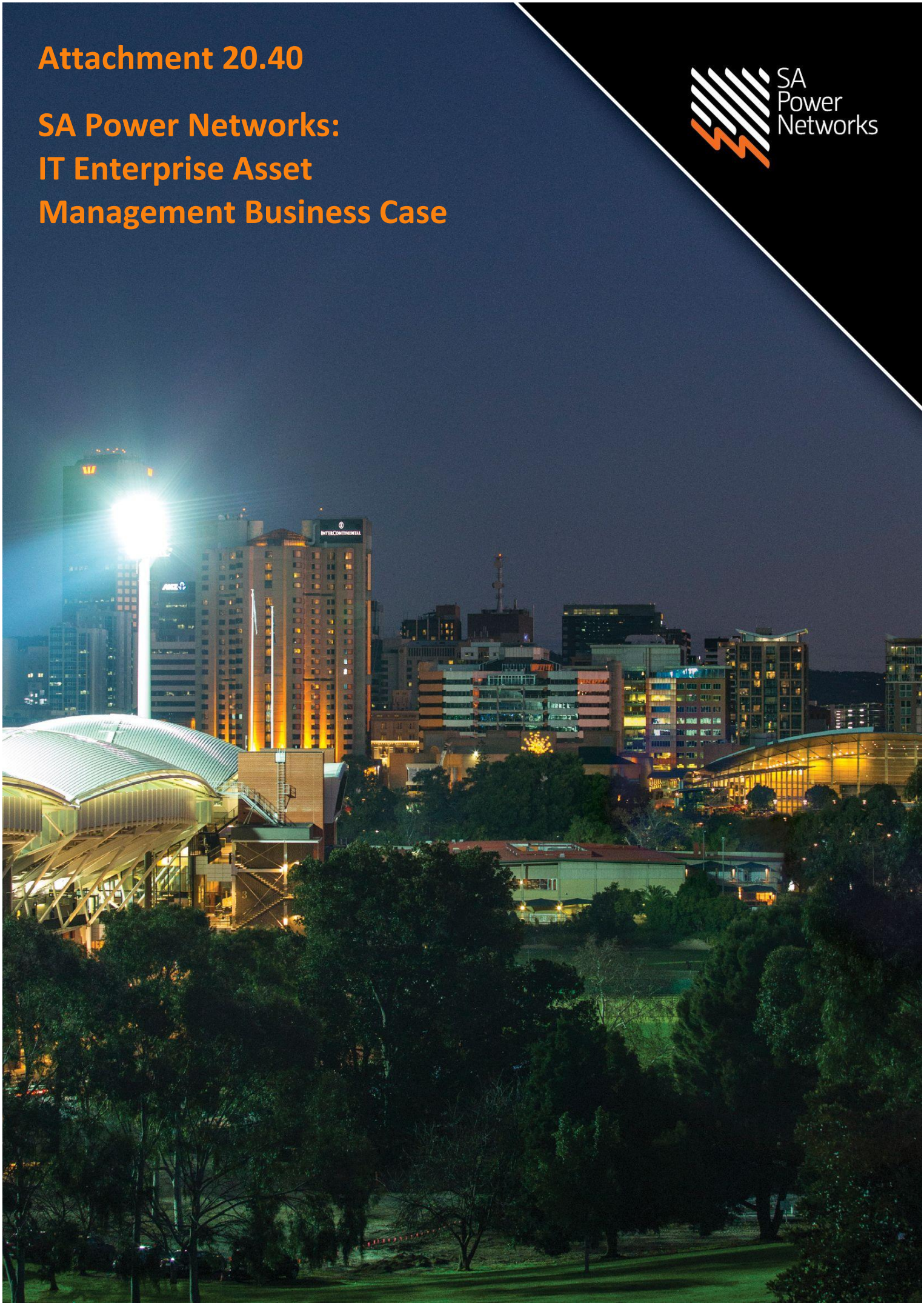
Attachment 20.40

SA Power Networks: IT Enterprise Asset Management Business Case



Business Case

Enterprise Asset Management

Project Ref Number : BC03

SA Power Networks

www.sapowernetworks.com.au

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1. Executive Summary

1.1 Reasons for the Project

The environment SA Power Networks operates in is going through significant change from a regulatory, statutory, environmental and consumer demand/ expectation perspective. To deal with the challenges that this dynamic environment is presenting the business, it must now take a significant step forward in the way it manages its assets to ensure electricity services continue to be delivered to customers as efficiently as possible, and that it is organised in such a way that it can meet its current and future compliance obligations.

This Business Case outlines the justification to invest in adopting an Enterprise Asset Management model, which takes a holistic and optimal approach to the management of an asset throughout its life, from inception to decommission/ replacement. The recommended option requires an investment of $26.9 million over eight years commencing 2014, to provide benefits in subsequent years, resulting in a Net Present Value of $2.08 million. The recommended option is the most efficient investment to support strategies to meet the following objectives:

1. Ability to demonstrate the National Electricity Objective of maintaining network reliability to customers at the lowest sustainable cost to customers; and
2. Meet regulatory compliance requirements at the lowest cost to customers.

A Changing Operating Environment

One of SA Power Networks' core focus areas is pursuing "excellence in asset management and delivery of services."[1] The organisation must also aim to achieve the National Electricity Objective, which is "to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity."[2] The organisation is also operating in a dynamic environment and is facing a number of external and internal challenges:

External challenges

- Downward pressure on network pricing. South Australian electricity prices have increased 137.1% from September 2002 to September 2012[3]. There is increasing pressure on utilities regulators to see that prices do not increase by these rates in the future.
- Demand for energy in South Australia is expected to decrease over the next ten years[4]. This reduction in network utilisation will result in increased pressure on unit prices.
- As demand for energy decreases, there will be pressure to defer augmentation.
- There are increasing compliance requirements:
    - Environmental – vegetation clearance and bushfire risk minimisation
    - Regulatory – Australian Energy Regulator's Request for Information Notices
    - Statutory – continually evolving Work Health & Safety laws and regulations

  There is additional cost to SA Power Networks to comply with these new and changing obligations.

[1] SA Power Networks Strategic Plan, 2014 – 2018, page 10
[2] http://www.aemc.gov.au/electricity/electricity-market.html
[3] Cost of Living Update, South Australian Council of Social Service, No. 12, November 2012
[4] South Australian Electricity Report, AEMO, 2013

- The significant uptake in distributed generation (residential and commercial photovoltaic systems) and anticipated growth in other embedded generation sources is placing pressure on network assets and upward pressure on cost, due to the significant change in network flows.
- Customer expectations are growing in terms of expecting reliable supply and up-to-date data and transparency in the event of supply disruptions, without any additional cost. Current manually intensive and disparate systems mean an average of four hours is spent per customer quality of supply enquiry just to gather the relevant data. Customers will not tolerate having to wait extended periods to receive information about their supply queries.
- Asset intensive organisations around the world are moving toward adopting Asset Management Standard methodologies (PAS55 / ISO5500X) to improve management of their assets, and in doing so realising more value from those assets. This move has been supported by utilities regulators and is considered good industry practice.
- There is a growing trend away from maintenance management towards asset management requiring field resources to return detailed information in a timely manner to support asset management decision-making processes.

Internal challenges

- The aging network requires an increase in analytics and monitoring to ensure SA Power Networks can maintain the reliability of supply at the lowest possible cost.
- An aging workforce retiring and taking with them many years of corporate knowledge and expertise that must be efficiently passed on to the next generation. In addition to this is the growing requirement for this aging workforce to accept the changes modern technology brings with it.
- SA Power Networks has a low level of maturity with respect to Enterprise Architecture, Business Architecture, Process and Information Management. Further to this, the organisation is disconnected from technology solutions with downstream process issues the result of the lack of an integrated process.
- The processes and systems currently in place are dis-jointed with large amounts of data not being integrated, making it difficult to provide a single source of the truth and resulting in manual data transfers and limited analytical capability.

