
1905	GPS Vehicle Tracking Improvements	1/07/2019	30/04/2020	██████████		██████████
<b>Business Systems Upgrades Total</b>				██████████		██████████
<b>Customer Information Systems</b>						
1889	Transitional CRM			██████████		██████████
1893	Customer Applications	1/07/2019	29/02/2020	██████████		██████████
<b>Customer Information Systems Total</b>				██████████		██████████
<b>Data Warehouses, Bus Intelligence &amp; Analytics</b>						
1907	Data Warehousing/Business Intelligence/Data Analytics	1/07/2019	30/06/2024	██████████		██████████
<b>Data Warehouses, Bus Intelligence &amp; Analytics Total</b>				██████████		██████████
<b>Digital Customer Engagement</b>						
1888	Website Redevelopment	1/07/2019	10/02/2020	██████████	██████████	██████████
1890	Digital Customer Engagement (Phase 1)	1/09/2018	23/11/2019	██████████	██████████	██████████
1891	Digital Customer Engagement (Phase 2)	1/07/2022	16/06/2023	██████████		██████████
<b>Digital Customer Engagement Total</b>				██████████	██████████	██████████
<b>Enterprise Architecture Evolution</b>						
2121	Enterprise Architecture Evolution	1/07/2019	30/06/2024	██████████		██████████
<b>Enterprise Architecture Evolution Total</b>				██████████		██████████
<b>Enterprise Information Management</b>						
1909	EDRMS Replacement	1/07/2019	22/02/2021	██████████	██████████	██████████
<b>Enterprise Information Management Total</b>				██████████	██████████	██████████
<b>Finance, HR, Asset &amp; Works Systems</b>						
1894	Meter Reading Hardware and Software Refresh	1/07/2022	31/01/2023	██████████		██████████
1895	Service Works Management Tool Replacement	1/07/2019	30/11/2020	██████████		██████████
<b>Finance, HR, Asset &amp; Works Systems Total</b>				██████████		██████████
<b>IT Infrastructure, Security &amp; Support</b>						
1912	Intranet Upgrade	1/07/2019	20/04/2020	██████████		██████████
1948	Application Delivery	1/07/2019	30/06/2024	██████████		██████████
1950	Collaboration	1/07/2019	30/06/2024	██████████		██████████
1958	IT Security	1/07/2019	30/06/2024	██████████		██████████
2055	Warehouse Barcoding and Supplier B2B	1/07/2019	20/04/2020	██████████		██████████
2422	IT Core Services	1/07/2019	30/06/2024	██████████		██████████
2423	IT Management and Supporting Tool-set	1/07/2019	30/06/2024	██████████		██████████
2481	End User Computing	1/07/2019	30/06/2024	██████████		██████████
2545	Infrastructure OPEX (BAU)	1/07/2019	30/06/2024		██████████	██████████
2561	Ajilis Minus (Combined)	1/07/2019	30/06/2024		██████████	██████████
2562	Ajilis Additional (Combined)	1/07/2019	30/06/2024		██████████	██████████
<b>IT Infrastructure, Security &amp; Support Total</b>				██████████	██████████	██████████
<b>Market Systems</b>						
1897	Market Systems - MDMS Replacement	1/07/2022	30/06/2024	██████████		██████████
1899	Market Systems - DBill Smart Streetlight Tariff Mods	1/07/2019	24/02/2020	██████████		██████████

1900	Market Systems - Billing Upgrades	1/07/2019	10/02/2020			
1901	Market Systems - MDMS Upgrades	1/07/2019	30/06/2024			
<b>Market Systems Total</b>						
<b>Mobility</b>						
1908	Mobility & Workforce Optimisation	1/07/2019	27/01/2020			
2056	Mobility for External Contractors	1/07/2020	21/04/2021			
<b>Mobility Total</b>						
<b>Outage Management</b>						
1902	Outage Management - Map Migration	1/07/2019	24/02/2020			
1903	Outage Management - Upgrade / Replacement	1/07/2022	31/05/2024			
<b>Outage Management Total</b>						
<b>Grand Total</b>						

