



Asset Management Plan

Corporate IT – Software Asset Management Plan

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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
AVL	Automatic Vehicle Location
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
DNSP	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
DD17	Distribution Determination 2017-2019, also known as a Revenue Reset.
	IT service provider previously utilised by TasNetworks for the provision of IT Service Desk services.
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

Term	Definition
MDP	Metering Data Provider
MDMS	Meter Data Management System
MECMS	Major Event Call Management System
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
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
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.
TIBS	TasNetworks Integrated Business Solution Project
TNOCS	Telecommunications Network Operation and Control System
TOGAF	The Open Group Architecture Framework
WSD	Works and Service Delivery business division

2 Introduction

As a newly formed entity within the Tasmanian jurisdiction, TasNetworks' vision is to be 'trusted by our customers to deliver today and create a better tomorrow'. TasNetworks aims to deliver electricity and telecommunications networks services, creating value for the customer, the Tasmanian State Government and the community.

To support its vision, TasNetworks has developed business strategic goals including:

- 'We understand our customers by making them central to all we do';
- 'We enable our people to deliver value'; and
- 'We care for our assets, delivering safe and reliable network services while transforming our business'.

The corporate Information Technology department is responsible for managing a wide ranging collection of software assets, from general desktop applications to the development and management of specialised business applications that support core business operations for the enterprise. The merged entity is now one year old and is making a concerted effort to rationalise and consolidate the software assets it has inherited from the two businesses, Aurora Energy and Transend, as well as put in place strategies and processes for the for the future.

TasNetworks actions its philosophies for asset management through asset management plans. 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 asset management plan have been developed taking into account past asset performance, industry best practice and the need for prudent investment to optimise cost and asset performance. These asset management plan 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 Distribution Determination 2017-2019 submission and to contribute to the achievement of the company's business strategic objectives outlined above. This document forms part of the overall regulatory proposal containing details of the TasNetworks corporate IT software assets, the proposed forecast capital expenditure on these assets, expressed in 2014/2015 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. for outage reporting) 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 2019;
- 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, 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;
- Provide a foundation to rationalise a number of systems into an enterprise platform (ERP) to reduce the IT environment complexity and support the adoption of shared business processes, data sets and systems across the organisation;
- Maximise the value from our ERP investment to enable 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; and
- Enable TasNetworks to control and, where possible, reduce technology costs in the long term through operational improvements, consolidation of IT applications and improved governance.

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 re-assessment 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 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; and
- When national bodies change protocols and procedures TasNetworks is obligated to follow to operate in the National Electricity Market, TasNetworks has little choice but to implement the changes.

3 Scope

3.1 In Scope

This asset management plan (AMP) covers the rationale for Corporate IT initiatives identified for DD17.

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, not some specific line of business IT assets 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 services;
 - Facilities;
 - Finance; and
 - Corporate IT.
- People and performance;
- Strategy and stakeholder relations;
- Works and service delivery; and
- Customer Service and Market Teams

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 management by the Telecommunication Network Operation and Control System (TNOCS) team;
- Protection and control software assets managed by the Protection and Control team; and
- Asset management software assets managed by the Network Information Systems (NIS) team within Strategic Asset Management.

4 The Journey

4.1 Regulatory Control Period 2012-2017

4.1.1 2012 to 2015

The first three years of the current determination period has seen the Distribution Business undertake major business initiatives and undergo significant change, much of which was not included or forecast in the previous submission.

This departure from the previous strategy has largely been due to decisions made at the Tasmanian State Government level, inclusive of the TESI reforms, and has impacted the business' ability to deliver on many of the initiatives outlined in the 2012-2017 Aurora Technology Roadmap, most notably the implementation of a single vendor consolidation strategy.

Major events that have been undertaken thus far during the RCP 2012-2017:

- The FRC Compliance Project - managed the business changes introduced by the 2012 major electricity reforms to introduce full retail contestability commencing on 1 July 2014. To enable TasNetworks (and previously Aurora Energy) to operate in the reformed energy market and meet its regulatory compliance obligations in a contestable market, it was necessary to re-engineer internal systems and business processes across key business areas.
When the last determination was developed this initiative was not certain to occur during the regulatory period, and if it did, the costs incurred were intended to be passed-through. Subsequently, the initiative was required and the costs were not passed through;
- 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. This resulted in the establishment of a shared Corporate IT function across the businesses, as well as the bringing together of many disparate, duplicate systems;
- Integrated Business Systems Project – TasNetworks undertook a feasibility activity in late 2014 to determine the approach to transitioning TasNetworks' diverse business processes and systems to an integrated systems platform. The outcome of this study was a recommendation that the business transition to a suite of Enterprise Resource Planning (ERP) software; and
- Insourcing of the IT service desk function– In the first half of 2015, a decision was made to insource the IT service desk from the previously outsourced provider back into the Corporate IT department of TasNetworks.

4.1.2 2015 to 2017

During the remaining time until the next determination period, the primary focus of the Corporate IT department will be on:

- Further consolidation of software assets - several strategic initiatives have commenced seeking to further consolidate and rationalise the current set of applications that have been brought together as a result of the transmission and distribution merger. These include:
 - A number of smaller undertakings in order to get the current application landscape operating more efficiently, e.g. improved access for staff to systems and data across disparate environments and domains;

- Interim integrated business systems solutions – several solutions are being implemented in HR, Finance and Governance, Risk and Compliance to provide interim relief from duplicated systems prior to the implementation of the integrated business systems project;
- Integrated business systems ERP selection and subsequent implementation:
 - A Request for Proposal, undertaken in May 2015, identified a system integration partner with process transformation expertise which could bring world’s best-practice processes to the organisation. This initiative encompasses implementation services, application support services and infrastructure support services in addition to the ERP solution suite; and
 - Implementation is expected to commence in November 2015 and, based on current projections, deliver in two stages by the end of 2017.
- Regulatory Changes - during the remaining period to the end of RCP 2012-2017, it is anticipated that 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 are anticipated to commence prior to 2017:
 - Metering Contestability (MC) rule changes; and
 - Ongoing AEMO bi-annual market systems and procedural changes.
- Ongoing upgrades and maintenance – during the remaining two financial years in the RCP 2012-2017 period there will be ongoing application upgrades and maintenance. The following initiatives are expected to occur:
 - Major Event Call Management System (MECMS) upgrade; and
 - Outage and Restoration Management application upgrade.
- TasNetworks has explored options for improving customer-facing systems through a number of strategic ideas including introducing a customer portal for some customer-centric processing, making better use of self-service channels and proactive customer communication mechanisms.
- There are a number of improvements that could be made to the GPS tracking tool that could assist with the management of staff welfare such as measuring the work hours of field crew with the aim of identifying excessive work hours.
- Definition and implementation of an Information Technology Strategy for TasNetworks.

4.2 Distribution Determination 2017-2019 (DD17)

During the next regulatory period there will be a further effort towards software asset consolidation and additional investments in customer-facing and asset management systems to support organisational strategic goals and regulatory obligations.

It should be noted that the full effect of the implementation of the integrated business systems project solution throughout the organisation is not yet known, and may affect the future direction and priority of initiatives during the DD17 period.

Further details of the challenges, objectives and initiatives planned to be undertaken during the DD17 regulatory period are explored later in this document.

4.3 Beyond 2019

From 2019 onwards, the Distribution and Transmission businesses within TasNetworks will align with regard to their regulatory determination periods. Although separate proposals will still be required, Corporate IT, as a shared service will be able to develop a more streamlined method for the development of the program of work, and allocation of costs between the two regulated streams.

The POW developed for DD17, identified later in this document, will allow the business to converge onto a consolidated platform on which the business can grow. TasNetworks aims to position itself by the end of the DD17 regulatory period to allow flexibility for the future direction of the IT environment, influenced by:

- The strategy and vision of the company;
- Further changes to the NEM and its framework;
- The growth of smart metering infrastructure in Tasmania;
- Power of choice reforms;
- The impacts of declining demand;
- The 'impact' of the ERP; and
- Further synergies and consolidation that can be achieved between the Transmission and Distribution sides of the business.

In demonstrating prudent expenditure in the upcoming DD17 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; and
- Automatic Vehicle Location application 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; and
- Technology principles.

5.1 Enterprise Principles

Name	Principle 1: Change must be managed
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"> • This principle requires that the business problem / issue / opportunity / impact is fully understood. • Gives a clear focus for what is to be changed so that scope and costs can be controlled. • Impact assessments can determine any issues / risks to reduce scope creep and unexpected outcomes. <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	Principle 2: Reduce Unnecessary Diversity and Complexity
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"> License costs are reduced through economies of scale and re-use of existing enterprise licenses. Fewer technology options introduced reduces the support skills required and has less work load for support staff to manage. Any application that is replaced must have a plan to be decommissioned. <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	Principle 3: Optimise for Organisational Benefit
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"> 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. 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. The current autonomous division management within TasNetworks has led to duplications of effort and technology investment. 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. The Business requires services that foster operational collaboration, cross-organisation information views, and highly adaptive, flexible enterprise wide solutions. Adopting a holistic view within TasNetworks will maximise the potential synergies across organisational boundaries and increase the reuse potential of solutions developed.
Implications	<ul style="list-style-type: none"> 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. TasNetworks should invest in a governance structure and compliance processes to enhance its investment evaluation, approval and resource allocation processes. TasNetworks should consider, as part of its governance processes, utilising the centralised program management office (PMO) that is responsible for evaluating all change initiatives against its EA to ensure compliance with all architectural components and to identify project overlaps and opportunities for reuse. TasNetworks' governance processes must ensure that tailored solutions that address unique

	<p>requirements are strictly managed to avoid incremental divergence from the EA over time.</p> <ul style="list-style-type: none"> • 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 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. • 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.
How to apply	N/A

Name	Principle 4: Enterprise IT Assets Are Managed Through the Entire Life Cycle
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"> • Emergence; • Mainstream; • Replacement; • Containment; • Retirement.
Rationale	<ul style="list-style-type: none"> • Assets are like any element of an organisation requiring investment and management, and they include business processes, enterprise solutions, IT infrastructure and buildings. • Asset operation and maintenance costs often represent a significant percentage of the total cost of ownership over the total life cycle. • Assets are expensive and should be properly managed throughout the life cycle to ensure that the maximum return on the investment is achieved. • Assets are expensive, and understanding their life cycle expectancy will help TasNetworks to prepare, schedule, budget and plan for their eventual replacement. • New assets must be of sufficient maturity and their risks clearly understood before they can be adopted. • Every major IT investment is a corporate asset and should be managed accordingly.
Implications	<ul style="list-style-type: none"> • 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. • TasNetworks should centralise its IT asset procurement processes. • Products and technologies used by TasNetworks will be modern solutions already proven by significant adoption in the industry, thereby minimising technological and support risks. • 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.
How to apply	N/A

Name	Principle 5: Risk Management
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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"> • Change proposals involve benefits, costs and risks assessments. All changes need the risk factors identified so an informed decision can be taken. • There are risks associated with implementing change and there are risks associated with NOT implementing change. • All risks are manageable with suitable mitigation strategies, trade-offs and finally risk acceptance. • The determination of acceptable residual risk is documented in TasNetworks' Risk Management policy. <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	Principle 6: Risk-Based Security
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"> • 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. • Security will use role-based access model. • Security is to be provided using different methods that should work together to provide the needed control of the business's processes and systems. <p><u>Government Information Security Policy</u></p> <ul style="list-style-type: none"> • TasNetworks and TasNetworks' systems are required to adhere to the Government Information Security Policy and other regulations and compliance obligations. • Financial and customer data must be encrypted before being sent to offshore locations. • Systems must comply with PCI DSS Reference Guide regulations <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	Principle 7: Ensure Effective Corporate Compliance
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"> • Corporate breaches have significant political, social, legal and cost implications. • 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. • Being a good corporate citizen can enhance credibility.
Implications	<p>TasNetworks must be cognizant of all its corporate requirements, including:</p> <ul style="list-style-type: none"> • Occupational health and safety; • Equal employment opportunities; • Privacy Act; • Right to Information; • Religious and cultural expectations; • Public Interest Disclosures <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.

