

TN-IES MDMS Upgrades Pgm-Nov 22- (IES)

❖ For work being proposed for inclusion into the capital works program.

Project name:	Market Systems - MDMS Upgrades
Department:	Technology & Performance
Investment Type:	Non-Network
Investment Category:	Non-Network - Information Technology
Functional Area(s):	ITDXC
Project ZoNe location:	assetzone.tnad.tasnetworks.com.au/R24_distribution/ICTIT
Document Number:	R0002079182
Needs Item Reference:	R0000334268
Regulatory Investment Test Required?	No
Version Number:	1.0
Date:	1/12/2022

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Preferred Option:			Option 1		
Level 1 Estimate +/- 30 per cent (preferred option – base dollars):			\$15,794,115		
Expenditure profile	FY25	FY26	FY27	FY28	FY29
Capex	\$3,158,823	\$3,158,823	\$3,158,823	\$3,158,823	\$3,158,823
Opex					

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Sign-offs (in support of the recommended option)			
Works Initiator:		Date	18/11/2021
Leader: (Endorsement)		Date	23/02/2022
Leader or General manager noting delegation levels. (Approval) ¹		Date	Click here and type the date.

¹ Approval based on delegation level.

❖ denotes mandatory field

1. RELATED DOCUMENTS

Description	URL
Needs Form	R24_NEE_S_IT_ITDXC_MktSys_MDMS_Upgrades_Pgm_-_Needs_Assessment
Estimate	R24_EST_S_IT_ITDXC_MktSys_MDMS_Upgrades_-_Project_Cost_Model_-_Option_1_-_V2.xlsm R24_EST_S_IT_ITDXC_MktSys_MDMS_Upgrades_-_Project_Cost_Model_-_Option_2_-_V2.xlsm
NPV	R24_NPV_S_IT_ITDXC_MktSys_MDMS_Upgrades_Pgm_-_NPV_-_V2.xlsx
Asset Management Plan	IT Software Asset Management Plan
	TasNetworks Towards 2030
	TasNetworks Digital Strategy
	Future Distribution System Vision
	TasNetworks Corporate Plan
	TasNetworks Business Plan
	TasNetworks Risk Management Framework
	National Electricity Rules (NER)

2. OVERVIEW

2.1 APPROVAL GATE STATUS



Approval Gate	Approver Title	Approver Name	Date
Gate 1 – Needs	Leader, Information Technology	Nigel Bailey	
Gate 2 – Option	This project seeks OPTIONS APPROVAL to proceed		

In line with the Gated Investment Framework this Project seeks Gate 2 Option approval to proceed to budget and financial approvals. This IES presents economic and risk assessments for each option considered, together with recommendation of a preferred option to address the business need.

2.2 BACKGROUND

The Meter/Market Data Management System (MDMS) is a set of applications that perform a number of functions that revolve around the LNSP, MDP and MPB roles TasNetworks perform in the NEM.

- Meter Data Management
- B2B and B2M Transactions
- Market Gateway
- Customer and Service Order Management
- Network Billing
- Workflow and Reporting

The MDMS is pivotal to various processes that support customer outcomes. A change that affects a B2B or B2M protocol, if unsupported, can cause substantial impact on TasNetworks ability to service our customer's needs.

In addition, this system is critical for maintaining cash flow for TasNetworks and [REDACTED], with its customer management and billing systems and processes being dependent on the TasNetworks MDMS.

These systems require regular upgrades to maintain currency of technology (recurrent) as well as changes to cope with changes in the rules, procedures, and laws that TasNetworks operate within. (non-recurrent works).

The MDMS performs the following functions;

- **Installation Management:** covering installation creation, static installation data, date effective installation data and installation data updates.
- **Customer Data Management:** customer data management functionality and capabilities including the ability to capture customer data through market transactions, manual inputs and the ability to review full date effective history.
- **Meter Management:** includes supporting interval meters and logical meters (used for UMS), register configuration, data stream configuration and metering standing data updates.

- **Unmetered Supply (UMS) Management:** includes inventory maintenance, standing data administration, and interval data management, processing performance, configuration, and logical data entities and reporting.
- **Metering Data Provider (MDP Type 7) Obligations:** UMS consumption data generation, validation, reading storage, supply to AEMO and processing performance.
- **Distribution Billing:** The replacement of the Distribution Billing capability is in scope for this project. Includes capabilities around tariff and invoice management, market NSW billing protocol support and unbilled energy.
- **Market Integration:** There are two key areas of market integration that are in-scope for the MDMS replacement which extends to support of business to market transactions and business to business transactions. The MDMS will need to support B2M transactions such as CAT transactions, retailer transfers and role changes and MSATS synchronisation. B2B transaction support includes service order management, meter data provider support, customer notifications/requests and one-way notifications.
- **Market Gateway:** The market gateway leads to AEMO's transaction hub for B2M and B2B transactions.
- **Meter Management for Basic Meters (MPB Type 6):** includes meter standing data management, register configuration, data stream configuration and metering standing data updates.
- **Metering Provider (reading collection) (MPC Type 6) Obligations:** reading routes, calendar/cycle management, route sequence management, download management, upload management, outstanding read management and reporting.
- **Metering Data Provider (MDP Type 6) Obligations:** basic reading processing, basic reading substitution, reading validation, reading storage and processing performance.

As Tasmania is part of the National Electricity Market, TasNetworks' market-facing applications are required to operate within and support the National Electricity Law (NEL) and its accompanying regulations and procedures, as well as jurisdictional laws and regulations. This requires regular and ongoing investment to ensure compliance with the regulatory environment.

Market Rule regulatory changes, imposed by the Australian Energy Market Commission (AEMC) may affect a variety of market processes, participant interactions and obligations.

Where AEMC changes affect market protocols, the Australian Energy Market Operator (AEMO), may be forced to update its systems and procedures. In these circumstances, TasNetworks, like all market participants, must accommodate such changes. AEMO have two releases each year, usually in May and November, which can incorporate AEMC changes or other changes AEMO themselves impose.

TasNetworks is audited for our compliance to NEL regulations and procedures, as well as service levels on a biannual basis in at least Metering Provider (MPB) and Metering Data Provider (MDP) roles. Failure to maintain market compliance can result in the loss of accreditation to operate in these roles in the market.

TasNetworks is also required to self-monitor our performance in our Local Network Service Provider (LNSP) role in regards to our operation under the National Energy Retail Rules (NERR) and make any necessary process or system adjustments to ensure ongoing compliance. Failure to do so can result in fines.