The Case for Change

SA Power Networks recognises that significant change is required in the way it manages its assets, both network and non-network:

- to achieve its strategic goal of excellence in asset management;
- to demonstrate achievement of the National Electricity Objective; and
- to meet the challenges of the dynamic operating environment it is working in.

SA Power Networks regularly reviews ways to achieve its objectives against the business environment it operates in, and has identified the following strategies to significantly improve the value proposition to customers:

1. Adopt an asset management process that is aligned to the ISO 55000 standard for Asset Management.
2. Develop an Enterprise Asset Management Roadmap that addresses:
    i. Extension of asset life

ii. Risk prioritised maintenance
iii. Increased workforce productivity
iv. Increase in the flexibility of the network to accommodate a variety of customer connections without undue constraint.
v. To ensure continuing compliance with Workplace Health and Safety regulations and ensure the safety of staff and customers.

To implement the above strategies requires significant uplift in capabilities in systems, processes, people and availability of data. SA Power Networks has considered options to implementing these strategies to deliver improved value to customers by either continuing with the current Business As Usual approach or to move towards Enterprise Asset Management.

1.2 Business Options Considered

SA Power Networks has considered the following options with respect to how it can take an Enterprise Asset Management approach across the whole organisation:

Option 0 -Do Nothing - This option maintains the current environment whereby SA Power Networks perpetuates the existing processes, people, systems, and data without any further improvement investment.

The current approach is characterised by:

- Siloed and non-integrated systems and tools
- Manual transfer of data between systems
- Multiple versions of the same data
- Low end-to-end process maturity across the asset lifecycle
- The difficulty and cost of providing transparency, repeatability and integrity of information and consistency of decisions.

This option will result in Regulatory non compliance beyond 2015 and the inability to demonstrate the National Electricity Objective and therefore considered not feasible on this basis.

Option 1 - Business As Usual (BAU) – This option utilises and extends the existing processes and systems in order to meet the requirements of the changing business environment including a move towards Enterprise Asset Management and alignment to ISO 55000. This option essentially uses significantly more labour and stand-alone systems in lieu of investment in improved systems to achieve the required asset management capabilities does not demonstrate the National Electricity Objective due to inefficiency.

Option 2 - A Balanced Approach towards Enterprise Asset Management – This option proposes to enhance and upgrade SA Power Networks' capabilities (process, people, systems and data) in order to move away from a siloed and non-integrated approach towards an Enterprise approach leveraging the capability of the existing SAP ERP system. As this represents a significant transformational change, the rate of change across business functions, capabilities and asset types will be balanced by an assessment of the realistic capacity of the business to absorb the rate of change.

The in scope improved capability required to support the EAM lifecycle includes:

- Asset Management Strategies and Asset Planning
- Design & Estimation
- Construction

- Operate and Maintain
- Decommission & Dispose
- Capabilities required across the lifecycle include:
  - Document & Records Management
  - Mobility for EAM
  - Asset analytics
  - Geo spatial enablement
  - Vegetation and bushfire management

The Enterprise Asset Management capability proposed under this option can be used for all assets held by SA Power Networks, that is, network and non-network assets. The scope of this option proposes to roll out the capability to network assets in the 2015-2020 timeframe, as this takes a balanced approach to implementing EAM, taking into account the amount of change the business will go through to adopt this capability. This option has the least cost and provides the best demonstration of the National Electricity Objective.

Option 3 - An Optimistic Approach towards Enterprise Asset Management – This option extends the capability uplift included in Option 2 and proposes a more aggressive implementation of solutions across business functions, capabilities and asset types that is balanced by an assessment of the maximum capacity of the business to absorb the rate of change. This option has the best NPV, but has the highest costs and high risks in implementation and delivering the estimated benefits.

1.3 Recommended Option

A summary of the options considered is provided in the following table:

Option		Total Cost[1 2]	NPV[2]	Overall Risk Rating	Benefits	Overall
0	Do Nothing	$38,024,265	-$26,391,191	HIGH	None	4
1	Business As Usual	$64,614,917	-$46,932,883	HIGH	None	3
2	Balanced Approach towards EAM	$26,932,147	$2,076,916	MEDIUM	Tangible Intangible	1
3	Optimistic Approach towards EAM	$74,802,390	-$6,174,727	HIGH	Tangible Intangible	2

[1] *Includes Delivery, Recurrent and Change Management Costs*

[2] *Calculated over 13 years from 2014/15 to 2026/27 at discount rate of 5.44%*

The overall rating has been assigned based on how each option rated against the following criteria:

- The total cost of the option
- The NPV
- The Overall Risk Rating

- What benefits the options deliver
- How the option aligns to corporate strategies and programs
- How the option aligns to IT strategy and programs
- How well the option aligns with NER expenditure objectives
- How well the option meets the NER expenditure criteria
- Whether the option meets the scope of the initiatives covered in this business case

The costings and NPV's have been calculated over a 13 year period from 2014/15 to 2026/27 to allow for ten years of benefits to be included in the NPV calculation.

The detailed work undertaken to consider the three options to meet the business needs outlined in this document is provided throughout this business case.

Based on this work, the recommendation is that the SA Power networks should aim to become an Enterprise Asset Management organisation by taking a balanced approach towards achieving this goal. This is considered to be a prudent and efficient investment, providing the most benefits to business in terms of satisfying its goal of achieving excellence in asset management, demonstrating the National Electricity Objective and meeting the challenges of the dynamic operating environment it operates in.

The detail for this option (Option 2) is provided under Section 4.4 of the Business Case.

Benefits of the Recommended Option

1. Extended asset life.
2. Increased ability to plan and predict future costs.
3. Better customer response times.
4. Better management of warranty claims.
5. Improved maintenance strategies.
6. Improved workforce productivity.
7. Improved vehicle and equipment productivity.
8. An enhanced, integrated vegetation management and bushfire management capability.

Timescale

Timescale Activity	Start Date	End Date
EAM Blueprint	1 Aug 14	30 Jun 15
Asset Data – Phase 1	1 Jul 15	30 Jun 16
Asset Data – Phase 2	1 Jul 16	30 Jun 17
Asset Data – Phase 3	1 Jul 17	30 Jun 18
Document and Record Management	1 Jul 15	31 Dec 15
Mobility	1 Jul 15	30 Jun 16
Condition and Maintenance Data	1 Jul 16	30 Jun18
Analytics – Phase 1	1 Jan 16	30 Jun 16
Analytics – Phase 2	1 Jul 17	31 Dec 17

Timescale Activity	Start Date	End Date
Analytics – Phase 3	1 Jan 19	30 Jun 19
Analytics – Phase 4	1 Jul 20	31 Dec 20
EAM Processes – Phase 1	1 Jul 16	30 Jun 17
EAM Processes – Phase 2	1 Jul 17	30 Jun 18
EAM Processes – Phase 3	1 Jul 18	30 Jun 19
Geo-enablement	1 Jul 19	30 Jun 20

Cost Estimates – Option 2 ($M Real 2013/14)

Financial Year	Capital Delivery and Change Management		Opex Step Change	*Total ($)*
	IT	Non-IT		
2014/15	0.517	0.287	0.000	**0.805**
2015/16	2.087	1.122	0.000	**3.209**
2016/17	3.473	1.845	0.318	**5.636**
2017/18	2.712	2.234	0.318	**5.264**
2018/19	1.531	1.270	0.318	**3.120**
2019/20	1.556	0.990	0.318	**2.864**
2020/21	1.111	1.429	0.570	**3.110**
2021/22	0.342	0.673	0.318	**1.333**
2022/23	0.000	0.000	0.318	**0.318**
2023/24	0.000	0.000	0.318	**0.318**
2024/25	0.000	0.000	0.318	**0.318**
2025/26	0.000	0.000	0.318	**0.318**
2026/27	0.000	0.000	0.318	**0.318**
Total Costs	**13.330**	**9.849**	**3.753**	**26.932**

The cost estimates for the 2015 - 2020 Regulatory Control Period are:

Delivery and Change Management Costs	Capex	$18,819,060
Opex Step Change	Opex	$1,273,386
		$20,092,446

Investment Appraisal

Option	Measure Type	Value
2	NPV (Net Present Value)	$2,076,916
	PI (Profitability Index)	1.1

Major Business Risks

The following risks have been identified with proceeding with this option:

1. Insufficient senior management support to roll out EAM due to under-estimating the effort required to make it a success.
2. Lack of understanding and provision for change management.
3. Insufficient training for all staff associated with the impact of new systems and processes, including new asset management strategies and standards.
4. Not implementing process change and system change simultaneously.
5. Lack of understanding of the initiatives in other business cases that impact on the success of EAM across the organisation.