5.2 Business Principles

Name	Principle 1: Primacy of Principles
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	Principle 2: Business Alignment
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	Principle 1: Data is an Asset
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"> 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. 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. <p><u>Duplication of data</u></p> <ul style="list-style-type: none"> 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. Standalone applications have a major duplication of data. All applications sharing data must be integrated with master data sources.
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	Principle 1: Use, Buy, Build
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"> 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. 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.

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	Principle 2: Manage Vendor Lock-In
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"> • Understand the potential benefits of aligning with a specific vendor's strategy, technology and services: <ul style="list-style-type: none"> ○ Greater and higher degrees of functionality (for example, performance, integration and innovative features); ○ High-volume discounts; ○ More tightly integrated end-to-end solutions; ○ Reduced costs of integration; ○ Range of products available from associated vendors providing leverage; • Understand the potential costs of aligning with a specific vendor's strategy, technology and services: <ul style="list-style-type: none"> ○ Reduced ability to integrate other systems (for example, applications, middleware and tools); ○ Reduced ability to negotiate for specific discounts because of the limited ability to introduce competitive bids; ○ Increased need for specialised technical skills (for example, system managers, programmers and relationship managers); ○ Required upgrades based on product dependencies, not direct user value ○ Limited choice of associated products; • Understand the risk/reward relationship between architectural freedom and business volatility and differentiation; • 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.
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	Principle 1: Infrastructure is Reliable
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	Principle 2: Infrastructure that is Affordable and Sustainable
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	Principle 3: Infrastructure that has Consistent Interoperability
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	Principle 4: Infrastructure is Managed and Automated
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 DD17' 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.

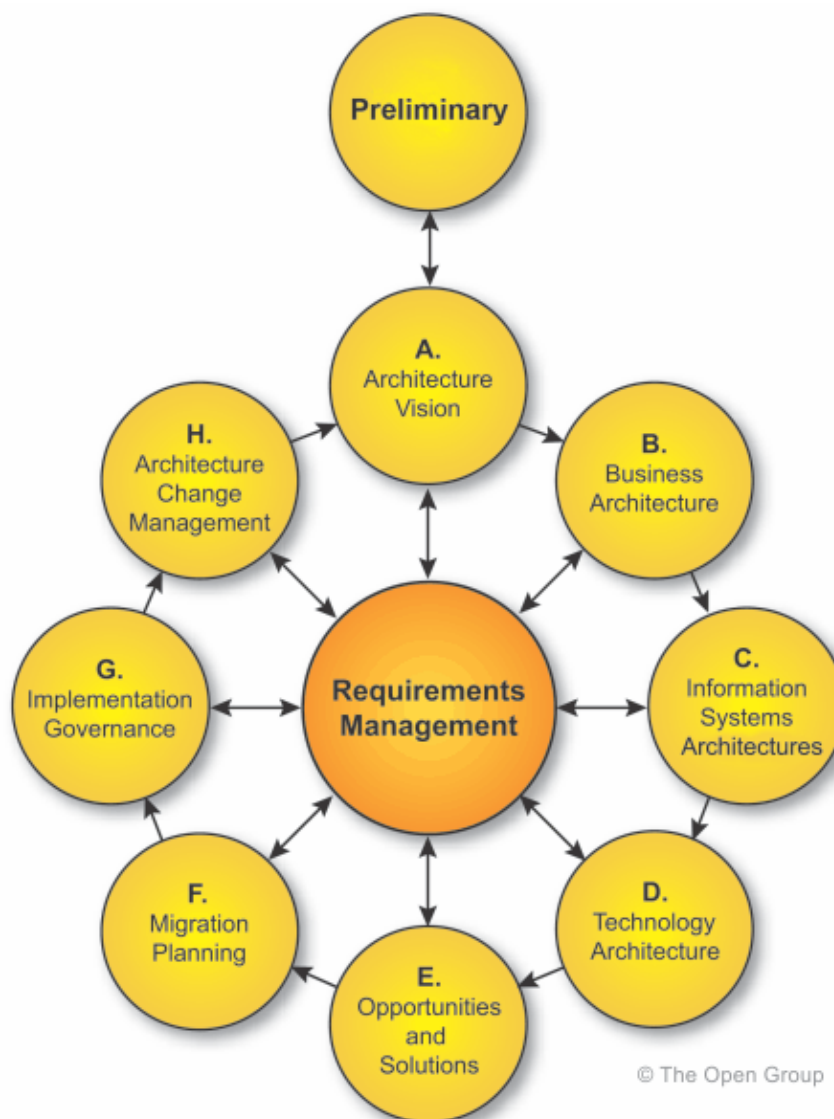


Figure 1 – Representation of TOGAF ADM

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; and
- 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; and
- 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.); and
- 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; and
- 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, Microsoft BizTalk services and Microsoft SQL Server Integration Services. 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; and
- System security and protection, especially for any interfaces exposed outside the Corporate IT network.

6.2.4 SharePoint application

Microsoft SharePoint utilisation at TasNetworks has grown dramatically during the current regulatory period. It has now changed from being a corporate intranet to a comprehensive application platform.

Critical asset management considerations for SharePoint applications are:

- Capacity management of server farm bandwidth, storage, memory and CPU; and
- 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; and
- 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 incident¹. 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:

[REDACTED]

In addition to the [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:

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

- 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?
- 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 'work arounds' 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; and
- 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; and
- 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 – 2017 -2019 Predicted State of Core items).

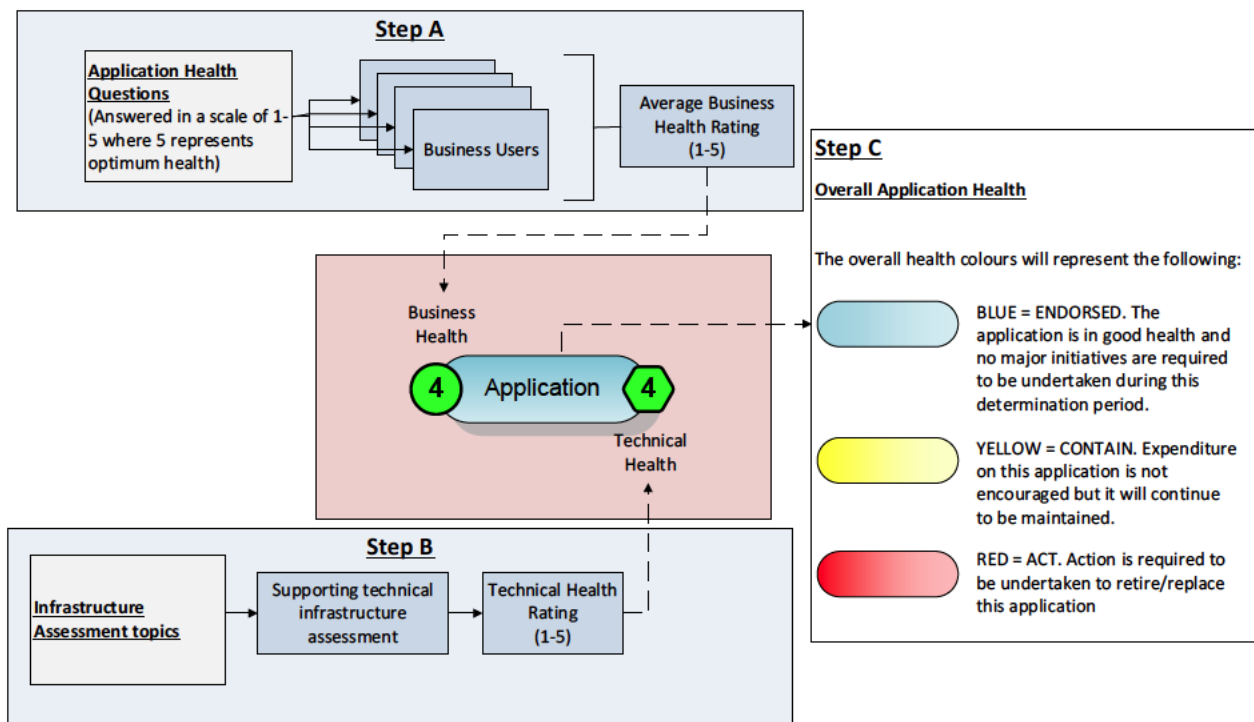


Figure 2 – Health assessment process

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.

The operational monitoring system, 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 DD17

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 DD17 program of works 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 DD17 is represented in the following diagram.

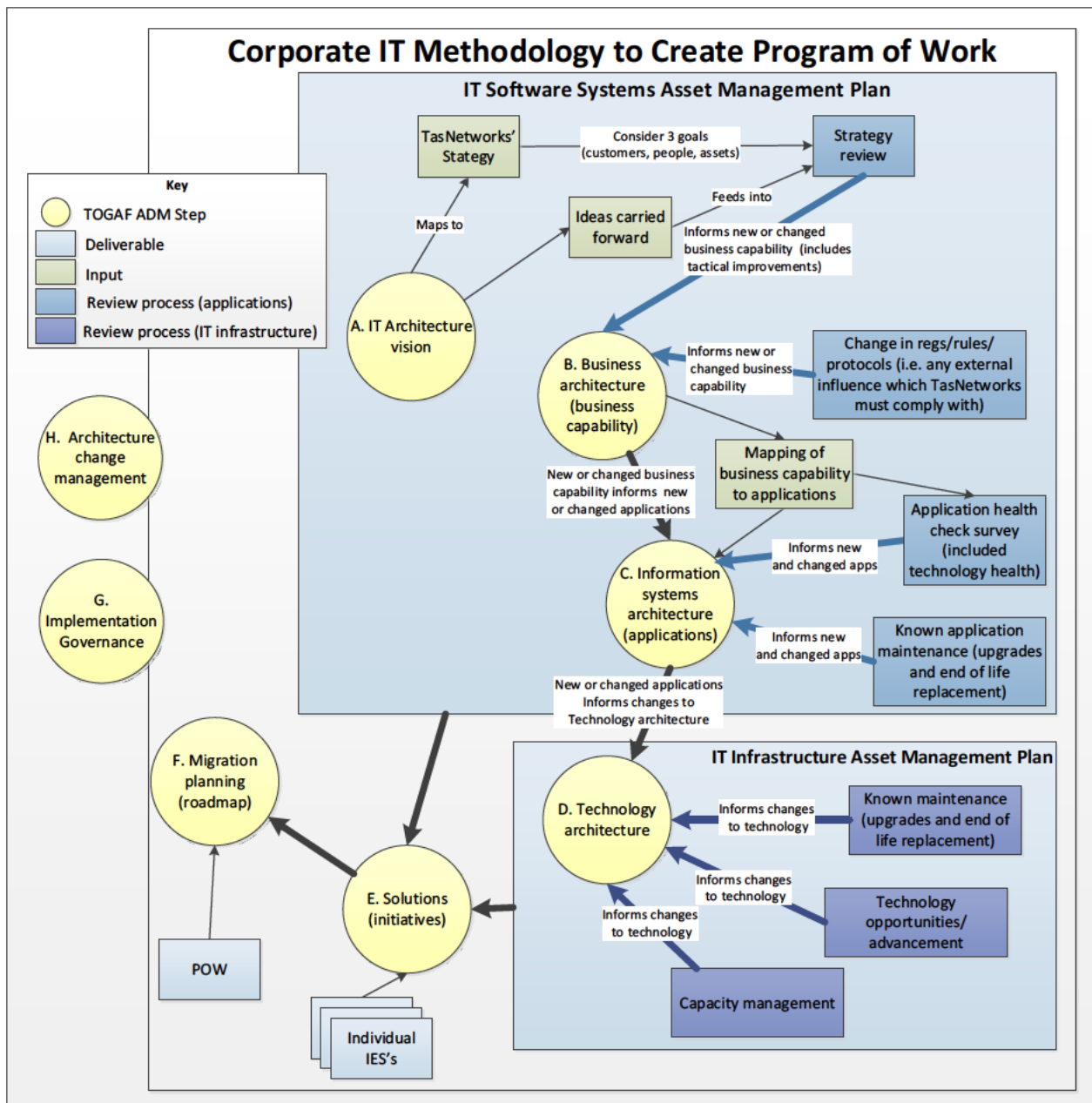


Figure 3 – DD17 Corporate IT methodology to create program of work

The individual steps comprising the TasNetworks methodology to create the DD17 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 over several weeks.