2.3 PROBLEM DEFINITION

This initiative is driven by the joint needs of:

- maintaining the currency of our applications by applying updates to the MDMS systems where they are available & prudent to apply, to ensure the health of the systems is maintained wherever possible and,
- reacting to ongoing changes to the regulatory environment in which TasNetworks operates. The laws, regulations and procedures as defined by the AEMC, AER and AEMO, as well as local Government agencies, are regularly subject to change, and TasNetworks must ensure compliance with these changes.

These two activities are often contained within the same project. Analysis was done on past projects to ascertain the ratio of recurrent (upgrade effort) to non-recurrent (changes to cope with regulatory change) and it was determined to be 70:30, and this has been used for this submission.

In order to maintain market systems contemporary with evolving regulatory obligations and to minimise the disruptions cause by the system's incompatibility with Market Rules, regular investment is required to perform alterations in line with the market's release schedule. Delaying updates also compounds the complexity of change, and therefore cost, when an upgrade is eventually performed.

The following protocols and standards are within the scope:

- B2B – Business to Business protocols for exchanges with market participants for:
 - Service Orders
 - Exchange of Customer Details
 - Meter Data handling rules and transport protocols
 - One-way Notifications between participants about events at a customer's installation.
- B2M – Business to Market protocols for registering installation details in the market operator's (AEMO) system (MSATS) and receiving metering configuration details.
- Roles and Responsibilities – That is division of responsibilities for activity at a customer's premises and the processes for changing the holders of those roles (e.g. meters churn, customer retailer churn / transfers).

AEMO and the Information Exchange Committee (IEC) will have an ongoing program of change to refine the operation of MSATS and the B2B procedures, these will require incremental changes to the Market Data Management Systems (MDMS) over the next period (2024-2029).

Many changes to Market systems have been made or are planned for 2022 and 2023. This rate of change is likely to increase rather than diminish.

AEMC has indicated that they intend to make more changes in faster succession with expedited and fast-tracked change processes:

<https://www.aemc.gov.au/news-centre/media-releases/making-more-rules-faster>

Many market changes require updates to data schemas. AEMO only support the current data schema version and the one before the current (v-1). If market systems are not upgraded in a timely fashion and are still using an older schema version (e.g. v-2) the market will simply not accept and transactions from them. TasNetworks would need to revert to fully manual interaction with the NEM.

TasNetworks market systems need to be updated whenever the schema is changed to remain operational.

NEM Reform

- The Energy Security Board is working through a program of Energy Market Reform initiatives as directed by the Energy Ministers. An outcome of the initiatives are Rule Change Requests to alter how the market works.
- Additionally any participant, AEMO, or the AER can raise Rule Change Requests. For example the 2018 Life Support changes are an AER initiated change, and the 2017 Metering Contestability works was joint sponsored by Lumo/Red Energy and COAG.
- Rule Change Requests result in changes to the Law, Rules and Regulations which in turn affects Obligations, Procedures and TasNetworks required capabilities.
- Energy Ministers and AEMC have indicated that they intend to make more changes in faster succession.
<https://www.aemc.gov.au/news-centre/media-releases/making-more-rules-faster>
- The list of Open, Pending and Not initiated Rule change projects gives an indication that the potential for impacts in coming years is credible and it is prudent to budget for further change. [Rule change projects | AEMC](#)
- DER evolution.
- ESB Recommendations for Post 2025.
- ESB Data Strategy.

Tasmanian Government

- In the past, the Tasmanian Government has initiated many changes that impacted Market Systems, from NEM Entry, through various tranches of contestability, to FRC.
- In the future, possible impacts could be around solar or battery rebates, data gathering, grandfathering or moves to increase competition. These efforts have the chance of requiring changes to TasNetworks Market Systems.
- Transition to renewables - Tasmania has set a target of 200% renewable electricity by 2040.

2.4 RR19 REGULATORY DETERMINATION PERIOD

The following outlines the impact of industry-led changes during the current regulatory determination period on TasNetworks budgeting and project delivery.

The purpose of this detail is to support a formal communication to the Australian Energy Regulator to highlight

- The challenges with the high level of industry-led change during this determination period on industry participants;
- The difficulties in forecasting and budgeting for compliance and system change initiatives driven from industry-led changes; and
- Learnings being adopted in light of the high-change environment facing TasNetworks.

2.4.1 MARKET SYSTEMS - MDMS UPGRADES IES

As part of the RR19 Regulatory Determination submission, an annual capital budget was requested to support compliance and system change initiatives during the period.

The following is an extract from the RR19 IES:

Preferred Option:				Option 1 - Perform minor upgrades to systems and procedures in order to maintain them at a market compliant level under the NEL						
Estimate (preferred option – base dollars):				\$10,644,000						
expenditure profile	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29
Capex	\$2.929m	\$1.929m	\$1.929m	\$1.929m	\$1.929m					

The following is a further extract from the RR19 IES providing some context to the required budget:

During the previous period, alterations have been necessary as a result of regulatory changes to metering and role arrangements for Power of Choice. The short timeframe of this change schedule has meant that ongoing changes will be required for a number of years to repair various processes and eliminate manual workarounds necessitated by the limited time allowed by AEMC deadlines.

AEMO and the Information Exchange Committee (IEC) will have an ongoing program of change to refine the operation of MSATS and the B2B procedures, these will require incremental changes to the Market Data Management Systems (MDMS) over the next period (2019-2024).

Additionally the industry faces further ongoing change in relation to:

- *Life Support arrangements;*
- *5 Minute settlements;*
- *Further contestability changes;*
- *Alternative generation related changes.*

In response to the IES, The AER's draft decision ([link](#)) documented the following:

TasNetworks has also not provided strong evidence for a specific increase in costs for the MDMS upgrades program in the 2019-20 year. The expected costs for this project are otherwise assumed to be equal in each year of the regulatory control period as the project reflects an average level of ongoing upgrade work arising from future regulatory changes. Making specific allowances for 'above average' years is therefore likely to overstate costs over time.

We have made a minor reduction to TasNetworks' forecast capex for the MDMS upgrades program in the 2019-20 year to ensure the forecast for this program reflects the expected average level of costs in each year. The average cost level should already account for years in which system change costs might

be above or below average, such that making a specific allowance for above average years is likely to overestimate program costs over the 2019–24 regulatory control period

This analysis proved to be wrong and in 2018, when the budget was request and IES developed, it was clear that the level of industry change experienced during this regulatory determination period was not anticipated by either TasNetworks or the AER and hence not adequately budgeted for.

2.4.2 RR19 ACTUAL COSTS TO DATE

The following table illustrates the actual and estimated costs to date, expended on compliance and system change initiatives during this period.