SA Power Networks is confident that these risks can be managed to ensure the successful implementation of the initiatives outlined in this Business Case.

2. Reasons

2.1 Background

One of SA Power Network's core areas of focus is 'excellence in asset management and delivery of services.'[5] In response to the increasingly dynamic environment it is operating in, SA Power Networks commenced a number of initiatives to ensure its assets are managed to the extent that it can deliver on this core area of focus, and will be in a position to continue to do so in response to a range of internal and external challenges it is expected to deal with. These challenges are outlined in detail in Section 2.2.

The measures already undertaken to ensure the organisation is providing an improved capability towards asset management are:

1. The preparation of the SA Power Networks Enterprise Asset Management Roadmap. The roadmap was prepared in 2013 in conjunction with external consultants, Vesta Partners, and provides a recommended approach to establishing an Enterprise Asset Management capability that is necessary for the organisation to achieve its objective of excellence in asset management. Vesta Partners were engaged by SA Power Networks to prepare the Roadmap due to their global experience in Enterprise Asset Management, the SAP ERP system, and the Utilities industry. The document outlines the significant changes necessary in terms of establishing a transformation program 'aimed at delivering documented processes, reliable data, synchronized technologies and an enabled staff all working under the common direction of an Asset Policy and strategic plan.'[6]
2. The first step in the Roadmap is the establishment of an Enterprise Blueprint, which SA Power Networks is currently working on. The next step is the establishment of the Enterprise Asset Management Blueprint, which is due to commence in the second half of 2014.
3. A commitment to move the business towards the recognised standard ISO 55000 – Standard for Asset Management.
4. The establishment of a Management of Work program of initiatives, which has included:
    a. Agreement to move towards an integrated enterprise asset management solution;
    b. A commitment to take an enterprise process view across the organisation;
5. The implementation of a stand alone condition-based risk management tool.

The systems development and process changes already taking place are providing an improvement to systems, processes and data, giving SA Power Networks a much improved approach to asset management. This business case proposes to build on the work already completed by providing an Enterprise Asset Management capability across the organisation.

2.2 A Changing Operating Environment

SA Power Networks has identified in its 2014-2018 Strategic Plan the core focus area "Excellence in Asset Management and Delivery of Services" [7]. At the same time, the National Electricity Objective is to "to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity"[8]. This objective aligns with the SA Power Networks

[5] SA Power Networks Strategic Plan 2014-2018, November 2013, page 10

[6] SA Power Networks EAM Roadmap, 28 January, 2014, Vesta Partners, page 5.

[7] SA Power Networks Strategic Plan 2014-2018, November 2013, page 10

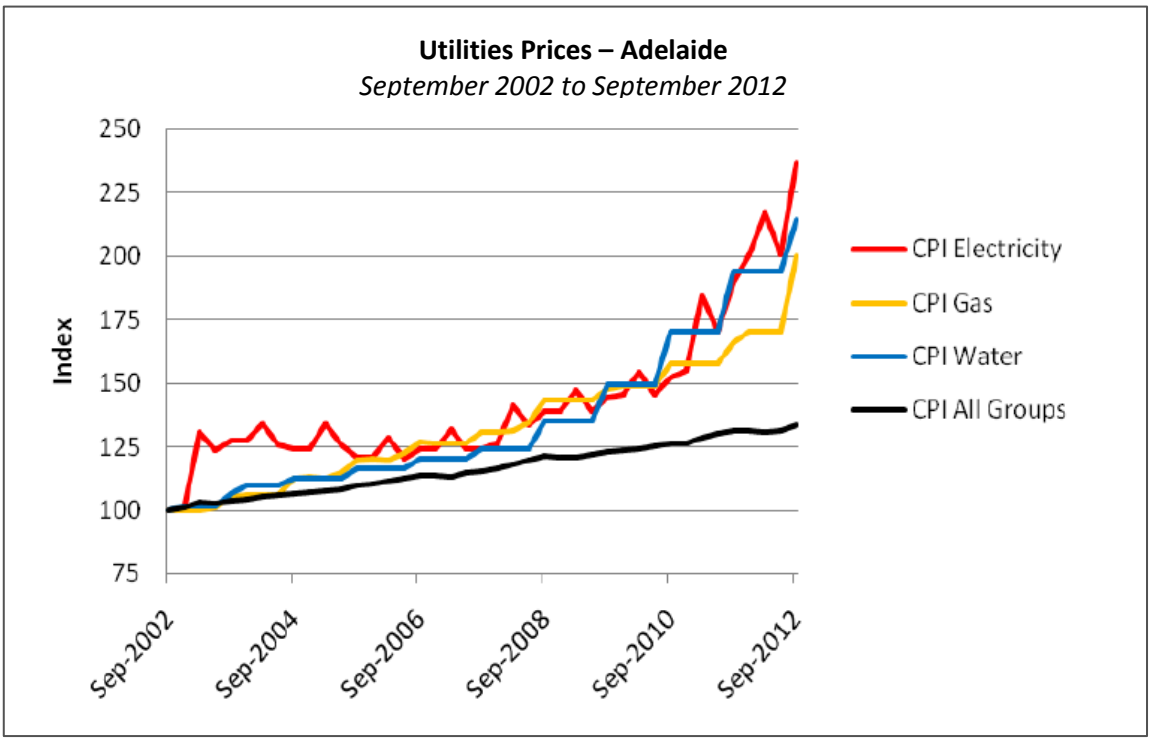
[8] http://www.aemc.gov.au/electricity/electricity-market.html

identified business driver of being a "cost efficient service provider"[9]. With increasing expectations of value for money by stakeholders of SA Power Networks, the current systems, processes and data do not give SA Power Networks the ability to demonstrate achievement against the National Electricity Objective.

Keeping these in mind, it is important to consider the current business environment that includes the following, and sometimes, conflicting challenges:

External challenges

- Downward pressure on network pricing. South Australian electricity prices have increased 137.1% from September 2002 to September 2012[10]. There is increasing pressure from consumers and welfare groups on utilities regulators to see that prices do not increase by these rates in the future.