The top down approach also included an analysis of changing Distribution Network Service Provider (DNSP) regulatory related rules that TasNetworks operates within and is obligated to conform with².

- **‘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 all applications classed as critical, major and important was evaluated. The changed business architecture identified from the top down approach was distilled with known maintenance regimes³ 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, prioritised⁴ and costed⁵ as a means of building the program for DD17. 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.

² 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.

³ 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.

⁴ 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.

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

7 Initiatives (2015)

In the context of this Asset Management Plan, initiatives are prospective individual packages of work that ultimately form the DD17 Program of Work, and 2017-2027 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.

The discussion of the initiatives is broken into:

- Business strategy review;
- Regulatory and government obligations;
- Heath Assessments; and
- Upgrades/maintenance/end of life replacement.

7.1 Business Strategy Review

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.

A number of 'change drivers' or issues were identified under the following themes:

- Better user of customer-facing technology;
- Planning for smart meter rollout and micro grids;
- Improved management of staff welfare; and
- Improved staff efficiency and effectiveness.

7.1.1 Better use of customer-facing technology

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

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

1. The works application submission and approval process is not efficient. From a TasNetworks customer perspective, there are unnecessary delays in applications being assessed.
From a TasNetworks staff perspective there is unnecessary and routine data entry being performed.
2. Customer payment options are limited to EFT and Cheque. Where necessary, customers expect to have the ability to make payments online at the point of application submission.
From a TasNetworks customer perspective there are unnecessary delays in their applications being assessed because of delays in receiving payments and then reconciling payments.
3. There is no transparency as to what is happening (i.e. the status) with the 'applications assessment and approvals process' and then the 'works initiation through to energisation process'. The customer needs to contact TasNetworks staff directly for this information which is inefficient.

From a TasNetworks customer perspective there is frustration in not having regular, up to date reports on application and then works progress. From a TasNetworks staff perspective, taking a phone call from a customer about their application/works, and then finding out the current status is complex and slow.

4. An online reporting mechanism could be enabled to handle low risk issues/problems that perhaps don't 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'.

5. 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 pulling the information themselves from online data.

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 portal (initiative IT.CST.13) would open several opportunities for customers to conduct their business with TasNetworks online including:

- Drafting and submission of work applications electronically, then the tracking of applications and approved works status on demand via the portal or by subscribed methods such as an email or SMS. It would also allow TasNetworks customers to pay application fees and contribution payments up to \$10,000 online.

From a customer perspective the benefits would include:

- The application data entry, submission (including online payment capability), assessment and approval process will be significantly quicker meeting the customer expectations of more convenience and quicker turnaround time; and
- On demand, customers will be able to look up or receive their application or works status without having to contact TasNetworks staff directly. This will meet the customer expectations of more personalisation, more convenience and better customer contact.

From a TasNetworks staff perspective there will be reduced manual handling of applications and payments leading to improved staff efficiency and effectiveness.

- 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 big opportunity to make use of self-service channels and proactive customer communication mechanisms for meeting customer expectations for more personalisation, more convenience, more options and better customer contact (initiative IT.SS.03).

- 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;
 - Line works in customer area;
 - General Information (e.g. Newsletters); and
 - Next meter reading imminent.
- 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 iPad);
 - Customer subscribing for SMS notifications about their location;
 - Customer subscribing for Email notifications about their location; and
 - Customer receiving general social media broadcast channels such as - Twitter posts, Facebook posts, Instagram posts etc. Functionality could be developed to broadcast the same message to several channels simultaneously.

Table 2 – IT ‘customer-facing’ initiatives

ID	Initiative	Initiative Description
IT.CST.13	Customer Portal	<p>A customer portal will address:</p> <ul style="list-style-type: none"> ● Drafting and submission of work applications electronically, then tracking of applications and approved works status on demand via the portal or by subscribed methods such as an email or SMS; ● Allowing TasNetworks customers to register low risk issues/problems online; and ● Allow TasNetworks customers to pay application fees and contribution payments up to \$10,000 online. <p>This initiative is scheduled for 2015-2017.</p>
IT.SS.03	Customer Engagement Initiative	<p>The ‘Customer engagement initiative’ will result in a mixture of technologies to disseminate/distribute a variety of information to wide ranging or targeted audiences.</p> <p>This initiative is scheduled for 2015-2017.</p>

7.1.1.1 IT Benefits to Customers, People and our Assets

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; and
- Enable TasNetworks to control and, where possible, reduce technology costs in the long term through operational improvements, consolidation of IT applications and improved governance.

7.1.2 Planning for smart meter rollout and micro grids

From July 2017, it is anticipated that there will be [REDACTED] smart meters installed in Tasmania per year. With the introduction of interval or smart meters, there will be flexibility to apply interval or time of use based tariffs.

Applying interval or time of use based tariffs is also an opportunity to influence changes in consumer consumption behaviour such as being able to encourage consumers away from peak times to off peak times, thus being able to reduce the maximum peak load on TasNetworks' infrastructure.

As it currently stands there is no way to model the impact of interval or time of use based tariffs, as there is no existing interval data to model against. This poses a real risk to TasNetworks with regard to under or over cost recovery. When TasNetworks under cost recovers annualised dividends may not be paid to the state government attracting unwanted government and perhaps public attention. Additionally, tariff prices for the following year may be increased to recover the shortfall leading to price shock which certainly will attract unwanted government and public attention.

To mitigate this risk it is proposed to create a protected environment for tariff modelling that will allow the extrapolation of historic interval data from historic quarterly reads, by applying expected consumption profiles against the historic reads (initiative IT.SS.03). Other revenue variables such as overall shifts in declining consumption or expanded take-up of solar power can also be factored in.

With the introduction of smart meters, TasNetworks will be able to retrieve additional details about power supply to improve the efficiency and effectiveness of work practices. For example it would be possible to automatically retrieve outage notifications, broken neutral alarms, harmonic data, power quality and demand response data (initiative IT.2022-2027.01).

The electrical power industry is undergoing rapid change. The rising cost of energy, the mass electrification of everyday life and climate change are the major drivers that will determine the speed at which such transformations will occur. Opportunities for micro grids will only increase dramatically with time as the traditional system of building larger and larger centralized power plants by utilities charging a regulated rate of return fades. Micro grids are a promising technology that can increase the reliability and economics of energy supply to end consumers. Micro grid development is shifting from prototype demonstration and pilot projects to full-scale commercial deployment. As such TasNetworks needs to plan for micro grid introduction into Tasmania within the next 10 years (initiative IT.2022-2027.02).

Table 3 – IT 'planning for smart meter rollout' initiatives

ID	Initiative	Initiative Description
IT.SS.03	Tariff Modelling Environment	Establish a protected modelling environment for the purposes of Tariff Modelling, taking the minimalist approach. This initiative does not fall within the POW for DD17.
IT.2022-2027.01	OMS/SCADA integration with Smart meters	Build interfaces into Metering Protocol systems to enable retrieval of outage notifications, broken neutral alarms, harmonic data, power quality and demand response data. This initiative does not fall within the POW for DD17.
IT.2022-	Network Support	Alterations to systems to enable support for network support

2027.02	Arrangements / Micro-grids	arrangements and micro-grids. This initiative does not fall within the POW for DD17.
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7.1.2.1 IT Benefits to Customers, People and our Assets

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

- 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;
- 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; and
- Enable TasNetworks to control and, where possible, reduce technology costs in the long term through operational improvements, consolidation of IT applications and improved governance.

7.1.3 Improved management of staff welfare

TasNetworks has a Zero Harm Policy that sets the guiding principles for TasNetworks' health, safety, environment and quality (HSEQ) management. It communicates responsibility and expectations that set the culture for a strong health, safety and environment culture by raising awareness and focused on behaviours to continually improve the way we work.

Many of TasNetworks staff are required to use vehicles and machinery as part of their daily duties. In keeping with the zero harm policy there are number of issues that have been identified including:

- Excessive hours worked and its potential impact on use of dangerous vehicles/machinery;
- Access to operate vehicles/machinery where there is no official competency.

There are a number of improvements that could be made to the GPS tracking tool that could assist with the management of staff welfare including:

- Measuring the work hours of field crew with the aim of identifying excessive work hours, including real time alerts to vehicle operators;
- Checking operational competency of vehicle members before enabling ignition.

Table 4 – IT 'improved management of staff welfare' initiatives

ID	Initiative	Initiative Description
IT.WSD.11	GPS Vehicle Tracking Tool Improvements	GPS Vehicle Tracking tool improvements that will allow better management of staff welfare. This initiative is scheduled for 2015-2017.

7.1.3.1 IT Benefits to Customers, People and our Assets

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

- 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; and
- 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 Improved efficiency and effectiveness

Several initiatives have been spawned as a result of TasNetworks identifying opportunities to use IT solutions to increase the efficiency and effectiveness in a number of areas including:

- Improving the works fulfilment process;
- Completing the integrated business systems project;
- Create a TasNetworks enterprise data warehouse;
- Improved fleet utilisation and efficiency;
- Improved customer relationship management; and
- Improved secondary asset management.

Many of the initiatives mentioned outside this section that have been instigated for other reasons will also result in improved staff efficiency and effectiveness (see chapter titled 'Other initiatives resulting in improved efficiency and effectiveness').

It should be noted that due to the nature of IT software asset investment, the net present value calculations included as part of the economic analysis of the individual initiatives are not inclusive of many of the potential benefits of the options. Many initiatives have no tangible bottom line direct savings that can be derived from the investments. There is however anticipated productivity gains provided via process improvements as well as other unquantifiable benefits including:

- Time saved;
- Improved output;
- Improved efficiency;
- Achieving the same with less staff; and
- Achieving more with the same staff.

7.1.4.1 Improving the works fulfilment process

The service order 'works fulfilment' process is a collection of independent sub-processes. There are various hand-off points to other parties and systems making the case management that 'Customer Connection Services' group performs quite difficult. Individual parts of the process involve laborious look-ups into preceding stages. There is a need to consolidate the sub-processes into a single system allowing the efficient management of those processes. This will enable improved customer service by

improving communication between retailers, contractors, customers and the Distribution Business. This integration will also improve the customer, contractor and retailer experience when dealing with the Distribution Business.