	2019/20	2020/21	2021/22	2022/23	2023/24	TOTAL
Projects						
Project Costs	\$617,000	\$612,000	\$6,938,000	\$7,560,000	?	\$15,727,000
Budget	\$2,782,360	\$1,832,360	\$1, 832,360	\$1, 832,360	\$1, 832,360	\$10,111,800
Variance	\$2,312,000	\$1,317,000	\$-5,009,000	\$-5,631,000	?	\$-5,615,200

Three years into the RR19 determination period, TasNetworks is currently running a \$5.6M overspend, and this can reasonably be expected to increase by another \$3M-\$5M before the end of the period.

2.4.3 UNEXPECTED INDUSTRY-LED CHANGES

The following industry-led changes were not known during the planning for RR19 and have only arisen with 6-18 month lead times prior to going live.

- B2B Version 3.6, 3.7 and 3.8 procedure changes
- Shared Isolation Point rule change
- Customer Switching Times
- MSATS Standing Data Review and subsequent addition and removal of fields

TasNetworks have observed that in between major industry reforms (such as Power of Choice and SMS&GS), the industry and its governing bodies are taking the opportunity to make other industry changes. Due to their perceived smaller change impact and complexity, these changes are often required to deliver with reduced lead times.

The higher level of constant change, coupled with reduced lead times has driven unforeseen project and vendor costs not provisioned for in the determination, as well as placed a higher level of effort and commitment from the business to facilitate and deliver.

2.4.4 PRODUCT AND VENDOR CONSTRAINTS

The high level of industry-led change has placed significant pressure on market systems vendors. TasNetworks has observed that its vendors are challenged with

- The burden of constant and short industry deadlines;
- Maintaining quality standards given time pressures;
- Low capacity to enhance and improve the product; and
- Attracting and retaining skilled resourcing to support the high work load.

This has also led to TasNetworks being obliged to receive and deploy product upgrades to facilitate industry changes as this is most efficient method for vendors to achieve the compliance outcomes across their customer base. This approach places additional effort on TasNetworks to test and deploy changes, adding to costs of compliance-driven initiatives.

2.4.5 AEMO DELAYS

In recent industry changes, AEMO delivery dates were delayed, which ultimately impacted upon industry rule implementation schedules. Most notably, key dates during the 5MS&GS and MSDR implementation schedules. These schedule changes have caused

- The need to re-plan, re-prioritise and resource alternative timelines;
- Added to TasNetworks project delivery costs; and
- Impacted on vendor development agreements and project schedules.

The financial impact of these delays is difficult to estimate, and although not as significant as the short lead times and high level of industry-led changes, does materially impact upon TasNetworks' delivery of these initiatives.

2.4.6 DETAIL COMES LATE IN THE PROCESS

TasNetworks often starts assessing impact when reviewing AEMC discussion papers and early estimation starts at this point. It is reviewed as the change progresses through Rule drafts and finals. True impacts are only fully understood once AEMO publish final determinations of the MSATS & B2B procedures. During this period the depth and complexity of procedures from AEMO resulted in far more changes to systems than originally anticipated, for example new transaction sets and data points needed to be created.

2.4.7 RR24

The current RR24 proposal has requested an increased annual budget to support industry changes (proposed to increase to \$3.16M per annum).

This reflects the high change environment and insufficient funding experienced in the current period, and also supports an ongoing program of work, as has been proposed in the current draft Market Systems Strategy presented to the Market Systems Steering Committee in March 2022.

2.4.8 CONCLUSION

Although TasNetworks makes best endeavours based on historical trends to forecast projects and expenditure in the Market Systems domain, ultimately we are at the mercy of the constant and rapidly evolving industry.

TasNetworks has adapted approaches and techniques to limit this impact such as;

- Participation in industry forums and working groups to stay abreast of and influence proposed changes;
- Critically assessing industry changes and only make the minimum and absolutely necessary system changes; and
- Combining the delivery of multiple rule changes in a single initiative

Ultimately these strategies are reactive in nature, and our ability to effectively forecast expenditure is limited.

3. CUSTOMER NEEDS AND IMPACT

TasNetworks' investments have a key driver of generating value to the customers; customer value is directly impacted by how compliantly, efficiently and effectively our market systems operate.

The Energy Security Board's recommendations for Electricity Market Design, including "Clean and Smart Power in the New Energy System" are aimed at unlocking benefits for consumers, but will have far reaching impacts on Market Systems.

The MDMS is pivotal to various processes that support customer outcomes. A change that affects a B2B or B2M protocol, if unsupported, can cause substantial impact on TasNetworks ability to service our customer's needs.

The MDMS:

- Allocates and registers the national identifier for every Tasmanian installation (NMI);
- Maintains installation details and informs the market operator and its participants;
- Maintains reading route information and is central to the reading process;
- Stores, validates and substitutes customer billing reads for basic customers;
- Maintains inventory and consumption records for unmetered supplies;
- Stores and maintains customer information used to ensure compliance with National Energy Customer Framework (NECF) obligations (e.g. Life Support etc.);
- Provides data, validation and supports completion of customer requested service orders (e.g. connections, reading and faults); and
- Supports the provision of accurate and timely accounts to customers via their Retailer.

In addition, this system is critical for maintaining [REDACTED], with its customer management and billing systems and processes being dependent on the MDMS.

4. CORPORATE ALIGNMENT❖

4.1 BUSINESS PERFORMANCE OBJECTIVES

This project will help achieve the customer and business performance objectives in TasNetworks' Corporate Plan, and aligns with the 2024 to 2029 regulatory period. The relevant performance measures are presented in Table 1.

Table 1 - Performance objectives relevant to this project.

Performance Category	Performance Measure	Investment impact on performance
	Customer Satisfaction	The Market Systems are key components to many processes that support our customers.
	Customer Net Promoter Score	Ensure delivery of services that drive the Net Promoter score.

Performance Category	Performance Measure	Investment impact on performance
Our Customers	Guaranteed Service Level (GSL) Payments	Ensure Market Systems remain functional and compliant, thus preventing the increase of payments made to customers through failure to meet our customer charter (GSL).
	AEMO MDP compliance measures	The Market Systems are central to the processes that provide quality meter data to market participants. The performance of these systems directly affects our ability to meet the AEMO compliance measures.
	AEMO DNSP/LNSP compliance measures	The Market Systems are central to the processes that maintain standing data and its supply to AEMO and to market participants. The performance of these systems directly affects our ability to meet the AEMO compliance measures.
	AEMO MPB compliance measures	The Market Systems are central to the processes that maintain standing data and its supply to AEMO and to market participants. The performance of these systems directly affects our ability to meet the AEMO compliance measures.
Safety and wellbeing	Reportable incidents	The Market Systems contain various information on safety risks associated with site visits, such as dangerous dogs or access hazards. It is important to ensure that these systems remain available to protect employee safety.
Our people	Employee engagement	Maintaining properly operational systems without the need for manual workarounds is important to maintain staff moral and wellbeing. Failure or inadequate functioning of these systems would quickly put employees under significant additional workload stress.
Our business - Sustained cost management	Capital expenditure	Upgrading systems on a regular basis lowers the need for capital intensive large scale upgrade projects to implement cumulative change.
Our business - Sustained cost management	Operating expenditure	Maintaining Market Systems in line with market rules will help avoid penalty charges for non-compliance, such as with the Life Support outage notifications.