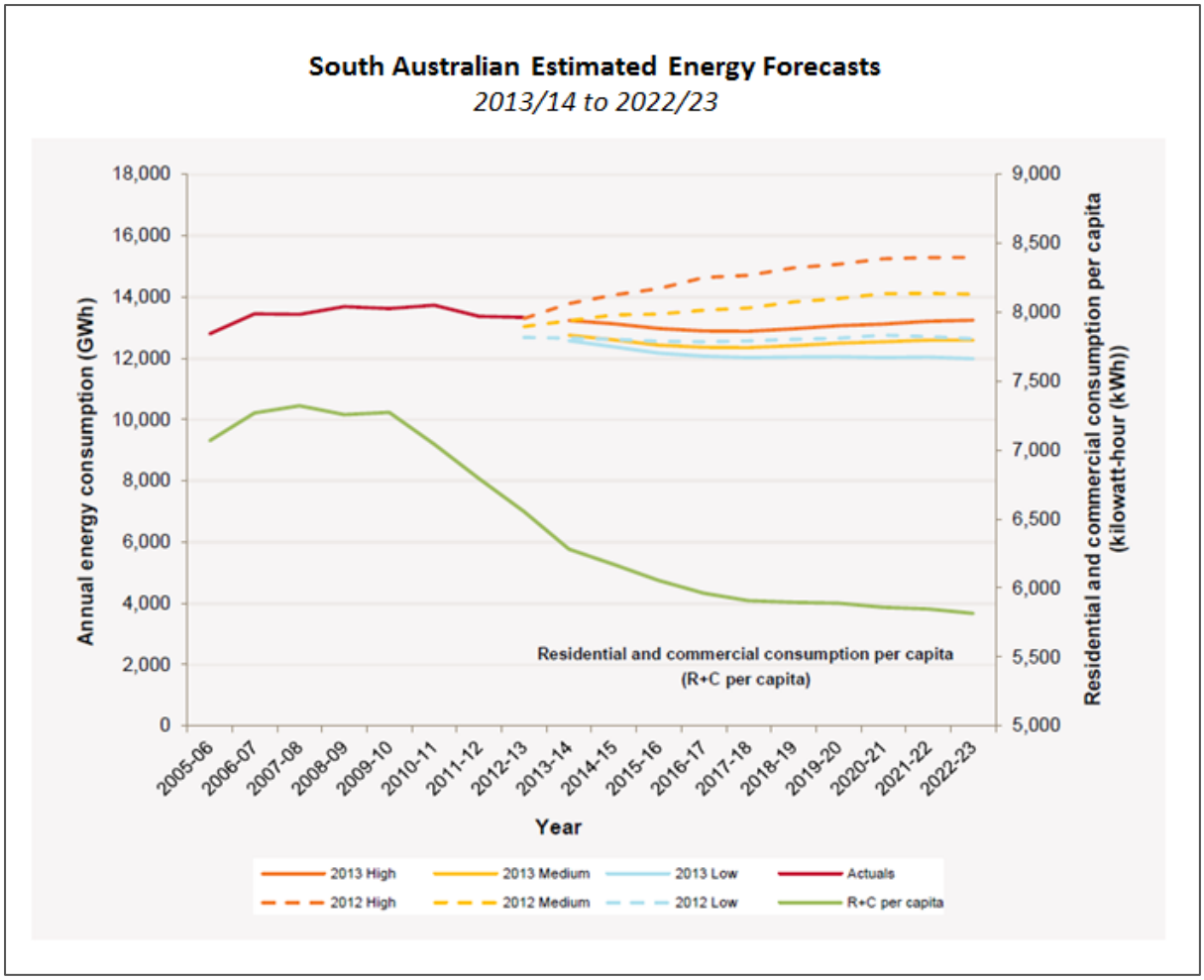
Source: Cost of Living Update, South Australian Council of Social Service, No. 12, November 2012

- Demand for energy in South Australia is expected to decline over the next ten years, with a decrease of 0.1% estimated over the 2013/14 to 2022/23 period, and a significant drop in per capita consumption[11]. This reduction in network utilisation will result in increased network unit price pressure.

[9] SA Power Networks Strategic Plan 2014-2018, November 2013, page 10

[10] Cost of Living Update, South Australian Council of Social Service, No. 12, November 2012

[11] South Australian Electricity Report, AEMO, 2013



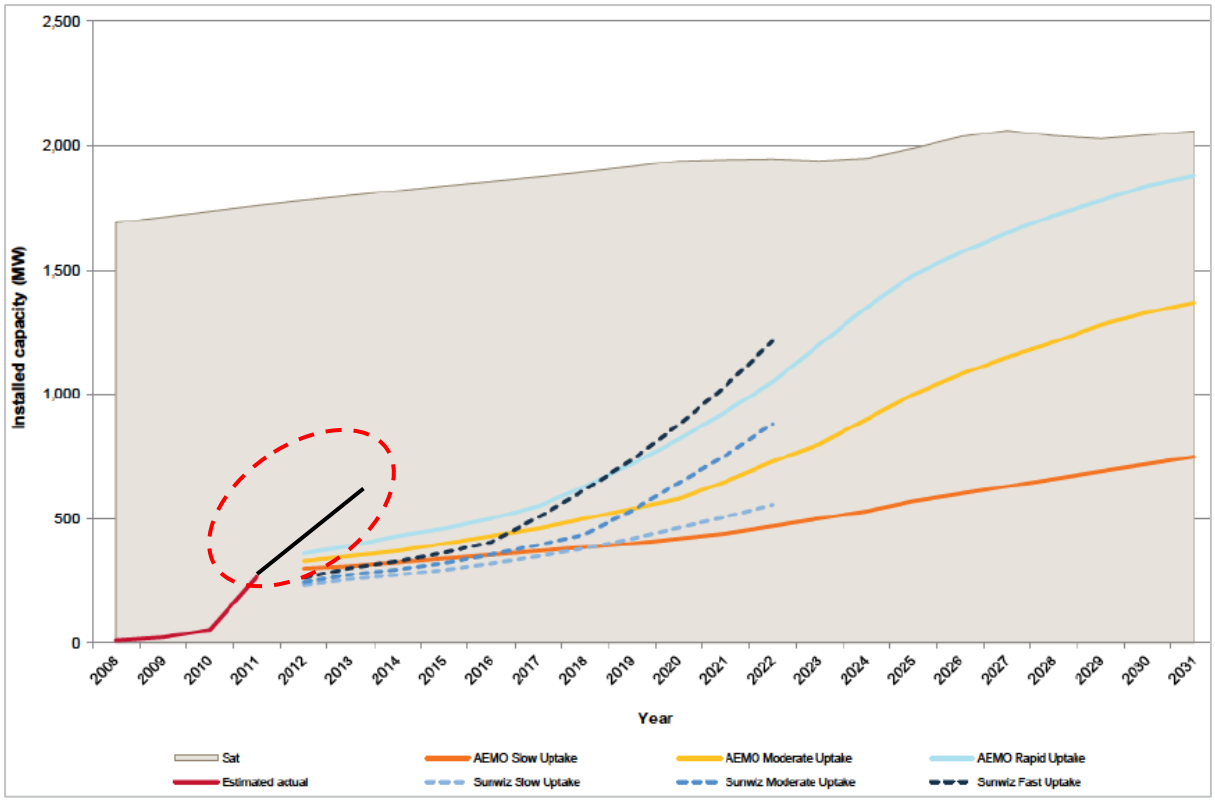
Source: South Australian Electricity Report, AEMO, 2013

- As demand for energy declines over the next ten years, there will be pressure to defer augmentation expenditure.
- There are increasing compliance requirements:
  - Environmental – vegetation clearance and bushfire risk minimisation
  - Regulatory – Australian Energy Regulator's Request for Information Notices
  - Statutory – continually evolving Work Health & Safety laws and regulations

  There is additional cost to SA Power Networks to comply with these new and changing obligations.
- The significant uptake in distributed generation. The chart below shows a 2012 AEMO forecast for rooftop PV installed capacity in South Australia[12]. The circled black line shows the actual uptake of PV installations increased capacity to 548MW by the end of 2013[13], significantly more than even AEMO's rapid uptake. Anticipated growth in other embedded generation sources is also expected to place additional pressure on network assets and upward pressure on cost, due to the significant change in network flows.

[12] *Rooftop PV Information Paper, AEMO, 2012*

[13] *www.reneweconomy.com.au, Uptake of Rooftop Solar PV Surges in South Australia in Second Half of 2013, Giles Patterson, 24 February, 2014.*



Source: Rooftop PV Information Paper, AEMO, 2012

- Customer expectations are growing in terms of expecting reliable supply and up-to-date data and transparency in the event of supply disruptions, without any additional cost. A CSIRO report published in 2013 stated 'It is also envisaged that customers might increasingly expect energy distribution system operators (DSOs) and retailers to do more than keep the lights on, meter energy usage and bill for that usage accurately.[14]'

  Current manually intensive and disparate systems mean an average of four hours is spent per customer quality of supply enquiry just to gather the relevant data. Customers will not tolerate having to wait extended periods to receive information about their supply queries.