Table 5 - Works Fulfilment Initiatives

ID	Initiative	Initiative Description
IT.CST.14	Connection applications management system upgrade	The connection applications management system upgrade is about extending service order management across applications and Electronic Works Requests (EWR) so that it manages the full end to end 'Works Fulfilment' process.

7.1.4.2 Completing the TasNetworks integrated business solution project

As previously discussed (see section 4 – The Journey) TasNetworks has embarked on a major business transformation project. The TasNetworks Integrated Business Solution project implementation is expected to commence in July 2015 and based on current projections, extend into the second half of calendar 2017. Funds are needed to complete that portion of the implementation which remains beyond June 2017.

Table 6 - Integrated business solution initiatives

ID	Initiative	Initiative Description
IT.SFT.03	TIBS Completion	The TasNetworks Integrated Business Solution project implementation is expected to commence in November 2015 and, based on current projections, complete at the end of calendar year 2017.

7.1.4.3 Creating a TasNetworks enterprise data warehouse

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.

TasNetworks needs an enterprise reporting data warehouse (EDW) that will allow TasNetworks to leverage all corporate data and allow flexible reporting across the whole business. An EDW will eliminate information silos allowing the organisation to report across all data sets. It will also provide enhanced business intelligence capability for the business through better standard reports, ad hoc reporting capability and data mining opportunities. Improved reporting will lead to better efficiency in operations for various business units. An EDW will lead to enhanced data quality and consistency across the organisation. An EDW will also provide a mechanism for managing historical intelligence. The TIBS project will be significantly progressed by the start of the DD17 distribution period. A deliverable of the integrated business systems project will be an end to end reporting platform that will serve reporting for the ERP data. It is expected that the reporting platform will be extended to become the core of a TasNetworks enterprise reporting data warehouse.

Table 7 - EDW Initiatives

ID	Initiative	Initiative Description
IT.BSS.02, IT.2022- 2027.05	Enterprise Reporting Platform	This initiative is about creating a single Business Intelligence (BI) environment, using one technology and having a single TasNetworks enterprise data warehouse (EDW) store.

7.1.4.4 Improved fleet utilisation and efficiency

TasNetworks has a fleet of about [REDACTED] vehicles in total. About [REDACTED] of these vehicles have on-board machinery that is used independently from its parent vehicle (e.g. crane, small motor etc.). A number of issues that have been identified that are affecting fleet utilisation and efficiency including:

- Flat batteries – staff expecting to hit the ground running at the start of the day are stalled when they encounter a flat battery;
- Over/under servicing of on-board machinery. On-board machinery servicing is tied to the parent vehicle it resides on, and is not reflective of actual on-board machinery use;
- On-board mapping interfaces are not as effective as they could be. For example, additional mapping layers could be added to improve the efficiency and effectiveness of TasNetworks staff (e.g. include more TasNetworks assets, toilet locations etc.); and
- Important 'field data of relevance' is not easily communicated to field staff. For example, if a staff member is entering a property with issues (e.g. angry owner, special instructions like key under rock to left of gate) cannot be readily signalled to and then accessed by field crew.

There are several opportunities to improve the utilisation of these vehicle assets. For example, remote battery monitoring will help prevent crews from encountering flat batteries upon arrival. Monitoring of on-board machinery usage could ensure machinery maintenance is tracked and implemented independent to its parent vehicle preventing over or under servicing.

TasNetworks uses a [REDACTED] system as its GPS Vehicle Tracking system. This can be extended to perform better on-board machinery monitoring and on-board battery monitoring. The GPS Vehicle Tracking tool efficiency and effectiveness could also be extended with an improved mapping interface that could:

- Include more relevant data that will improved the effectiveness of field crews; and
- Improve the use of geo-fencing with regard to alerting field crews to details of relevance, e.g. property boundaries.

Table 8 - Fleet Initiatives

ID	Initiative	Initiative Description
IT.WSD.11	GPS Vehicle Tracking Tool Improvements	GPS tool improvements that will allow: <ul style="list-style-type: none"> • Ability to manage machinery more effectively and efficiently; and • Enhancements to the mapping interface. This initiative is scheduled for 2015-2017.
IT.2022- 2027.10	AVL Interfacing and Improvements	General improvements including interfacing automatic vehicle location into works management systems. This initiative does not fall within the POW for DD17.

7.1.4.5 Improved Customer Relationship Management

TasNetworks is a customer-focussed business. Many customer-focussed processes rely on TasNetworks staff having an expansive view of future, current and past customer interactions with TasNetworks.

TasNetworks currently has a tool that operates in the customer relationship management space that is limited in scope. The system is not as all-encompassing as it could be and staff needs to perform many inefficient look-ups into various systems to get a total consolidated customer view when addressing customer needs.

TasNetworks needs an enhanced consolidated customer view, including call and outage history and relevant network activity that impact them. The proposed customer relationship management (CRM) system will enable a single view of customer information by providing staff with a single sign-on portal with easy access to all customer data.

Table 9 - CRM Initiatives

ID	Initiative	Initiative Description
IT.CST.15	Customer Relationship Management	An enhanced TasNetworks CRM will provide a broader, more consolidated view of a customer that will allow TasNetworks staff to get a better and broader understanding of the customer relationship with TasNetworks (e.g. why they are our customer, what are their details, what are their site install details). This initiative does not fall within the POW for DD17.

7.1.4.6 Improved secondary asset management

Secondary assets in this context are components of the distribution system which do not have electrical properties relevant to the operation or connectivity of the network. However, secondary assets still typically have a lifecycle and attribution of their own which is not currently actively recorded and managed.

Secondary asset data is required to be captured, stored and analysed in order to allow for more effective asset management and planning, including inventory management and asset replacement.

TasNetworks requires a secondary asset management system that provides the Distribution Business with functionality to store and maintain standing data and test results associated with:

- Connection assets (service, connections, panels);
- Metering; and
- Transformers.

Table 10 - Secondary Asset Data Initiatives

ID	Initiative	Initiative Description
IT.WSD.10	Secondary Asset Data Collection	Provide the capability to store and maintain standing data and test results for secondary assets. This initiative does not fall within the POW for DD17.

7.1.4.7 Other initiatives resulting in improved efficiency and effectiveness

Many of the initiatives mentioned outside this section that have been instigated for other reasons will also result in improved staff efficiency and effectiveness as demonstrated in the table below.

Table 11 – Other IT initiatives resulting in ‘improved efficiency and effectiveness’

ID	Initiative	How improves efficiency and effectiveness of TasNetworks
IT.CST.13	Customer Portal	<p>The staff inefficiency and ineffectiveness that this initiative will address includes:</p> <ul style="list-style-type: none"> • Applications are manually typed by TasNetworks staff into Connection applications management system; • Payments have to be manually reconciled with applications; • Handwritten application data quality and completeness causes a variety of issues; • Customer queries regarding status of their works applications is time consuming to determine/answer; and • Low priority reports/complaints get reported directly to the call centre. <p>This initiative is scheduled for 2015-2017.</p>
IT.CST.04	Market System Maintenance	<p>This initiative will allow TasNetworks to improve its efficiency and effectiveness of market reconciliation by more effective reporting.</p>
IT.SS.03	Customer Engagement Initiative	<ul style="list-style-type: none"> • By improving the customer’s ability to find information themselves, there will be less need to contact TasNetworks for the information. • By improving the customer’s ability to find information (e.g. current outages) themselves, there will be less need for customers to notify TasNetworks of a known event that is already being actioned. <p>This initiative is scheduled for 2015-2017.</p>
IT.CST.29	MECMS Maintenance/Upgrade	<p>This initiative will allow TasNetworks to improve its efficiency and effectiveness by ensuring functions are updated to align with modern TasNetworks business practices. New functions will assist TasNetworks becoming more efficient and effective.</p>

7.1.4.8 Benefits to Customers, People and our Assets

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

- Minimise threats to security and privacy of personal information that TasNetworks is required to keep in relation to its customers, contractors and employees;
- 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;
- Provide a foundation to rationalise a number of systems into ERP to reduce the IT environment complexity and support the adoption of shared business processes, data sets and systems across the organisation;

- Maximise the value from our ERP investment to enable TasNetworks to cost effectively respond to external changes; and
- Enable TasNetworks to control and, where possible, reduce technology costs in the long term through operational improvements, consolidation of IT applications and improved governance.

7.2 Regulatory and Government obligations

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 (2016) - this rule change seeks to implement arrangements that would promote competition in the provision of metering and related services in the National Electricity Market (NEM);
- Multiple Trading Relationships (2017) - a rule change to the National Electricity Law to allow for multiple trading relationships (MTR) at a single site;
- Embedded Networks (2017) - aims to clarify the metering and other arrangements for consumers in 'Embedded Networks', as well as reduce the barriers for consumer access to competitive offers from market participants and support competition in the provision of electricity and demand side services;
- Ongoing procedural changes (Bi-annual) – incremental market rule changes are generally implemented on a bi-annual cycle with effective dates for any changes usually effective as of May and November, in some cases implementation timeframes are included but this is generally not the case; and
- National Billing Protocol (Unknown) - AEMC plan to institute a national billing protocol. There will be differences to the NSW protocol TasNetworks use now and 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.

Table 12 – IT initiatives resulting from regulatory and government obligations

ID	Initiative	Initiative Description
IT.CST.01	Metering Contestability – DNSP Impacts (MC)	AEMC Driver changes likely to affect connection processes, flow of meter data, meter data volumes and type, standing data and market interfaces. This initiative represents impacts that we are obliged to implement regardless.
IT.CST.02	Multiple Trading Relationships (MTR)	AEMC driven change introducing capability for customers to have more than one Electricity Retailer. For example, one for light and power, and one for an electric vehicle.
IT.CST.03	Embedded Networks (EN)	AEMC driven change forcing a unified approach to embedded networks. If the Tasmanian Government hasn't enabled embedded networks prior, this will definitely open up the option for such

		arrangements in Tasmania.
IT.CST.04	Market Systems Maintenance	Maintain ongoing compliance with the market systems we connect to by performing alterations required in line with the markets bi-annual release schedule (May and Nov).
IT.CST.20	Upgrade Billing for National Protocol	AEMC plan to institute a national billing protocol, although the timeframe for this is unknown. When it is implemented, out processes and systems will need to be adjusted to comply. This initiative does not fall within the POW for DD17.

7.2.1 Benefits to Customers, People and our Assets

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; and
- Enable TasNetworks to maintain reliability and quality of IT services, in line with agreed service level targets and future business, customer and regulatory requirements.

7.3 Health assessments

As previously described, a health assessment was conducted for the purposes of DD17. 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; and
- Under-utilised/under-deployed applications.