4.2 RISK OBJECTIVES

The corporate plan identifies a number of business risks outlined in the TasNetworks Risk Framework. The TasNetworks Risk Appetite Statement details the level of risk the business finds acceptable in each category (Safety, Environmental, Financial, Regulatory, Legal and Compliance, Customers, Assets, Reputation and People).

This initiative addresses Customer, Financial and Regulatory compliance risks, of which TasNetworks has No to Low appetite. Those risks, which will be impacted by this project, are presented in Table 2.

An assessment of the risks mitigated by the project is presented in Section 6.3 and a more detailed comparison in Appendix B – Key Business Risk Comparison.

Table 2 - Business risks mitigated by this project

ID	Risk Category	Risk	Impact
ITR-017	Regulatory Compliance	TasNetworks cannot remain compliant due to inability to make modifications to accommodate regulatory change.	Damage to relationships with market operator, AER, Retailers and customers. Possible fines.
ITR-018	Financial	If systems are not maintained in accordance with relevant changes, TasNetworks may face NECF breaches and fines.	Additional costs.
ITR-019	Customer	Impact to Retailers as a result of data quality and integrity of information.	Increase in disputes and complaints as well as customers' retail bills may be affected.
ITR-020	Financial	Market non-compliance may lead to high level of scrutiny during market audits.	Business disruption due to resources being tied up with auditing activities.
ITR-021	Financial	Inability to bill correctly.	Loss of revenue.
ITR-178	Sustainable and Predictable Pricing	If market systems are not adequately maintained, it is possible that billing errors will lead to under or over recovery.	Under or over recovery would result in price adjustments in the next reset period, thus jeopardising Predictable Pricing.
ITR-022	Financial	Increased revenue leakage.	Ongoing loss of revenue.
ITR-024	Customer	Potential for customers to be affected by our inability to handle modified market processes.	Customers without power/services in expected timeframes.
ITR-025	Business Continuity Mgmt.	If not maintained in a healthy supported state, the current system may suffer failure, which could lead to several issues, namely: market process issues, impact to Distribution Monthly Billing, non-compliance to regulatory, SLA and timeframe obligations.	Negative impacts on TasNetworks' operations, customers and retailers and non-compliance with regulatory obligations. Significant additional resources would be required to perform the necessary manual process. Failure likely to be identified by external parties, and would negatively impact TasNetworks' reputation.
ITR-158	Cyber Security	If systems are not maintained in a healthy supported state, they become more vulnerable to Cyber Attack. The need for manual interventions to overcome functional gaps also increases the risk of Cyber Attack.	Compromised Market Systems could result in significant financial loss. It could also cause significant disruption or total failure of our ability to process market transactions with resultant impact on customers, reputation and regulatory compliance.
ITR-159	Emerging Complexity of the NEM	It is critical that our Market Systems are properly maintained for them to be able to deal with the increasing complexity of the NEM.	If systems are not maintained it will hinder or prevent TasNetworks from participating in an increasingly complex NEM. This may have far reaching impacts on the business depending on how the NEM evolves.

ITR-160	Death or Injury (Employee)	The Market Systems contain various information on safety risks associated with site visits, such as dangerous dogs or access hazards.	If these systems fail and the information is not available, employee injuries may result.
ITR-173	Cyber Security	If systems are not maintained in a healthy supported state, they become more vulnerable to cyber attack. A market system could also act as an entry point to the whole of TasNetworks IT Ecosystem.	A cyber attack that affects multiple operational systems could cause widespread disruption to the business, breaches of market obligations and release of sensitive data.

4.3 STRATEGIC OBJECTIVES

Table 3 summarises strategic objectives that will be addressed by this project.

Table 3 - Strategic objectives relevant to this project

Strategic Document	Strategic Goal	How this initiative will address the strategic goal
Towards 2030	Achieve efficiencies and reinvest gains in innovation for customers and growth.	<p>When new regulations are enforced, existing processes may break and data become mismanaged or lost and manual complex workarounds will be required, making work practices difficult, thus negatively impacting the business.</p> <p>Should TasNetworks not adopt and enable changes to market protocols, it might become non-compliant. This will affect customers and their retailers and increase the risk of:</p> <ul style="list-style-type: none"> • Issues being detected by the Market operator. • The Market operator might undertake more intensive compliance audits. • TasNetworks' not being able to deliver necessary data to the Market operator. • Adverse findings and potential fines that if not addressed, might result in deregistration in key roles. <p>This initiative provides regular efforts to address any such changes that are approved by the market committees, maintaining our reputation for operating compliantly.</p>
TasNetworks Business Plan	Our Owners – “Driving an efficient business that ensures our business remains sustainable”	Use of systems that are not maintained to match market protocols would result in errors, manual workarounds and duplication of effort and hence reduce our business efficiency. The use of manual processing would not be sustainable.
TasNetworks Business Plan	Our Customers – “We engage with our customers, and continue to develop customer-centric approaches”	<p>Should TasNetworks not adopt and enable changes to market protocols, TasNetworks may fail to provide key services to connect, modify connections, re-energise a customer or provide billing reads.</p> <p>This initiative provides regular efforts to address any regulatory changes approved by the market in a timely manner, maintaining valuable relationships with</p>

Strategic Document	Strategic Goal	How this initiative will address the strategic goal
		retailers and customers, ensuring TasNetworks can be trusted to deliver.

5. PROJECT OBJECTIVES❖

The key objective of this project is to secure a provision to maintain systems and procedures at market compliant level under the National Electricity Law, which is periodically reviewed by the AEMC, and NEM procedures and data standards, which are reviewed by AEMO biannually.

6. OPTIONS ANALYSIS❖

6.1 OPTIONS CONSIDERED AND ECONOMIC ANALYSIS²

Table 4 lists the options considered, the outcome of the economic analysis for each option, and the option being proposed for endorsement in this Investment Evaluation Summary. Details of the NPV analysis are included in Appendix A1.