- There is a growing trend away from maintenance management towards asset management requiring the field resources to return detailed information in a timely manner to support asset management decision-making processes.

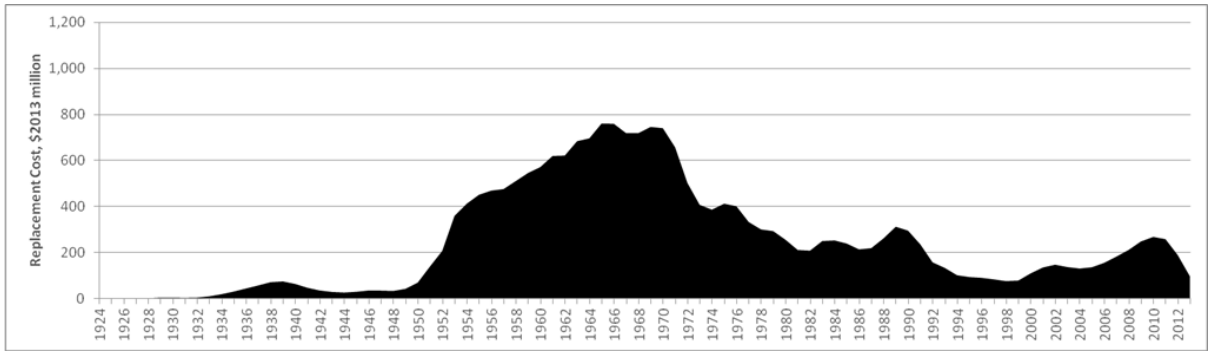
- Asset intensive organisations around the world are moving toward adopting Asset Management Standard methodologies (PAS55 / ISO5500X) to improve management of their assets, and in doing so realising more value from those assets. This move has been supported by utilities regulators.

Internal challenges

- The aging network requires an increase in analytics and monitoring to ensure SA Power Networks can meet its obligation to maintain the reliability of supply at the lowest possible cost to customers.

[14] *Understanding the residential customer perspective to emerging electricity technologies, CSIRO, July 2013, page 19.*

The chart below is an estimated age profile of SA Power Network's network assets (a multiplication of asset number by year with unit replacement cost and then smoothed to remove spikes), and clearly shows the majority of assets are now over 40 years old.



Source: SA Power Networks

- An aging workforce retiring and taking with them many years of corporate knowledge and expertise that must be efficiently passed on to the next generation. In addition to this is the growing requirement for this aging workforce to accept the changes modern technology brings with it.
- SA Power Networks has a low level of maturity with respect to Enterprise Architecture, Business Architecture, Process and Information Management. Further to this, the organisation is disconnected from technology solutions with downstream process issues the result of the lack of an integrated process.
- The processes and systems currently in place are very complex, with applications requiring multiple interfaces to support existing business processes, and large amounts of data not being integrated, making it difficult to provide a single source of the truth and resulting in manual data transfers and limited analytical capability.

These challenges drive the need for the business to increase the level of analytical capability in order to assist with the determination of the best value for asset management investment decisions.

Even though the current processes and systems have adequately managed SA Power Networks' assets in the past, the change in the business and the dynamic operating environment it now operates in means a step change is necessary to provide a suitable foundation to meet the National Electricity Objective and deliver the identified business drivers and vision.

It is for these reasons that SA Power Networks needs to consider improvements required to meet business goals, AER's objectives and the changing operating environment. SA Power Networks requires significant business transformation to embed and govern common processes, integrated and aligned systems, reliable data and knowledgeable people.

2.3 Objectives

Given the increasingly challenging business environment SA Power Networks is operating in, it will be seeking to extend the average Asset Life through improved maintenance practices and by the adoption of a whole of asset approach. The objective of this business case is to propose a recommended solution with respect to how it can achieve this. When considering the options, SA Power Networks will need to consider ways to improve the following three key Asset Management capabilities:

1. Asset Management Accountability

- Adoption of International Asset Management Standard ISO 55000 as the Asset Management Policy and Strategy and the development and modification of supporting business processes.
- Clarify and agree asset management roles, responsibilities and accountabilities across the business.
- Ensure the roles across the business have the appropriate level of capability, both in terms of requiring a significant amount of training and also by way of a cultural shift in order to achieve the asset management objectives, rather than replicating or extrapolating current practices.
- Preparation of an Enterprise Asset Management Blueprint, including roadmap. This Blueprint will set a sound foundation for the successful implementation of the subsequent project phases. The Blueprint must take a business process approach to the design of the solutions required to lift the business capability. This design includes the business process, people, systems and data requirements and establishes a solid foundation upon which to move forward. To maximise the benefits, this blueprinting will require a cultural shift by the business to ensure the new intentions can be realised rather than simply replicating and extrapolating from the current state.

2. Asset Information Management

- Improve the asset data capture processes and maintain reliable asset related information to inform and improve asset management decision making.
- Improve the process by which the data directly associated with an asset is created, maintained and displayed, including:
  - Maintenance views
  - Geo spatial views
  - Connectivity views
  - Customer views
  - Operational views
  - Financial views
  - Environmental views
- Improve the process by which asset condition and performance data is created, maintained and displayed, including:
  - Historical asset condition and performance data
  - Planned and completed work history
  - Historical quality of supply data (load and voltage)
- Develop and implement appropriate data/ information management governance capability across the business.
- Develop the appropriate level of integration with the financial asset register.
- Ensure the functional requirements to enable asset analytic are met, including probability of failure, connection point reliability and whole of life costs.

- Ensure the functional requirements to enable investment modelling are met.
- Ensure the functional requirements to enable Level of Service (LoS) Performance reporting are met.
- Ensure the functional requirements to enable Business Risk management are met.
- Ensure the functional requirements for a vegetation management system are met to track and monitor vegetation and growth rates over time.

3. Asset Lifecycle Management

- Improve the businesses capability to manage assets from a 'whole of life' perspective, that is, from asset planning and design through to disposal.
- A number of other Business Cases (identified below) address capabilities to address this key whole of life view of an asset. Therefore, all initiatives associated with these business cases must understand the nature of the resulting inter-dependencies:
  - BC04 Financial Management
  - BC05a Supply Chain & Procurement
  - BC05b Project, Program and Portfolio Management
  - BC09 SAP Foundations
  - BC10 Integrated Design & Estimation
  - BC11 People and Culture
  - BC16 Field Force Mobility
  - BC21 Business Intelligence Enablement
  - BC32 Regulatory Compliance
  - BC02a Customer Facing Initiatives
  - BC18 Systems Integration
  - BC24 Enterprise Document and Content Management
- The following business and technical capabilities required across the asset lifecycle will be addressed within the scope of this business case:
  - Document & Records Management for EAM
  - Mobility for EAM
  - Asset Analytics
  - Geo spatial enablement of the processes

2.4 Relationship to Business Strategies and Programs

The project contributes to achievement of strategic objectives as described below.