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

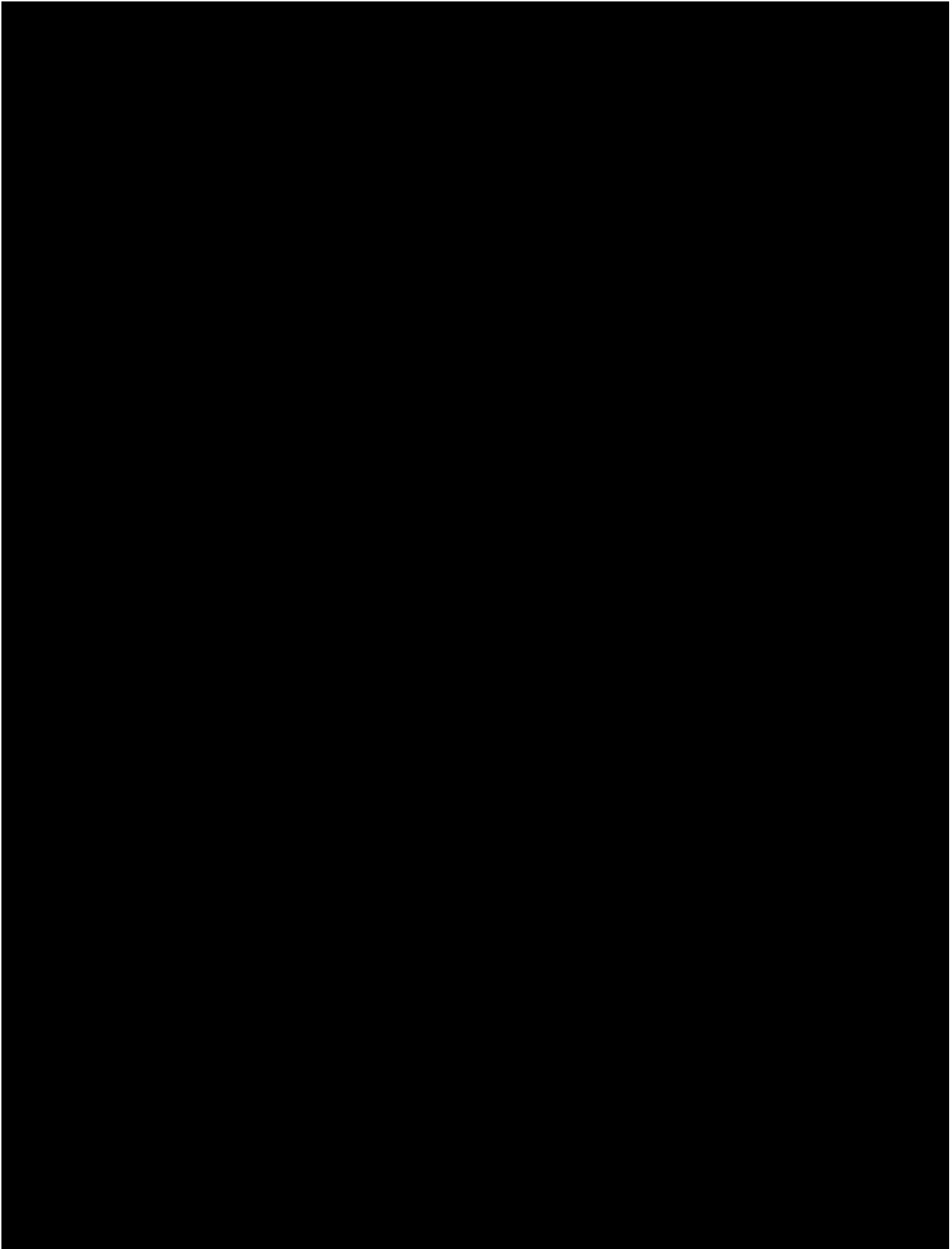


Figure 4 – TasNetworks application health assessment summary

The following initiatives were either as a result of, or will address issues found during the application health assessments.

Table 13 – IT initiatives addressing health check issues

ID	Initiative	Initiative Description
IT.CST.04	Market Systems Maintenance	Maintain ongoing compliance with the market systems we connect to by performing alterations required in line with the markets bi-annual release schedule (May and November).
IT.CST.14	Connection applications management system upgrade	The connection applications management system upgrade is about extending service order management across applications and Electronic Works Requests (EWR) so that it manages the full end to end 'Works Fulfilment' process.
IT.CST.27	Outage Management System Upgrades	Every 3 years perform a platform and product upgrade to ensure support level doesn't degrade.
IT.CST.29	MECMS Maintenance/Upgrade	The MECMS will need updates/upgrade once the outage IVR system/process becomes bedded down.
IT.WSD.11	GPS Vehicle Tracking Tool Improvements	GPS tool improvements that will allow: <ul style="list-style-type: none"> • Ability to manage machinery more effectively and efficiently; and • Enhancements to the mapping interface.

7.3.1 Benefits to Customers, People and our Assets

By performing a bottom-up approach to developing future initiatives, TasNetworks is able to:

- 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;
- 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 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; and
- Enable TasNetworks to control and, where possible, reduce technology costs in the long term through operational improvements, consolidation of IT applications and improved governance.

7.4 Upgrades/Maintenance/End of Life Replacement

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; and
- Less functionality is available from existing systems due to out-dated software, providing lower value to the business.

The initiatives below have been separated into:

- Upgrades;
- Support and maintenance; and
- End of life replacement.

7.4.1 Upgrades

The IT function is responsible for providing a sustainable IT environment covering upgrades to primary and secondary business systems. Primary business systems are defined as **Large** and will generally be outsourced and have greater than 4 weeks of development time. Secondary business systems are defined as:

- **Very Small** – IT Tech staff visits the user, installs the application, update documentation and knowledge base architecture repository;
- **Small** - Mostly outsourced development of 2 weeks. Minimal project management, testing and documentation;
- **Medium** - Set up a test environment, vendor accommodation, testing of 2 weeks, then move to live; and
- **Medium – Large** - Mostly outsourced development of 4 weeks. Minimal project management, testing and documentation.

For ease of justification, upgrades to secondary applications have been grouped together under the one initiative (IT.SFT.02). Upgrades to primary applications will generally have their own initiative, however wherever possible primary application upgrades have been incorporated into other initiatives that already require large changes to the primary application. An example of incorporation is the upgrade to

NEM market system interface which is expected to be part of the Metering Contestability initiative as extensive changes and testing to NEM market system interface will already be required.

Table 14 – IT software upgrade initiatives

ID	Initiative	Initiative Description
IT.CST.27, IT.2022- 2027.07	Outage Management System Upgrade	Regular vendor updates are required to ensure that TasNetworks has access to the latest supported release.
IT.SFT.02, IT.2022- 2027.04	Business Management Systems General Program of Work	This initiative details a number of TasNetworks' business applications that will need to be upgraded during this regulatory period. Generally speaking, these applications are not large (i.e. are considered to be secondary applications) and have therefore not warranted their own initiative.
IT.CST.29, IT.2022- 2027.13	MECMS Maintenance/Upgrade	The MECMS will need updates/upgrade once the outage IVR system/process becomes bedded down.
IT.CST.06	Meter data management system upgrade	Upgrade meter data management system from V3 (2005) to V4 or contemporary version. Includes data migration plus customisation for distribution specific requirements. This initiative does not fall within the POW for DD17.
IT.2022- 2027.12	Connection Process Upgrade	By 2025 it is likely that upgrades will be required to the connection applications management system. This initiative does not fall within the POW for DD17.
IT.2022- 2027.11	Enterprise Information Management	By 2023 it is likely that upgrades will be required to the Enterprise Information Management system. This initiative does not fall within the POW for DD17.
2022- 2027.14	Customer Portal Upgrade	By 2022 it is likely that upgrades will be required to the Customer Portal. This initiative does not fall within the POW for DD17.
IT.2022- 2027.09	CRM Upgrade	By 2023 it is likely that upgrades will be required to the CRM. This initiative does not fall within the POW for DD17.

7.4.2 Support and Maintenance

The IT function is responsible for providing a sustainable IT environment, covering support and maintenance for business applications.

Table 15 – IT software support and maintenance initiatives

ID	Initiative	Initiative Description
IT.SFT.04, IT.2022- 2027.15	Software and hardware support and maintenance	This initiative covers the software and hardware maintenance and support of software systems managed by Corporate IT at TasNetworks.

7.4.3 End of Life Replacement

The IT function is responsible for providing a sustainable IT environment, including replacement of primary and secondary business systems.

Table 16 – IT software end of life replacement initiatives

ID	Initiative	Initiative Description
IT.WSD.06, IT.2022- 2027.06	Meter Reading Handheld Device Renewal	The device vendor () and history has indicated that the handheld devices have a seven year life expectancy. As the device fleet was previously replaced in 2011/2012, they are due to be replaced in 2018/2019 and then again in 2025/26.
IT.WSD.07	Service Order Scheduling and Field Tool Replacement	The 'Service Order Scheduling and Field Tool' application is now at end-of-life and there is no upgrade path with the current vendor. This initiative is about finding and sourcing an alternative product.
IT.2022- 2027.08	Field tool upgrade/replacement	Changes in technology will likely necessitate a new field platform by 2025. This initiative does not fall within the POW for DD17.

7.4.4 Benefits to Customers, People and our Assets

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; and
- Enable TasNetworks to control and, where possible, reduce technology costs in the long term through operational improvements, consolidation of IT applications and improved governance.

8 Program of work

The discussion of the 10-year program of work has been broken into the program of work for DD17 (2017-2019) and the program of work for following eight-year period from 2019 to 2027.

8.1 Distribution Determination 17 Program of Work

8.1.1 DD17 Roadmap

The following roadmap demonstrates the initiatives proposed to be undertaken as part of the Distribution Determination 2017-2019 Program of Work. The estimated commencement, durations and dependencies of each of the initiatives is shown, grouped by owning business unit.