Table 4 - Options considered

Option No.	Option summary	Direct 5yr cost (\$m)	10 yr NPV (\$m)	Preferred option (yes/no)	Reason for selection/rejection
0	Do nothing – i.e. do not upgrade the market systems. Not a credible option as will result in non-compliance	(\$14.97)	(\$29.56)	No	Rejected option as it will result in non-compliance
1	Market Systems Upgrades implemented as an agile program	(\$15.79)	(\$27.99)	Yes	Selected option as this is necessary to maintain compliance and is the most cost effective implementation approach.
2	Market Systems Upgrades implemented as a series of separate projects	(\$29.90)	(\$51.85)	No	This would maintain compliance but would be more costly than an agile program implementation.

6.1.1 OPTION 0: DO NOTHING

The option of 'Do Nothing' assesses the base case scenario where this initiative is not implemented.

The functions that the MDMS provides involves many millions of transactions that are largely dealt with in a fully automated manner. Staff deal primarily with exceptions. Not maintaining systems

² Cost estimates used on the analysis have a level of accuracy of $\pm 30\%$ and do not include the 20% contingency amount applicable to this type of project.

either through upgrades or changes for regulatory change can easily introduce more manual handling for huge transaction volumes. This will require many additional staff (along with accommodation requirements) to deal with this additional workload. Timing obligations are such that even with additional staff, TasNetworks will fail our obligations resulting in fines and disruption to customer & Retail processes.

Table 5: Option 0 – Scenario Assessment

Criteria	Advantages	Disadvantages
1. Solution effectiveness		Not undertaking necessary changes to market systems to meet regulatory obligations might result in non-compliance.
2. Cost	No initial Capex cost to consider.	<p>If changes in the regulatory environment occur as expected and this initiative does not progress, TasNetworks will need manual workarounds for various office and field processes. These will be manually intensive, requiring significant additional staff. In addition, non-compliance with regulatory obligations for market systems might incur penalty fees.</p> <p>We may increase payments made to customers through failure to meet our customer charter (GSL).</p> <p>Additionally there is a significant risk of fines due to non-compliance.</p>
3. Business impact		<p>Non-compliance with regulatory obligations for market systems would have a significant impact on TasNetworks, increasing process complexity and make them manually intensive.</p> <p>This, in turn, might impact on TasNetworks' ability to provide services.</p>
4. Business strategic alignment		<p>The business objective '<i>Optimise our program of work and emergency response capability delivering on our promise</i>' will not be fulfilled due to potential negative business impacts.</p> <p>The business objective '<i>Delivering valued services to our Customer</i>' will not be fulfilled due to possible process failures.</p> <p>In the event manual workarounds permanently increase our cost to serve, pricing may be affected, conflicting with our goal of ensuring predictable pricing.</p>
5. IT strategic alignment		Option not aligned with IT strategy because it will not fulfil the principle of maintaining systems in a healthy and supported state.
6. Project complexity	N/A	N/A
7. Risk profile		See section 4.2 Risk Objectives
8. Compliance		TasNetworks' systems would not meet its regulatory compliance obligations of being part of NEM.
9. Time		There is an increased risk of failure or security incident, leading to unscheduled changes that need to be implemented at short notice.

6.1.2 OPTION 1: MARKET SYSTEMS UPGRADES – AGILE PROGRAM

Perform minor upgrades to systems and procedures as an Agile Program in order to maintain them at a market compliant level under the NEL.

This is the preferred option and its scenario assessment can be seen below. Further details are available in section 6.7 Preferred option.

This forecast is total capex (recurrent and non-recurrent). No specific non-recurrent can be identified this far in advance, but historic projects were examined to determine historic split, and we continue to use this 70/30 split.

Table 6: Option 1 – Scenario Assessment

Criteria	Advantages	Disadvantages
1. Solution effectiveness	This option addresses the problem outlined in section 2.3 Problem Definition by ensuring market systems will maintain their compliance requirements under the NEL. AEMO have two release cycles a year, a continual agile program is the most efficient way of combining software upgrades and regulatory change.	
2. Cost	This option will ensure there is appropriate provision to accommodate regulatory changes. It will provide a more cost effective implementation than option 2 by minimising project overheads.	Capital expenditure required.
3. Business impact	This option will allow timely adjustments to market systems as required. It is the most efficient use of business resources (Subject Matter Experts)	
4. Business strategic alignment	It will support the fulfilment of the strategy and performance objectives detailed in sections 4.1 and 4.3.	
5. IT strategic alignment	TasNetworks' market systems are contemporary and built for Australia's NEM. This option aligns with the IT strategy by ensuring the solution: <ul style="list-style-type: none"> • Is designed to suit TasNetworks work practices and work processes so as to be as efficient and effective as possible without compromise. • Will be maintainable and supported. • Will be 'fit for purpose'. 	

	<ul style="list-style-type: none"> • Will align with current IT infrastructure. • Will align with other IT road map initiatives. 	
6. Project complexity	Because this option only requires upgrades in case there are changes on the regulatory environment, it was assessed as having low complexity.	
7. Risk profile	See Appendix B – Risk Comparison.	
8. Compliance	TasNetworks leverages the expertise and conformity of vendor products designed for NEM market interface, which ensures compliance with industry standards and regulatory obligations.	
9. Time	Because this option only requires upgrades in line with regulatory changes, this option was assessed as time-effective.	

6.1.3 OPTION 2: MARKET SYSTEMS UPGRADES – MULTIPLE PROJECTS

Perform minor upgrades to systems and procedures as a series of separate projects in order to maintain them at a market compliant level under the NEL.

The market systems upgrades will be discrete sets of changes driven by AEMO specification releases. It may be tempting therefore to treat them as separate projects. This approach would achieve the same compliance outcomes, but would be more costly as there would be overheads associated with project start-up, lack of continuity of resources etc.

Table 7: Option 2 – Scenario Assessment

Criteria	Advantages	Disadvantages
1. Solution effectiveness	This option addresses the problem outlined in section 2.3 Problem Definition by ensuring market systems will maintain their compliance requirements under the NEL.	Running multiple concurrent projects will be less efficient due to effort to spin up projects, duplicated resources.
2. Cost	This option will ensure there is appropriate provision to accommodate regulatory changes. It will provide a less cost effective implementation than option 1 as a result of project overheads.	Capital expenditure required. Increased cost as projects are less efficient.
3. Business impact	This option provides the same business impact as option 1.	This option has a higher impact on the business through needing larger subject matter expertise effort for separate concurrent projects

4. Business strategic alignment	This option provides the same strategic alignment as option 1.	
5. IT strategic alignment	This option provides the same strategic alignment as option 1.	
6. Project complexity	This option provides the same level of complexity as option 1.	
7. Risk profile	See Appendix B – Risk Comparison.	
8. Compliance	This option provides the same level of compliance as option 1.	
9. Time	This option would be equally time-effective as option 1.	

6.1.4 SENSITIVITY ANALYSIS

N/A

6.2 OPTION EXPENDITURE PROFILES

The following tables show the expenditure profile for each investment option.