Table 1 Contribution to corporate strategic objectives

Corporate Strategic Objective	Contribution
Delivering on the needs of our shareholders, by achieving our target returns, maintaining the business' risk profile, and protecting the long term value of the business	*By taking an EAM approach to asset management, SA Power Networks will have the right people, processes and systems to manage its assets as efficiently and cost effectively as possible. This will help to provide shareholder value, manage business risk to acceptable levels and maximise the value of the company's assets.*
Providing customers with safe, reliable, value for money electricity distribution services, and information that meets their needs	*By taking an EAM approach to the management of its assets, SA Power Networks will integrate its people, processes and systems to provide a well-trained workforce that will be responsible for optimising equipment performance, improving reliability and prioritising asset maintenance. These factors will lead to a safer, more reliable service that will provide greater value to its customers.*
Maintaining our business standing in the community as an exemplary corporate citizen of South Australia	*By investing in the initiatives detailed in this Business Case, SA Power Networks will be demonstrating its commitment to providing South Australia with electricity distribution services that are supported by a best-practice approach to asset management.*
Ensuring that our workforce is safe, skilled and committed, and that our resourcing arrangements can meet our work program needs	*EAM is centred on ensuring assets are managed throughout their entire life-cycle by a workforce that understands safety and is skilled enough to ensure the value of assets is maximised. EAM provides the tools to help ensure SA Power Networks' work program is adequately resourced.* *The additional benefit of EAM is to minimise the amount of unnecessary asset maintenance, further ensuring that necessary work programs are adequately resourced.* *The implementation of the EAM content will increase the level of safety for our employees through more efficient 'tagging' of the asset and also allows for environmental improvements through increased use of asset attributes and available functionality.*
Maintenance and development of key capabilities that will help sustain our success into the future	*A critical part of SA Power Networks' EAM approach is to provide adequate and continuous training to staff. This will ensure a minimum standard and skill level is developed and maintained across the workforce to ensure SA Power Networks develops as an organisation that understands the importance EAM has in terms of providing a world-class electricity distribution service now and into the future.*

Table 2 Contribution to corporate core areas of focus

Corporate Core Areas of Focus	Contribution
Energised and responsive customer service	*One of the central aims of EAM is to optimise an asset's reliability, the result of which will be to ensure customers are provided with the best possible electricity distribution service. EAM also covers Outage Management, which means in the event of disruption to services, SA Power Networks is able to best manage its resources to ensure disruption to the service is minimised, while at the same time keeping customers fully informed.* *The ability to geo-spatially understand where an asset is located and its condition in terms of the network, customer and future maintenance and capital plans will increase the ability for SA Power Networks to 'bundle' work appropriately and so maximise the benefits to customers.*
Excellence in asset management and delivery of service	*Asset intensive organisations such as electricity distributors should always be looking at ways to maximum their return on their equipment investments. To do this, they seek to optimise asset reliability, utilisation rates and useful life, while at the same time maintain those assets as cost effectively as possible.* *By implementing the initiatives outlined in this Business Case, SA Power Networks will have the people, processes and systems to be able to achieve this, meaning it will be able to provide world-class asset management and delivery of service.*
Growth through leveraging our capabilities	*SA Power Networks has already invested extensively in its people, processes and systems. By further enhancing its existing capabilities, it will be able to cater for the growth in the demand for its services into the future.* *Three areas where its existing capabilities will be enhanced are:* *i. Redefined business process that will ensure safety, deliver consistent results and support efficient planning;* *ii. Re-configuration of the existing corporate ERP system to provide an integrated and comprehensive EAM solution, while at the same time reducing the number of other applications that are used. This will have the benefit of eliminating some of the unnecessary complexity that currently exists.*

Corporate Core Areas of Focus	Contribution
	iii. *Providing adequate training to staff to make sure SA Power Networks has a skilled workforce to support its commitment to providing excellence in Network Infrastructure Management.*
Investing in our people, assets and systems	*In order to ensure the success of implementing EAM, SA Power Networks will need to invest in its people, assets and systems. The investment necessary in each of these areas has been detailed in the SA Power Networks EAM Roadmap[15], and can be summarised as follows:* i. *People – SA Power Networks is committed to providing the necessary training (upfront and ongoing) to its workforce so that it has the skills to ensure the success of the initiatives that make up the EAM Business Case.* ii. *Assets – the purpose of EAM is to make sure SA Power Networks' asset are managed throughout their entire lifecycle to maximise their value to the organisation.* iii. *Systems – existing systems will be enhanced and configured to provide the systems functionality that is necessary for an integrated and comprehensive to EAM.*

Table 3 Contribution to IT strategic objectives

IT Strategic Objective	Contribution
Ensure technology, systems and processes support SA Power Networks long-term business direction	*Establishing SA Power Networks as an organisation committed to a full EAM approach to the way it manages its assets will set up the organisation now and into the future as a leader in electricity distribution and infrastructure in Australia. Technology, systems and processes will all be enhanced and developed to support this objective, which forms part of the organisation's Strategic Plan 2014 – 2018.*
Ensure IT governance, planning and reporting are aligned with SA Power Networks strategy	*The initiatives outlined in this Business Case will be carried out in accordance with IT's standard approach to all projects, which will ensure the correct governance, planning and reporting controls are in place.*

[15] SA Power Networks EAM Roadmap, version 4.3, 28 January 2014, Vesta Partners

IT Strategic Objective	Contribution
Partner with other business departments to deliver value through technology	*IT will be working closely with other business departments to ensure the EAM initiatives are successfully completed and deliver the expected value by providing the required technology. Initially, the focus will be on partnering with Network Services, but as the organisation broadens the EAM approach, it will work with other business areas to provide the technology to support SA Power Networks becoming a full EAM organisation.*
Ensure our people are informed and engaged, and have the right skills aligned with business objectives	*One of the critical elements of implementing the EAM initiatives detailed in this Business Case is the adequate training of staff to ensure they have the skills to make EAM at SA Power Networks successful. An extensive training program has been recommended as part of these initiatives, and it is important that this is coupled with the correct approach to change management across the organisation. The importance of this should not be under-estimated, and the commitment from business leaders across SA Power Networks will be essential to ensure its success.*
Improve efficiency of our processes in line with good industry practices	*Another key part of successfully deploying EAM at SA Power Networks is ensuring business processes are reviewed and updated to support the systems that will be provided.* *Having a combination of the correct business processes and systems in place will contribute to a best-practice environment in terms of the organisation being positioned to provide excellence in Network Infrastructure Management.* *In recognition of this, SA Power Networks is planning to establish its approach EAM in a manner that will comply with the International Standard for Asset Management (ISO 55000).*
Continually identify and manage IT-related business risks to reduce potential business impact	*The main IT-related business risk in relation to the EAM Business Case is the ability of IT to contribute to the improvement and support of the EAM systems. The continuing success of EAM will be dependent on the organisation investing in developing the necessary skills and knowledge in the relevant systems to provide the necessary expertise. This will need to be very closely managed by IT to make sure it has provided the skills to make EAM across SA Power Networks a success.*

2.5 Relationship to National Electricity Rules Expenditure Objectives

Table 4 Contribution to the National Electricity Rules expenditure objectives

National Expenditure Objectives	Contribution
Meet or manage expected demand over the period (NB: this is community demand for electricity not demand for IT Services)	
6.5.7(a)(2) comply with the applicable regulatory obligations or requirements associated with the provision of Standard Control Services	*The proposed expenditure seeks to implement mandatory changes required to SA Power Networks systems in response to AER RIN reporting requirements. This will enable SA Power Networks as a market participant to:* *1) Achieve increased completeness and accuracy of actual historical data and reduce requirement for use of estimates; and* *2) Meet and maintain RIN reporting compliance going forward.*
Maintain the quality, reliability and security of supply of services provided by SA Power Networks	*The primary reason SA Power Networks is looking to implement EAM initiatives coupled with implementing ISO 55000 is to provide excellence in Network Infrastructure Management. By doing this, it will have the systems, processes and people to be able to maintain the quality, reliability and security of supply, as effectively and efficiently as possible.*
Maintain the reliability and security of the distribution system i.e., the electricity network.	*By taking an EAM approach to the management of its assets, SA Power Networks will have:* • *documented best-practice processes;* • *supporting systems and technology; and* • *enabled staff* *to be able to provide optimum maintenance with respect to its electricity assets. This will ensure a reliable and secure electricity network for all South Australians both now and into the future.*

2.6 Meeting the National Electricity Rules Expenditure Criteria

Please specify (at a very high level) how adherence to these criteria is demonstrated throughout this business case.