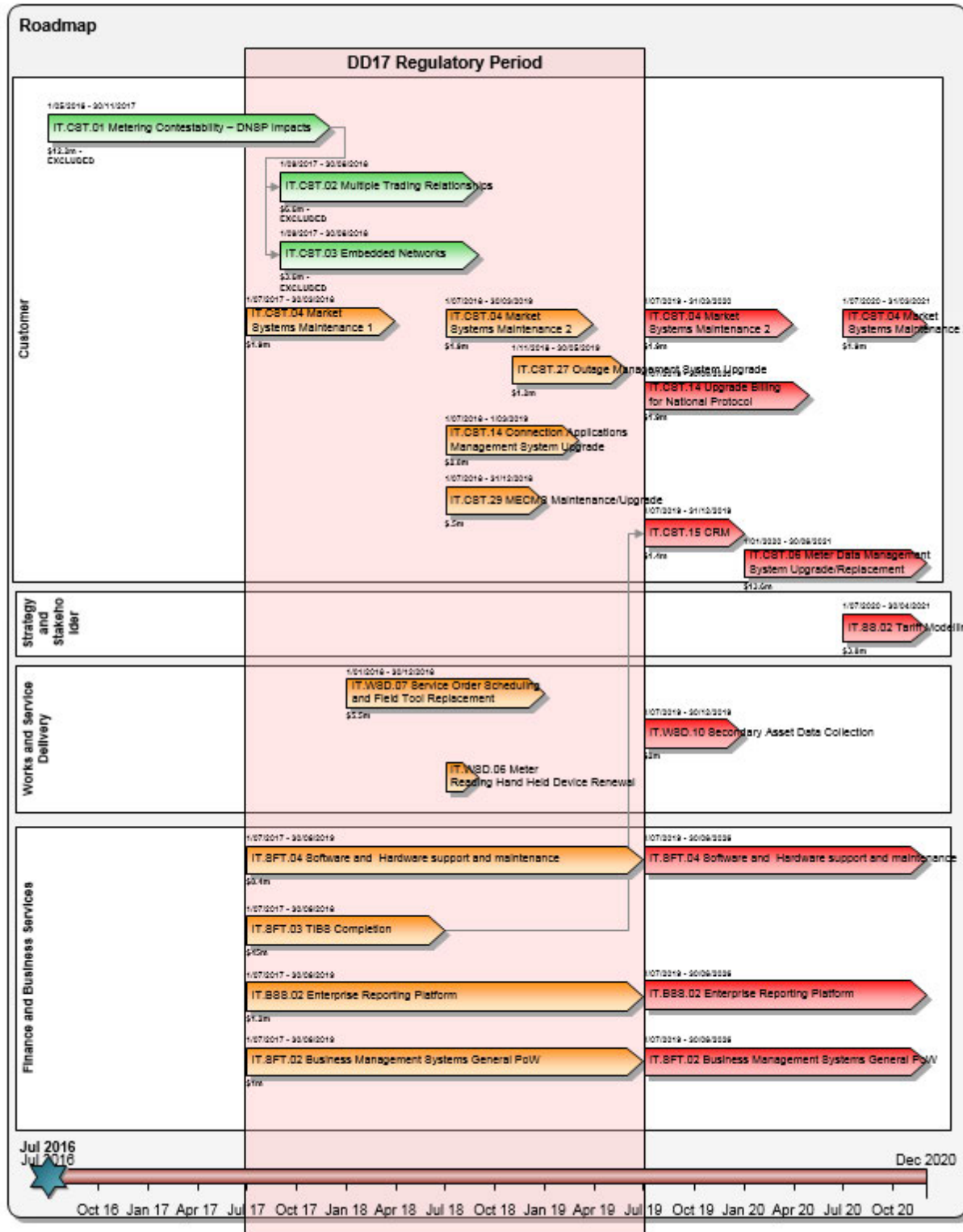


Figure 5 – 2017 – 2019 Roadmap

8.1.2 DD17 Initiatives

The following table lists the proposed DD17 initiatives in order of descending priority. The costs populated are the estimated preferred option costs to be incurred by each of the initiatives during the DD17 regulatory period and in some cases may not represent the total cost of the initiative (i.e. some costs may be incurred prior to or after the DD17 period).

Table 17 – DD17 prioritised initiative list with costs

Initiative / IES ID	Initiative Title	Priority Requirement	Estimated CAPEX Costs (during DD17)	Estimated OPEX Costs (during DD17)
IT.SFT.02	Business Management Systems General Program of Work	Must have	██████	
IT.CST.01	Metering Contestability - DNSP Impacts	Must have	██████	██████
IT.CST.04	Market Systems Maintenance	Must have	██████	██
IT.SFT.04	Software and Hardware support and maintenance	Must have		██████
IT.WSD.06	Meter Reading Handheld Device Renewal	Must have	██████	
IT.CST.27	Outage Management System Upgrade	Must have	██████	
IT.BSS.02	Enterprise Reporting Platform ⁶	Must have	██████	██████
IT.SFT.03	TIBS Completion ⁷	Must have	██████	
IT.WSD.07	Service Order Scheduling and Field Tool Replacement	Need to have	██████	
IT.CST.14	Connection applications management system upgrade	Need to have	██████	
IT.CST.29	MECMS Maintenance/Upgrade	Need to have	██████	

⁶ The dollars represented for Enterprise Reporting Platform is the 79% distribution component only.

⁷ The dollars represented for TIBS Completion is the 79% distribution component only.

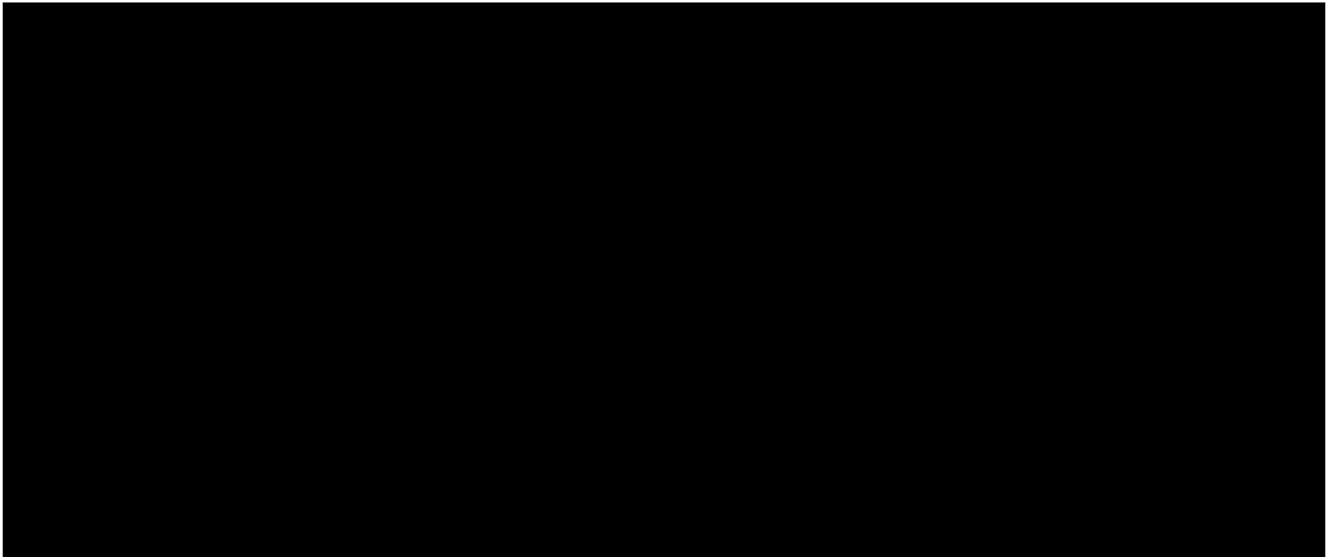


Figure 6 - DD17 Corporate IT Estimated Initiative Costs ordered by descending cost

8.1.3 DD17 Excluded Initiatives

The following initiatives have been assumed to be required to be undertaken by TasNetworks due to upcoming potential changes to the regulatory laws and framework in which we operate.

At this stage the exact date they are required to be undertaken has not been confirmed, although it has been assumed that they will be funded via another means (e.g. direct pass-through), and hence excluded from the DD17 Corporate IT Software proposed capital expenditure.

Table 18 – DD17 Excluded Initiatives

Initiative / IES ID	Initiative Title	Priority Requirement	Estimated CAPEX Costs (during DD17)	Estimated OPEX Costs (during DD17)
IT.CST.02	Multiple Trading Relationships (MTR)	Must have	████	████
IT.CST.03	Embedded Networks (EN)	Must have	████	████

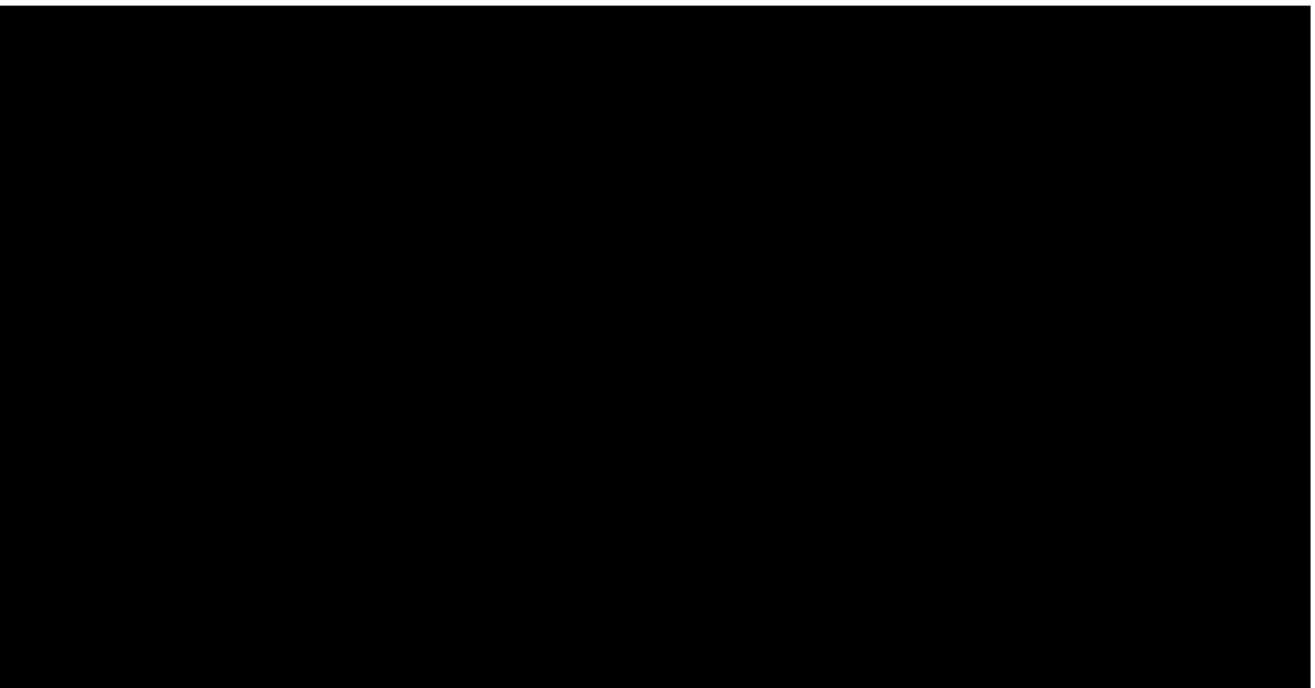


Figure 7 - DD17 Excluded Initiatives

8.1.4 DD17 Corporate IT Software Capital Expenditure

8.1.4.1 Capital Expenditure by Business Unit

The following graph shows expenditure by business unit excluding the 'TIBS Completion' project.

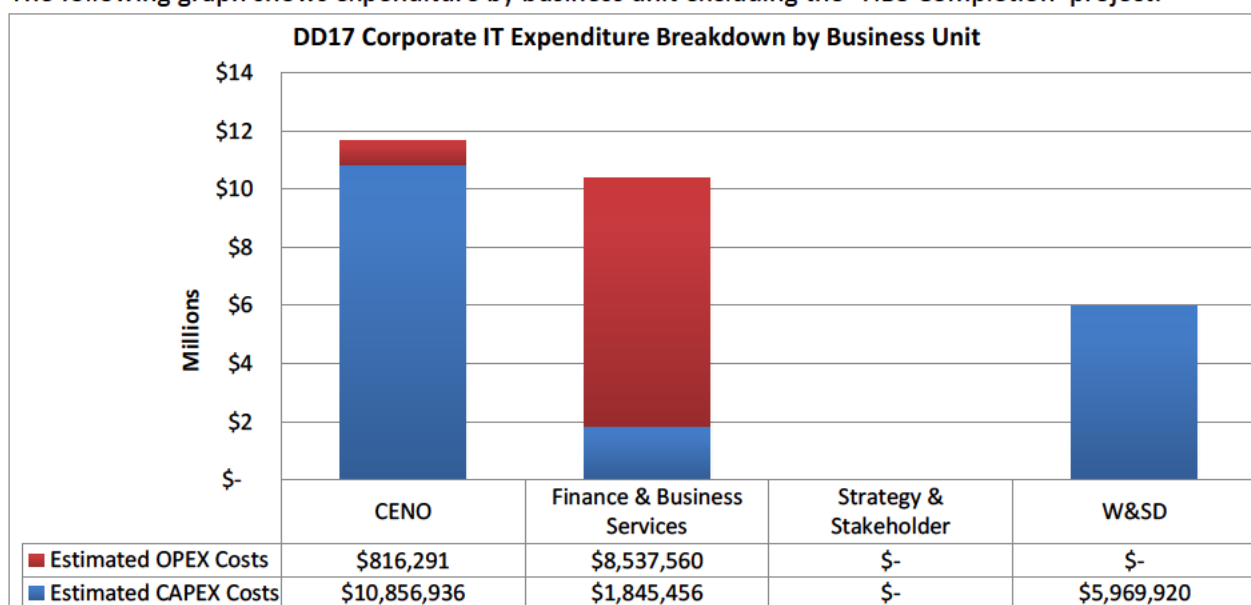


Figure 8 - DD17 Corporate IT Expenditure Breakdown by Business Unit⁸

The rationale for the large operating expenditure within the Finance and Business Services business unit is due to the licensing, support and maintenance and upgrades for all TasNetworks shared enterprise IT hardware and software being attributed to this team (IT.SFT.04). For a similar reason it also includes expenditure for upgrades to secondary applications (IT.SFT.02). It also includes some expenditure for establishing an enterprise reporting platform (IT.BSS.02).