Option 0 – Do Nothing					
Estimate (in nominal dollars) \$14.97m					
Expenditure profile	FY25	FY26	FY27	FY28	FY29
Capex					
Opex	\$2,993,462	\$2,993,462	\$2,993,462	\$2,993,462	\$2,993,462

Option 1 – Market Systems Upgrades – Agile Program					
Estimate (in nominal dollars) \$15.79m					
Expenditure profile	FY25	FY26	FY27	FY28	FY29
Capex	\$3,158,823	\$3,158,823	\$3,158,823	\$3,158,823	\$3,158,823
Opex					

Option 2 – Market Systems Upgrades – Multiple Projects					
Estimate (in nominal dollars) \$28.74m					
Expenditure profile	FY25	FY26	FY27	FY28	FY29
Capex	\$4,813,893	\$5,980,790	\$5,980,790	\$5,980,790	\$5,980,790
Opex					

6.3 RISK MITIGATION

The matrix presented in Table 8 compares the options, showing how each assists TasNetworks in mitigating its key business risks (previously identified in section 4.2 Risk Objectives).

Appendix B provides supporting details of the risk assessment outcomes presented in Table 8.

Table 8 - Risk matrix summary

ID	Risk Category	Risk Drivers	Impact	Option 0 Gross risk	Option 1 Net risk	Option 2 Net risk
ITR-017	Regulatory Compliance	TasNetworks cannot remain compliant due to inability to make modifications to accommodate regulatory change.	Damage to relationships with market operator, AER, retailers and customers. Possible fines.	High	Low	Low
ITR-018	Energy Policy and Regulation	If systems are not maintained in accordance with relevant changes, TasNetworks may face NECF breaches and fines.	Additional costs.	Medium	Low	Low
ITR-019	Customer Focus	Impact to Retailers as a result of data quality and integrity of information.	Increase in disputes and complaints as well as customers' retail bills may be affected.	Medium	Low	Low
ITR-020	Business Continuity Management	Market non-compliance may lead to high level of scrutiny during market audits.	Business disruption due to resources being tied up with auditing activities.	Low	Low	Low
ITR-021	Financial	Inability to bill correctly.	Loss of revenue.	Medium	Low	Low
ITR-178	Sustainable and Predictable Pricing	If market systems are not adequately maintained, it is possible that billing errors will lead to under or over recovery.	Under or over recovery would result in price adjustments in the next reset period, thus jeopardising Predictable Pricing.	Medium	Low	Low
ITR-022	Financial	Increased revenue leakage.	Ongoing loss of revenue.	Medium	Low	Low
IITR-024	Customer Focus	Potential for customers to be affected by our inability to handle modified market processes.	Customers without power/services within expected timeframes.	Medium	Low	Low
ITR-025	Business Continuity Management	If not maintained in a healthy supported state, the current system may suffer failure, which could lead to several issues, namely: market process issues, impact to Distribution Monthly Billing, non-compliance to regulatory, SLA and timeframe obligations.	Negative impacts on TasNetworks' operations, customers, retailers and non-compliance to regulatory obligations, could negatively impact TasNetworks' reputation.	Medium	Low	Low

ITR-158	Cyber Security	If systems are not maintained in a healthy supported state, they become more vulnerable to Cyber Attack. The need for manual interventions to overcome functional gaps also increases the risk of Cyber Attack.	Compromised Market Systems could result in significant financial loss. It could also cause significant disruption or total failure of our ability to process market transactions with resultant impact on customers, reputation and regulatory compliance..			
ITR-159	Emerging Complexity of the NEM	It is critical that our Market Systems are properly maintained for them to be able to deal with the increasing complexity of the NEM.	If systems are not maintained it will hinder or prevent TasNetworks from participating in an increasingly complex NEM. This may have far reaching impacts on the business depending on how the NEM evolves.	High	Low	Low
ITR-160	Death or Injury (Employee)	The Market Systems contain various information on safety risks associated with site visits, such as dangerous dogs or access hazards.	If these systems fail and the information is not available, employee injuries may result.	Medium	Low	Low
ITR-173	Cyber Security	If systems are not maintained in a healthy supported state, they become more vulnerable to a cyber attack. A market system could also act as an entry point to the whole of TasNetworks IT Ecosystem.	A cyber attack that affects multiple operational systems could cause widespread disruption to the business, breaches of market obligations and release of sensitive data.			

6.4 QUANTITATIVE RISK ANALYSIS

N/A

6.5 BENCHMARKING

N/A

6.6 EXPERT FINDINGS

N/A

6.7 PREFERRED OPTION

The preferred option is to run an agile program to upgrade systems and procedures in order to maintain them at market compliant level under the NEL. This option has been selected because it has best alignment with the investment need whilst:

- Minimising the cost.
- Minimising the negative business impacts and maximising the positive business impacts.
- Maximising the business strategic alignment.
- Maximising the IT strategic alignment.
- Minimising the project complexity.
- Minimising the risk to the organisation.

6.7.1 SCOPE

The scope is to maintain TasNetworks' market systems so that they remain compliant with changed market rules, procedures and service level requirements. The systems that are likely to be impacted include:

- Meter data management system release(s)/changes to address any alterations/enhancements required to maintain compliance with market regulations.
- NEM market interface system release(s)/changes to address any alterations/enhancements required to maintain compliance with market regulations.
- This is inclusive of all modules:
 - Service Order Management (SOM)
 - Customer Transfers
 - Market Synchronization
 - Standing Data Reconciliation (SDREC)
 - Market Integration Layer (MIL)
 - Meter Data Delivery
 - Customer and Transfer Solution (CATS)
 - Task Management
 - Customer Details
 - Distribution Billing
 - Network Invoice Management (NIM)
 - Network Operational Management (NOM).
- Field tool release(s)/changes to address any alterations/enhancements required to maintain compliance with market regulations.
- Change Management Impacts - the following business processes may require re-engineering and subsequently training and re-education throughout their user base:
 - Service Order processes (Receipt, Scheduling, Execution and Completion)
 - Market Interactions
 - Meter Reading
 - Distribution Billing.