Figure 16 – Initiative List

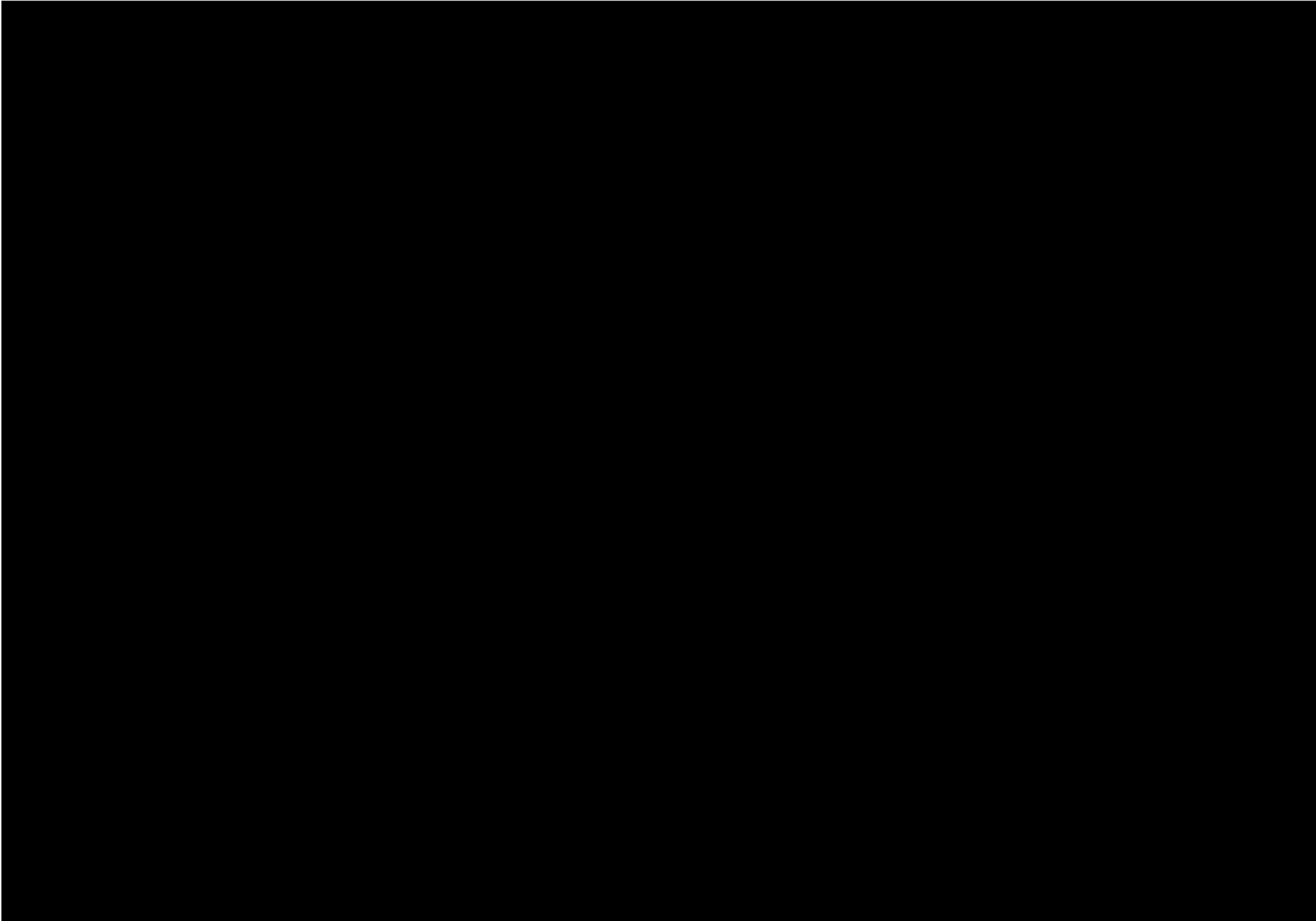


Figure 17 – 2017 – 2019 Predicted State of Core Applications