CAPEX changes are primarily concerned with customer and market-processes and applications, hence the magnitude of capital expenditure in the Customer Engagement and Network Operations (CENO) business unit. CENO's market applications will be required to undergo significant alterations to remain compliant with changes in Metering Contestability, Multiple Trading Relationships and Embedded Networks, as well as other smaller-scale procedural changes.

Other influences for the weighting of capital expenditure towards the software assets of the CENO team are:

- Targeting our strategic goals of understanding our customers by making them central to all we do;
- Several of end-of-life asset replacements; and
- Leveraging of information technology assets to make the business-critical market processes more efficient and effective.

⁸ CENO - Customer Engagement and Network Operations, W&SD – Works and Service Delivery

8.1.4.2 Delayed and Excluded Capital Expenditure

A number of initiatives were identified during the DD17 processes that were excluded from the final regulatory period submission for reasons detailed below. These initiatives totaled to an estimated \$27M in capital expenditure. The following graph shows expenditure by DD17 included, DD17 excluded and delayed. These numbers don't include the 'TIBS Completion' project.

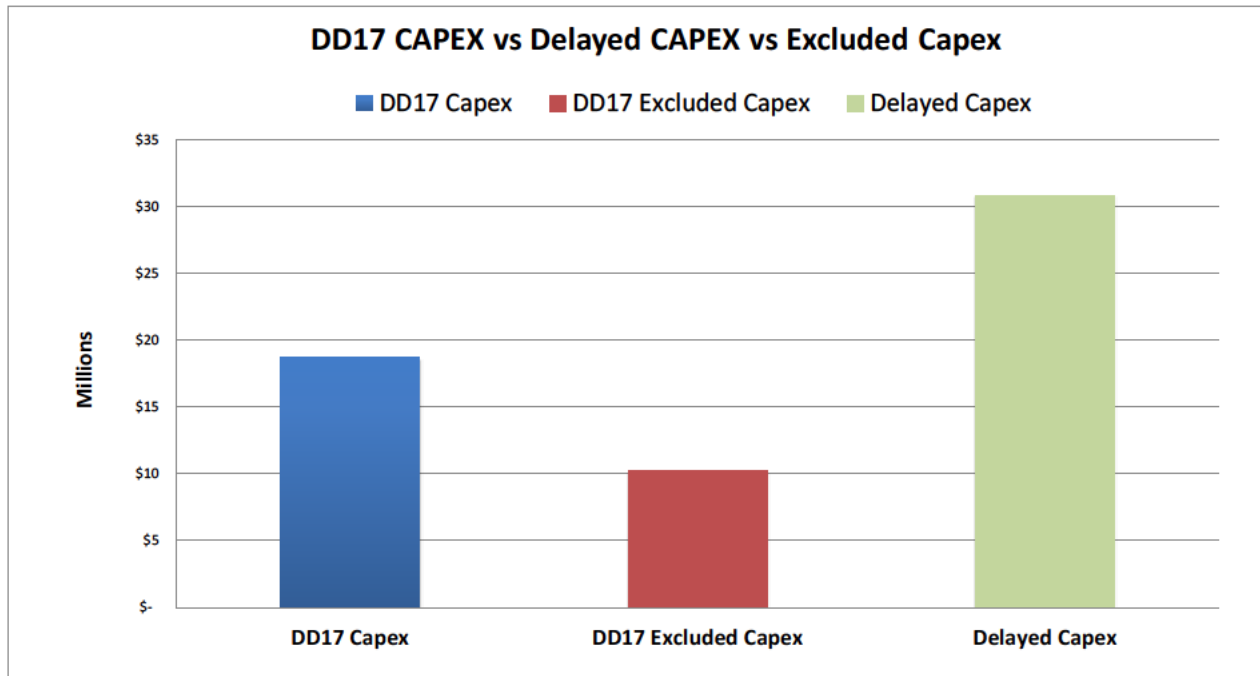


Figure 9 - DD17 CAPEX vs. Excluded CAPEX vs. Delayed CAPEX

These initiatives are ultimately still required to be undertaken by the business however were delayed until a future regulatory period due to the following reasons:

- **Priority** – In establishing a priority on the initiatives identified, some were deemed as a lesser priority and postponed until after DD17. An initiative to replace the meter data management system has been delayed until after its expected useful life, however this is not expected to represent significant risk to the business;
- **Prudence** – In an effort to reduce the capital expenditure during the DD17 regulatory period, and 'smooth' expenditure of several periods, some initiatives were delayed until post-DD17; and
- **Dependencies** – Some initiatives are dependent upon the completion of preceding initiatives and had to be delayed until the next regulatory period. An example is that TIBS needs to complete before the CRM initiative (IT.CST.15) commences.

Details of the delayed initiatives can be found later in this document in 'The following table shows planned new initiatives for 2019-2027 (8 years).

Table 20 – New initiatives delayed beyond DD17'.

8.1.5 DD17 Corporate IT Software Operating Expenditure

The operating expenditure attributed to Corporate IT's software assets is related to maintaining existing applications, licence fees to operate the assets and the procuring of service and delivery support.

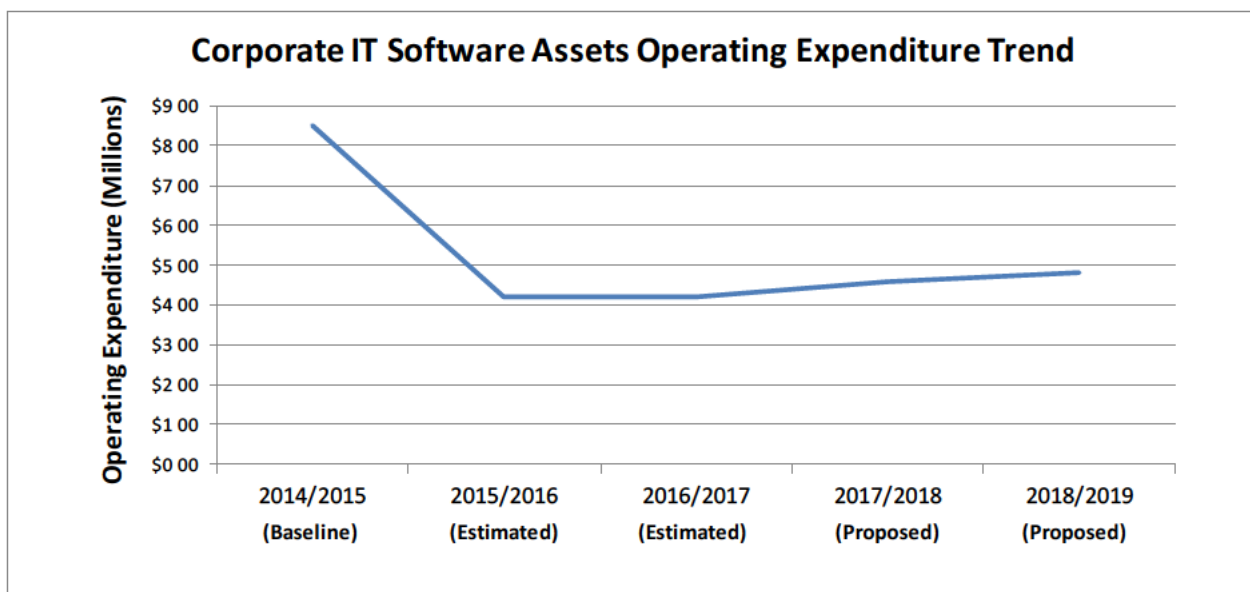


Figure 10 - Corporate IT Software Assets Operating Expenditure Trend

Corporate IT's operating expenditure on software assets it expected to fall after the current financial year (2014/2015). This is predominantly due to the insourcing of the service desk function from [REDACTED]. It should be noted, however, that this initiative has resulted in an uplift in the Corporate IT internal labour costs which is not represented in these OPEX estimates.

The anticipated increase in operating expenditure during the DD17 regulatory period can be attributed to increasing the product footprint of current software assets. Some new assets may also be introduced prior and during the DD17 period requiring an increase in OPEX count.

For the purpose of budgeting, it has been assumed that the operating expenditure for supporting the current applications within the scope of the TIBS solution will be equivalent to the support costs of the new implementation.

Table 19 - Operating Expenditure Step Changes due to DD17 Initiatives

POW Year	Project Title	Estimated OPEX Step Change p.a.
2017/2018	Market Systems Maintenance 1	\$1,500
2018/2019	Market Systems Maintenance 1	\$6,000
2018/2019	Market Systems Maintenance 2	\$1,500
2017/2018	Customer Engagement Initiative (anticipated completed prior to DD17 commencing)	\$25,000
2018/2019	Customer Engagement Initiative (anticipated completed prior to DD17 commencing)	\$50,000
2017/2018	Enterprise Reporting Platform	\$60,000 (\$47,400 distribution share)
2018/2019	Enterprise Reporting Platform	\$120,000 (\$94,800 distribution share)
2017/2018	Metering Contestability - DNSP	\$322,916

2018/2019	Metering Contestability - DNSP	\$484,375
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8.2 2017 – 2027 projected POW

A 10-year expenditure roadmap for Corporate IT software assets has been developed, and as shown below, other than the initial capital expenditure during the DD17 period (explained in an earlier section), expenditure is expected to remain reasonably constant over the remaining 8 years of the 10-year period.

These estimations have been largely made by extrapolating our detailed five-year expenditure estimates over 10 years, not taking into account further, and expected, regulatory, industry and strategic changes that will come to fruition during this time.

The intermittent rise in capital expenditure in 2022/2023 is due to several core applications expected to require major upgrades and/or replacements during this year.

Details of initiatives that have either been postponed until later in the 10-year roadmap, or are expected to be required to be undertaken at a certain time, are detailed in the following section.