6.7.2 HIGH LEVEL IMPLEMENTATION ACTIVITIES

High level activities identified to implement this initiative include:

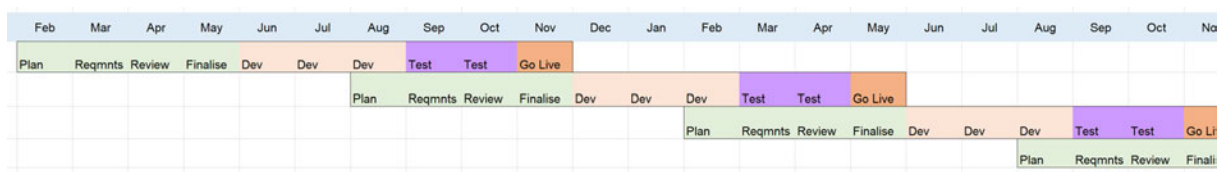
- Analysis of TasNetworks obligation for Market System compliance, including:

- Identifying existing processes that will need to be changed and redrafting the 'To Be' process;
- Elicitation of the full set of requirements for TasNetworks to become compliant with the principles of 'Market Systems';
- Identification of what requirements will be delivered, resulting in the preparation of separate requirements documentation sufficient to enable development to be undertaken;
- Identification of what requirements will be delivered via a known vendor resulting in the preparation of separate requirements documentation sufficient to enable a vendor build to be undertaken;
- Review and sign-off on vendor supplied functional specifications for implementation;
- Design and build of system components;
- Deployment and testing of vendor supplied components in TasNetworks' environments. Testing will include System Integration Testing (SIT, ensuring all vendor components work with each other), and User Acceptance Testing (UAT, ensuring the business is happy with the new functions delivered);
- Deployment to the TasNetworks Production environment;
- Training of staff in the new functionality and new 'To Be' processes where relevant, including creation/update of all documentation (administrative or end user); and
- External Communications: Current and potential customers and their electrical contractors will need to be made aware of changed processes.

6.7.3 PROGRAM APPROACH

This option will deliver the upgrades under the structure of an agile program. This approach will allow for the best utilisation of resources by scheduling the various overlapping upgrade activities appropriately. It will also enable a continuity of expertise and avoid project stop/start overheads.

The following graphic gives an indication of the sort of timeline that might be expected based on AEMO's twice yearly implementation of changes.



The program will need to account for the dependency on the MDMS replacement initiative which will be completed part way through the R24 period. Prior to go-live of the replacement, updates will continue to be applied to MDMS, but after go-live they will be applied to the replacement system.

7. INVESTMENT TIMING❖

The project schedule was defined over the 5 year period so that the alteration in the market systems can be undertaken in line with the market's release schedule.

8. EXPECTED OUTCOMES AND BENEFITS

The outcomes and benefits are considered from a TasNetworks' perspective and from an external stakeholder perspective, in this case the customer and retailer.

Outcomes and benefits have also been segregated into tangible (i.e. measureable) and intangible (not measureable). Tangible benefits are used as part of the NPV calculations in Appendix A – Economic analysis

Table 9 - Summary of Expected Benefits

TasNetworks' perspective	Tangible benefits	
	The benefits quantified below have been assessed as most likely to result given the assumptions made regarding the expected future state.	
	Benefit Description	Benefit
	With the implementation of this initiative, there is avoidance of increased risk of fines due to non-compliance ('Do Nothing' risk IT-018 mitigated).	\$200,000
	With the implementation of this initiative, there is avoidance of extra resources required to account for loss of efficiency and workarounds if the 'Do Nothing' option is selected ('Do Nothing' risk IT-123 mitigated).	20 FTE plus Accommodation/PC's/Desks etc.
	Intangible benefits	
	<ul style="list-style-type: none"> With the implementation of this initiative, there will be a reduced likelihood of revenue leakage ('Do Nothing' risk IT-022 mitigated). With the implementation of this initiative there will be a reduced risk of business disruption as a result of increased auditing activities ('Do Nothing' risk IT-020 mitigated). Have greater reliance on data, which will improve the ability to correctly model tariff prices. Reduced reliance on existing trained resources who understand defects and workarounds. Reduced reliance on working outside of systems and processes. Decrease in the likelihood of human error. Increased employee confidence in market systems, which will lead to a reduction in stress, frustration, overtime, and retention issues of employees. 	
Customer's perspective	<p>From a customer perspective, TasNetworks will be able to:</p> <ul style="list-style-type: none"> Handle modified market processes without impacting the customer reduced ('Do Nothing' risk IT-019 mitigated). Address impacts to retailers as a result of outstanding defects, ensuring customers are correctly billed. Improve delivery of accurate data in a timely manner. Maintain valuable relationships with retailers and customers where TasNetworks can be trusted to deliver. 	

9. ASSUMPTIONS ❖

The following are inclusive of project and financial assumptions.

Table 10 - Assumptions

ID	Assumption Description
ITA-001	Cost estimates used on the analysis have a level of accuracy of $\pm 30\%$ and do not include the 20% project contingency normally applied to this type of project.
ITA-004	It is assumed that the cost associated with future modifications to maintain compliance with changing regulations is reasonable.
ITA-005	It is assumed that processes imposed by systems maintenance will be as efficient as current processes and not require further FTE resources.
ITA-010	The biannual market changes to the B2B and CATS procedures potentially introduce 20 FTEs worth of additional labour per annum should greater numbers of Service Orders or other transactions require manual intervention to ensure compliance. Accommodation, Desks, PC's, training for the additional people would be required.
ITA-011	It is assumed the if the Market Systems are not adequately upgraded, TasNetworks would be more likely to incur fines for non-compliance amounting to approximately \$200k p.a.
ITA-012	It is assumed that the funding provision will suffice to undertake market systems maintenance.
ITA-014	It is assumed that every time we make changes to the system we will need to undertake end-to-end process testing and market testing, which will have an impact on costs regardless of the scope.
ITA-033	It is assumed that current technology will be available at the time this initiative is implemented.
ITA-042	It is assumed the vendor that currently provides the technology will continue to support it.
ITA-157	The cost of updating the MDMS replacement system with regular AEMO changes will be the same as it is for MDMS

10. REGULATORY INVESTMENT TEST

N/A

11. RECOMMENDATION ❖

It is recommended that the preferred option is approved and progressed as it best satisfies the customer and business needs.

In order for the MDMS to deal with evolving AEMC regulatory obligations, TasNetworks will be required to make upgrades to the current system to mitigate the risks of non-compliance. Failure to maintain market compliance can result in the loss of accreditation to operate in particular roles under the market, which makes Option 1 the preferred option.

12. APPENDIX A – ECONOMIC ANALYSIS

The assumptions used in the NPV analysis are as follows:

- NPV analysis is carried out for a 10 year period from the start of the initiative.
- Weighted Average cost of Capital (WACC) of 2.79 per cent is used.

The results of the Economic Analysis are provided below:

<u>ANALYSIS OF OPTIONS</u>		Option 0	Option 1	Option 2
		Status Quo - Do Nothing	Implement upgrades in an Agile Program	Implement Upgrades in separate projects
CASHFLOW	<i>flow</i>			
Capital Expenditure	Cash outflow	-	(31,588,230)	(58,641,003)
Operational Expenditure	Cash outflow	(39,246,154)	-	-
Operational Cost savings	Cash Inflow	-	-	-
Total Expenditure	Cash outflow	(39,246,154)	(31,588,230)	(58,641,003)
Revenue	Cash Inflow	-	-	-
Net Cashflow	Net cash	(39,246,154)	(31,588,230)	(58,641,003)
CASHFLOW NPV		(34,786,320)	(27,998,624)	(51,844,585)
PLUS NON CASH				
Non Cash Benefits	Non cash in	-	-	-
Non Cash Costs	Non cash out	-	-	-
Net Value	Net Value	(39,246,154)	(31,588,230)	(58,641,003)
COST BENEFIT NPV		(34,786,320)	(27,998,624)	(51,844,585)
RANKING		2	1	3

13. APPENDIX B – KEY BUSINESS RISK COMPARISON

The project options each have a different impact on key business risks. The table below provides a qualitative summary of the impacts of each option on key business risks, with consideration for the risk approach and risk management process outlined in TasNetworks' Risk Management Framework. Note, the risk profile for option 2 is the same as option 1.

Risk ID	Risk Category	Risk drivers	Impact	Option 0 – Do Nothing (untreated risk)				Option 1 Market Systems Upgrades			
				Likelihood	Consequence	Risk	How does this option mitigate current situation risk?	Likelihood	Consequence	Risk	How does this option mitigate current situation risk?
ITR-017	Regulatory Compliance	TasNetworks cannot remain compliant due to inability to make modifications to accommodate regulatory change.	Damage to relationships with market operator, AER, Retailers and customers. Possible fines.	Almost Certain	Moderate	High	Risk unmitigated	Rare	Moderate	Low	Initiative will allow TasNetworks to maintain compliance.
ITR-018	Financial	If systems are not maintained in accordance with relevant changes, TasNetworks may face NECF breaches and fines.	Additional costs.	Likely	Minor	Medium	Risk unmitigated	Unlikely	Minor	Low	Initiative will allow TasNetworks to maintain compliance.
ITR-019	Customer	Impact to Retailers as a result of data quality and integrity of information.	Increase in disputes and complaints as well as customers' retail bills may be affected.	Likely	Minor	Medium	Risk unmitigated	Unlikely	Minor	Low	Initiative will maintain effectiveness of billing and service order systems, this should result in no rise in disputes and complaints.
ITR-020	Financial	Market non-compliance may lead to high level of scrutiny during market audits.	Business disruption due to resources being tied up with auditing activities.	Likely	Negligible	Low	Risk unmitigated	Unlikely	Negligible	Low	Initiative will allow TasNetworks to maintain compliance
ITR-021	Sustainable and Predictable Pricing	Inability to bill correctly.	Loss of revenue.	Likely	Minor	Medium	Risk unmitigated	Unlikely	Minor	Low	Initiative will maintain effectiveness of billing systems.
ITR-178	Sustainable and Predictable Pricing	If market systems are not adequately maintained, it is possible that billing errors will lead to under or over recovery.	Under or over recovery would result in price adjustments in the next reset period, thus jeopardising Predictable Pricing.	Possible	Moderate	Medium	Risk unmitigated	Rare	Moderate	Low	Initiative will maintain effectiveness of billing systems.
ITR-022	Sustainable and Predictable Pricing	Increased revenue leakage.	Ongoing loss of revenue.	Possible	Negligible	Low	Risk unmitigated	Unlikely	Negligible	Low	Initiative will maintain effectiveness of billing systems.
ITR-024	Customer	Potential for customers to be affected by our inability to handle modified market processes.	Customers without power/services in expected timeframes.	Likely	Minor	Medium	Risk unmitigated	Unlikely	Minor	Low	Initiative will maintain effectiveness of service order systems.
ITR-025	Business Continuity Management	If not maintained in a healthy supported state, the current system may suffer failure, which could lead to several issues, namely: market process issues impact to Distribution Monthly Billing, non-compliance to regulatory, SLA and timeframe obligations.	Negative impacts on TasNetworks' operations, Customers and Retailers and non-compliance to regulatory obligations could negatively impact TasNetworks' reputation.	Possible	Moderate	Medium	Risk unmitigated	Rare	Moderate	Low	Initiative results in compliance.
ITR-179	Business Continuity Management	If not maintained in line with market schema changes systems will cease to function, requiring fully manual interaction with the market. This would require significant FTE input and would be error prone	Significant costs and negative impacts on TasNetworks' operations, Customers and Retailers and likely non-compliance to regulatory obligations.	Likely	Major	High	Risk unmitigated	Rare	Major	Medium	Initiative will maintain integrity of Market Systems in line with schema changes.
ITR-158	Cyber Security	If systems are not maintained in a healthy supported state, they become more vulnerable	Compromised Market Systems could result in significant financial	██████	██████	██████	██████████████	██████	██████	██████	Initiative will maintain integrity of Market Systems and therefore maximise Cyber Security.

Risk ID	Risk Category	Risk drivers	Impact	Option 0 – Do Nothing (untreated risk)				Option 1 Market Systems Upgrades			
				Likelihood	Consequence	Risk	How does this option mitigate current situation risk?	Likelihood	Consequence	Risk	How does this option mitigate current situation risk?
		to Cyber Attack. The need for manual interventions to overcome functional gaps also increases the risk of Cyber Attack.	loss. It could also cause significant disruption or total failure of our ability to process market transactions with resultant impact on customers, reputation and regulatory compliance.								
ITR-173	Cyber Security	If systems are not maintained in a healthy supported state, they become more vulnerable to Cyber Attack. A market system could also act as an entry point to the whole of TasNetworks IT Ecosystem.	A cyber attack that affects multiple operational systems could cause widespread disruption to the business, breaches of market obligations and release of sensitive data.								Initiative will maintain integrity of Market Systems and therefore maximise Cyber Security.
ITR-159	Emerging Complexity of the NEM	It is critical that our Market Systems are properly maintained for them to be able to deal with the increasing complexity of the NEM.	If systems are not maintained it will hinder or prevent TasNetworks from participating in an increasingly complex NEM. This may have far reaching impacts on the business depending on how the NEM evolves.	Likely	Major	High	Risk unmitigated	Rare	Moderate	Low	Initiative will maintain the capability of Market Systems to accommodate the NEMs evolving complexity.
ITR-160	Death or Injury (Employee)	The Market Systems contain various information on safety risks associated with site visits, such as dangerous dogs or access hazards.	If these systems fail and the information is not available, employee injuries may result.	Possible	Moderate	Medium	Risk unmitigated	Rare	Moderate	Low	Initiative will maintain the capability of Market Systems to continue making safety information available.