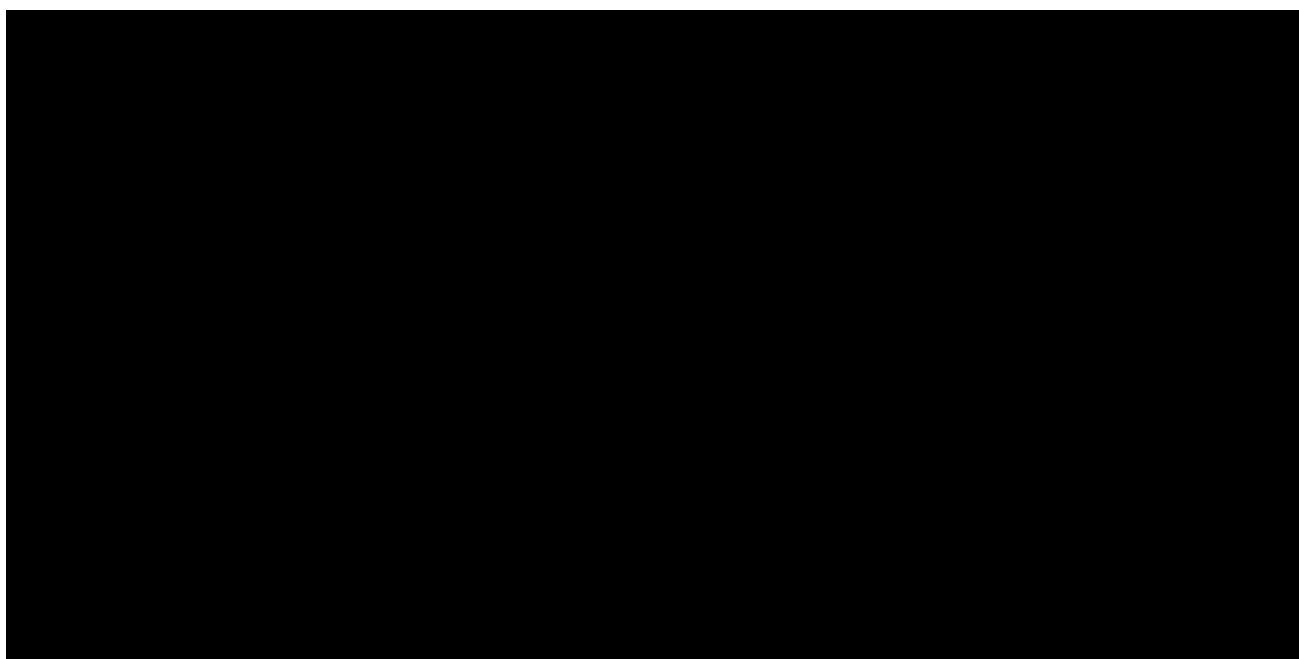


Figure 11 - Corporate IT 10-Year Estimated Expenditure

8.2.1 Beyond DD17

From 2019 onwards, the Distribution and Transmission businesses within TasNetworks will align with regard to their regulatory determination periods. Although separate proposals will still be required, Corporate IT, as a shared service will be able to develop a more streamlined method for the development of the program of work, and allocation of costs between the two businesses.

The POW developed for DD17, described in the previous section, will allow the business to converge onto a consolidated platform on which the business can grow. The point at which TasNetworks aims to be at by the end of the DD17 regulatory period will position itself to be able to progress down any number of future directions, influenced by:

- The strategy and vision of the company;
- Further changes to the NEM and its framework;

- The growth of smart metering infrastructure in Tasmania;
- The impacts of declining demand;
- The availability of the ERP platform; and
- Further synergies and consolidation that can be achieved between the Transmission and Distribution sides of the business.

In demonstrating prudent expenditure in the upcoming DD17 regulatory period, a number of the initiatives identified were delayed. Although the appetite for these initiatives may change prior to the next determination submission, the following have been identified as being on the horizon and are represented on the following roadmap.

The initiatives identified above for the period from 2019-2027 can be classified into one of two categories:

- New initiatives; and
- Replacement, maintenance and enhancement initiatives.

8.2.1.1 New initiatives

The following table shows planned new initiatives for 2019-2027 (8 years).

Table 20 – New initiatives delayed beyond DD17

ID	Initiative	Initiative Description	Estimated CAPEX Costs	Estimated OPEX Costs
IT.CST.20	Upgrade billing for national protocol	AEMC plan to institute a national billing protocol. There will be differences to the NSW protocol we use now and our processes and systems will need to be adjusted to comply.	████	████
IT.WSD.10	Secondary Asset data collection	Provide the capability to capture data on service and fuse assets during connection service orders.	████	████
IT.2022-2027.01	OMS/SCADA integration with smart meters	Build interfaces into Metering Protocol systems to enable retrieval of outage notifications, broken neutral alarms, harmonic data, power quality and demand response data.	████	
IT.2022-2027.02	Network Support Arrangements / Micro-grids	Alterations to systems to enable support for network support arrangements and micro-grids.	████	
IT.SS.02	Tariff modelling environment	Establish a protected modelling environment for the purposes of Tariff Modelling, taking the minimalist approach.	████	████

IT.CST.15	Customer Relationship Management	An enhanced TasNetworks CRM will provide a broader, more consolidated view of a customer that will allow TasNetworks staff to get a better and broader understanding of the customer relationship with TasNetworks (e.g. why they are our customer, what their details are, what is their site install details).	■	
IT.CST.06	Meter data management system upgrade/replacement	Meter data management is currently maintained within Version 3. There is a new Version 4 however it is a large project to upgrade and TasNetworks may consider new technology at that time.	■	

8.2.1.2 Replacement, maintenance and enhancement initiatives

The following table shows planned initiatives for 2019-2027 (8 years) that involve replacement, maintenance or enhancement of existing applications.

Table 21 – replacement, maintenance and enhancement initiatives beyond DD17

ID	Initiative	Initiative Description	Estimated CAPEX Costs	Estimated OPEX Costs
IT.SFT.04, IT.2022-2027.15	Support and hardware support and maintenance	OPEX licensing, support and maintenance for all TasNetworks hardware and software for 8 years (excluding capital projects planned for the 2019 - 2027 regulatory period as these costs are included in the respective project).		■
IT.CST.04	Market systems maintenance	This initiative is a continuation of IT.CST.04.	■	■
IT.SFT.02, IT.2022-2027.04	Business Management Systems program of work	This initiative is a continuation of IT.SFT.02.	■	
IT.BSS.02, IT.2022-2027.05	Enterprise reporting platform ⁹	This initiative is a continuation of IT.BSS.02.	■	■
IT.2022-2027.06	Meter Reading Handheld device renewal	Handhelds need to be replaced about every 7 years. This initiative is the next instance of IT.WSD.06.	■	

⁹ The dollars represented for Enterprise Reporting Platform is the 79% distribution component only.

IT.CST.27	Outage Management System upgrade	Every 3 years TasNetworks needs to perform a platform and product upgrade to ensure support level doesn't degrade. The outage management system will be due for a major upgrade/replacement in 2021/2022 (next instance of IT.CST.27).	████	
IT.2022-2027.07	Outage Management System upgrade	Every 3 years TasNetworks needs to perform a platform and product upgrade to ensure support level doesn't degrade. The outage management system will be due for a minor upgrade in 2024/2025.	████	
IT.2022-2027.08	Field tool upgrade/replacement	Changes in technology will likely necessitate a new field platform (next instance of IT.WSD.07).	████	
IT.CST.29	MECMS maintenance/upgrade	This initiative is recognising that there needs to be continual upgrades/improvement to the MECMS tool in 2021/22.	████	
IT.2022-2027.13	MECMS maintenance/upgrade	This initiative is recognising that there needs to be continual upgrades/improvement to the MECMS tool (next iteration of IT.CUS.29).	████	
IT.2022-2027.09	CRM upgrade	IT.CST.15 will result in a new CRM in 2019-2020. This initiative recognises that there will need to be major upgrade to the CRM system at some point.	████	
IT.2022-2027.10	AVL interfacing and improvements	This initiative is recognising that there needs to be continual upgrades/improvement to the GPS Vehicle Tracking tool.	████	
IT.2022-2027.12	Connection process upgrade	This initiative is recognising that there needs to be continual upgrades/improvement to the connection applications management system replacement (next iteration of IT.CUS.14).	████	
IT.2022-2027.14	Customer portal upgrade	IT.CST.12 will result in a new Customer Portal in the next regulatory period. This initiative recognises that there will need to be major upgrade to the Customer Portal at some point.	████	
IT.2022-2027.11	Enterprise Information Management upgrade	By 2023 it is likely that upgrades will be required to the Enterprise Information System.	████	

9 Appendix 1 - Corporate IT Software Roadmap

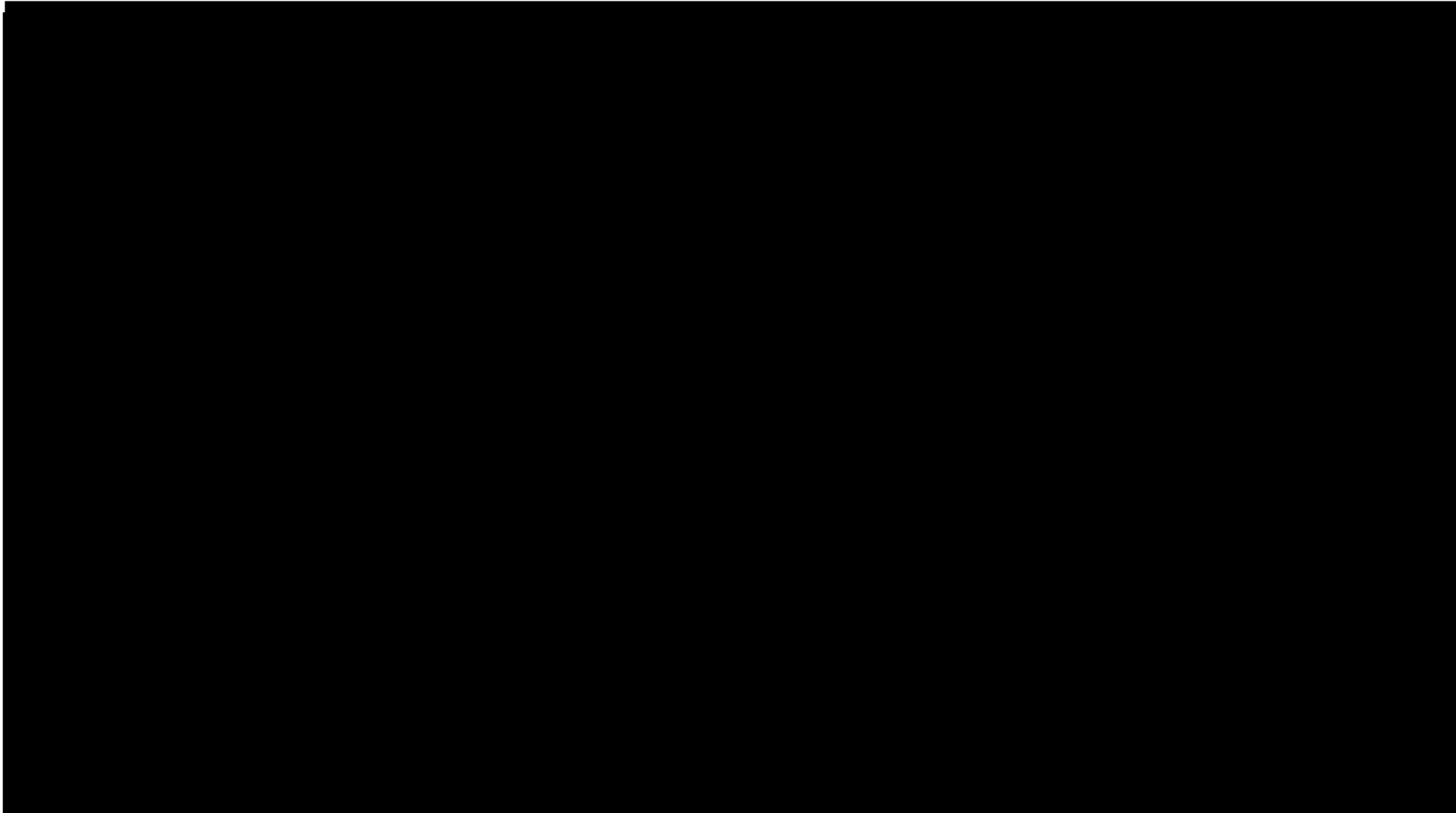


Figure 12 – 2017 – 2019 Predicted State of Core Applications