Table 5 Activities to Meet the National Electricity Rules expenditure objectives

National Expenditure Criteria	Activity
Cost of a prudent operator	*Many utilities are facing the same challenges that SA Power Networks is facing with respect to its infrastructure, field force management, new technologies, and compliance and regulatory obligations. Utilities are looking at ways to best meet these challenges as efficiently and effectively as possible while maintaining a high level of service to its customers. The cost of implementing these EAM initiatives is seen as a cost-effective and long term investment in the future of SA Power Networks' ability to continue to meet these challenges.*
Efficient cost of achieving the objective(s)	*SA Power Networks has engaged consultants who are expert in the field of EAM for utilities (Vesta) to prepare its EAM Roadmap and to provide some costings for the training of staff. It has also consulted extensively with its ERP vendor, SAP, who have independently prepared costings for the systems and technology that IT will be expected to deliver as part of this Business Case.* *Both Vesta and SAP have extensive industry experience and able to provide realistic and efficient cost estimates based on their knowledge and experience with EAM in other electricity utilities.* *A range of options have been considered and discussed in detail by Vesta, SAP, and SA Power Networks, with the most appropriate recommendation forming part of EAM Roadmap prepared by Vesta. A Do-Nothing option has also been considered, and is outlined in Section 4.1 of this Business Case.*
Realistic expectation of forecast and cost impact	*SA Power Networks is facing the challenge of an asset base made of up aging infrastructure, meaning rising maintenance costs and the risk of decreasing reliability and the possibility of higher failure rates.* *SA Power Networks intends to enhance existing technologies and systems to provide an EAM approach that will be able to best manage these challenges and risks as cost-effectively as possible.* *The cost of implementing these EAM initiatives to deal with these challenges and risks have been calculated in conjunction with external consultants (Vesta and SAP), who are experts in this area, with particular skills and experience in the electricity utilities sector.*

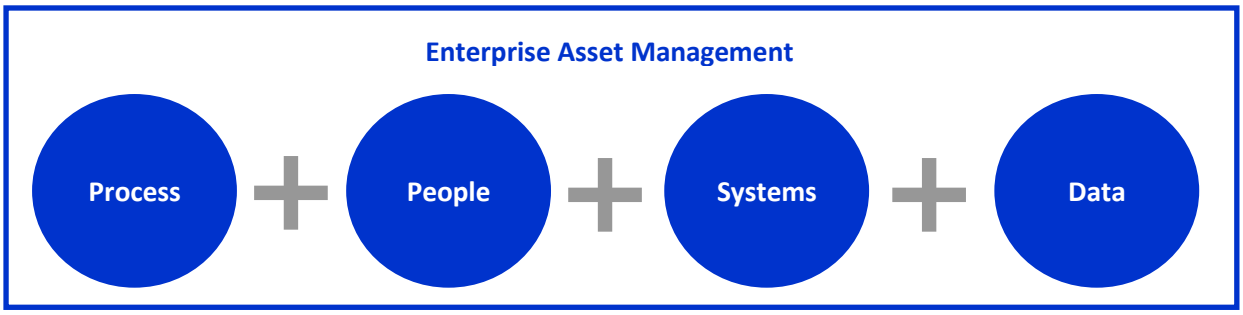
3. Scope

3.1 What is Enterprise Asset Management?

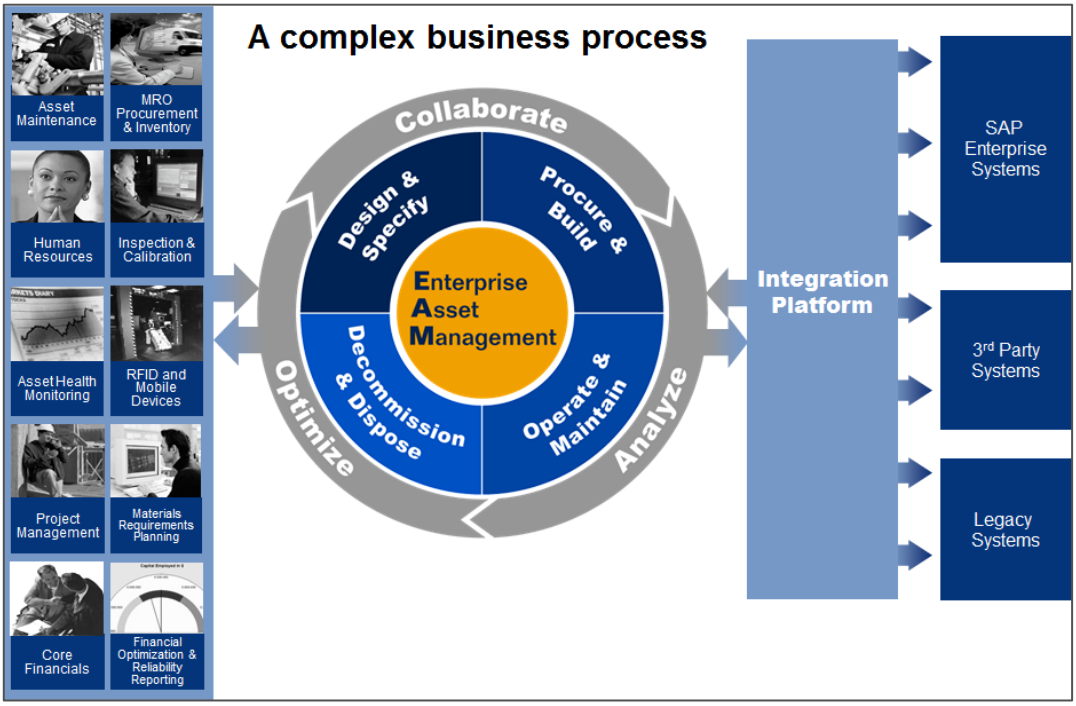
Enterprise Asset Management (EAM) has been defined as:

"the whole of life optimal management of the physical assets of an organization to maximize value. It covers such things as the design, construction, commissioning, operations, maintenance and decommissioning/replacement of plant, equipment and facilities. "Enterprise" refers to the management of the assets across departments, locations, facilities and, in some cases, business units. By managing assets across the facility, organizations can improve utilization and performance, reduce capital costs, reduce asset-related operating costs, extend asset life and subsequently improve ROA (return on assets)[16]."

It is important to note that EAM is not an just an IT System - it is the business processes and enabling people, systems and data required to optimally manage an organisations asset's throughout the entire asset lifecycle.



EAM is a very complex process with multiple processes that must be integrated to fully maximise the associated benefits, as can be seen from the following figure:

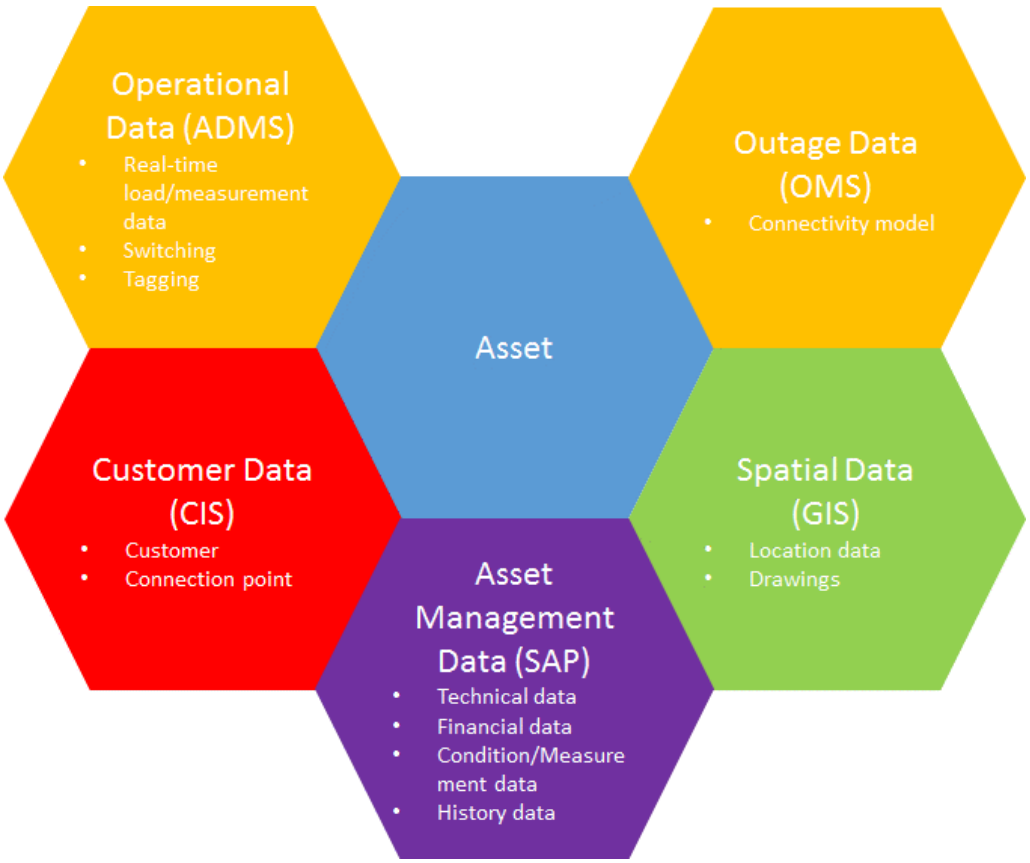


Source: Dr. Walter G. Kienle, Chief Solution Expert EAM, IBU Utilities, SAP AG, 2010

[16] http://en.wikipedia.org/wiki/Enterprise_asset_management

The foundation piece to EAM is the reliable and efficient access to unified and accurate data. This in turn allows for better business process integration, timely decision making and streamlined process execution. SA Power Networks currently has asset management related data stored in multiple, disconnected systems and databases and has a heavy reliance on MS Excel to consolidate and bring data together. To maximise the benefits of adopting an EAM approach requires an integrated landscape of corporate systems, each with asset centric data elements that traditionally have operated as largely stand-alone systems.

The following diagram depicts five key systems within the SA Power Networks landscape that are critical from an Enterprise Asset Management point of view:



The very high level outline above indicates a long journey of enablement for organisations with a low level of EAM maturity. Despite this, there are a number of industry trends emerging for Utilities across the globe and EAM and the associated capabilities can be recognised as part of the changing landscape. The ISO 55000 Asset Management Standard recognises this and challenges the whole organisation to understand how the management of assets aligns with strategic objectives.

Organisations that have adopted a similar approach towards enterprise asset management include:

- China Light & Power (Hong Kong)
- National Grid (U.K.)
- HydroOne (Canada)
- EDF Energy (U.K.)
- EBS Networks (U.K.)
- Ausgrid (Australia)

3.2 Scope Inclusions

Enterprise Asset Management (EAM) can be described as the whole of life management of an organisation's physical asset base. By utilising a life cycle approach for its assets, organisations consider the end-to-end process from strategy, design and estimation, procurement and construction, operate and maintain, decommission and dispose, irrespective of the class of asset./

This Business Case presents options around how SA Power Networks can best implement the proposed improved capability required to enable the business to achieve an uplift in the way it manages the entire asset lifecycle, maximises its use and productivity and ensures adherence to enterprise and regulatory procedures.

The scope of the long term business requirements that will deliver the improved capability is:

1. **Data**

- The ability to create, edit and display asset data attributes from a single access point.
- The ability to relate assets to connections (including customers, embedded generation) in both a spatial and network connectivity dimension.
- The ability to create, edit and display asset condition and performance data.
- The ability to aggregate assets into Network or Fleet, e.g., pole – span – feeder – substation – connection point. This is termed "linear asset management".
- The ability for on-line condition monitoring information to be captured automatically in databases associated with the assets.
- The ability to capture Regulatory reporting data, for example for Regulatory Information Notices.
- The ability to capture data necessary for vegetation management, including vegetation growth rates, saplings per span and actual clearance achieved per span.
- The ability to capture any other data inputs required by analytic tools.

2. **Mobility**

- The enablement of Mobile resources to create, edit and display asset data, condition and performance data in a spatial and network dimension.
- The ability to obtain manuals to support work practices.
- An integrated document and records management that includes drawings, job folders, asset history, photos, Network Access Requests.
- Integrated systems to assist the management of workplace safety.

3. **Analytics**

- To enable Business Analytics such as probability of failure, failure mode and effects, reliability centred maintenance, connection point reliability, whole of life costs, business risk exposure and performance reporting.
- The ability to forecast future key measures, for example, condition, reliability, demand, costs and risks.
- The ability to analyse at multiple levels for linear assets, for example, network assets.

- The ability to identify efficient maintenance work bundling by risk priority.

4. Investment Option Modelling

- To enable the modelling of different investment optimisation strategies, for example, replace versus maintain (CBRM), and maintenance prioritisation via business risk exposure reduction.
- The ability to be able to rank non-mandatory investments in a consistent manner across all investment types.

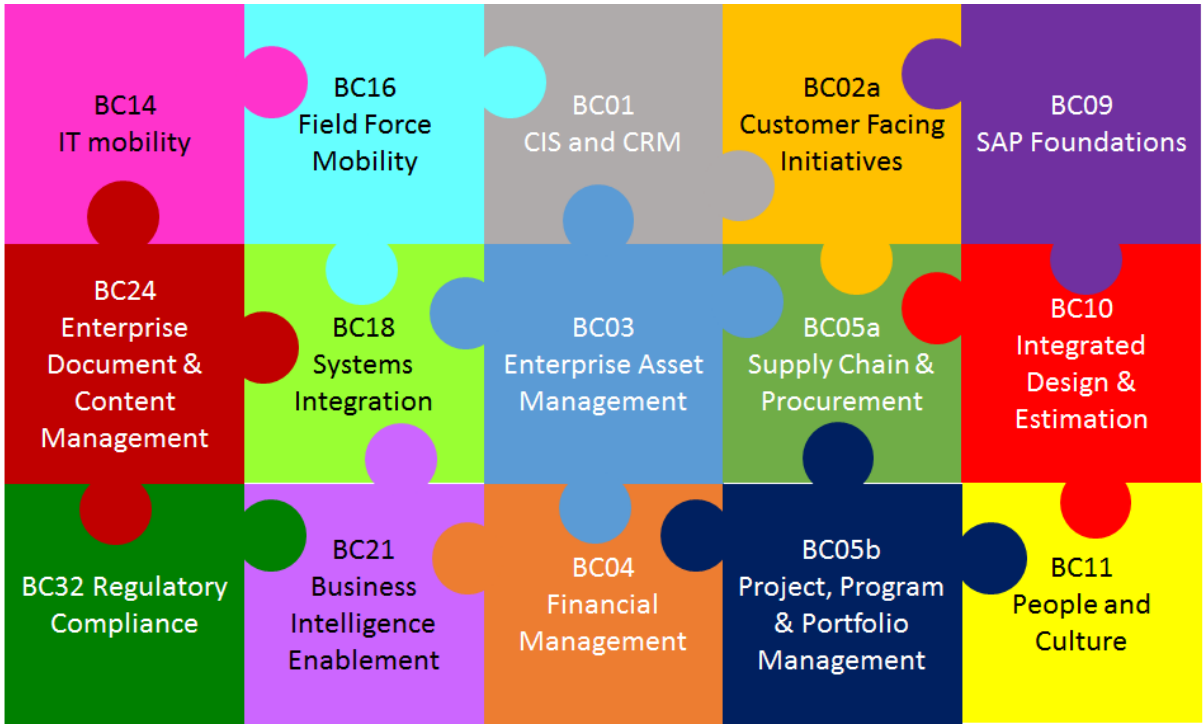
5. Reporting

- To enable maintenance tasks automatically triggered by asset condition status.
- To ensure Regulatory compliance reports are on time and auditable.
- To enable metrics that impact on and roll-up to SA Power Networks' Levels of Service (LoS).
- To enable automated reporting and trending of the status and performance of asset management programmes in terms of earned value, cost, progress and risk, for example, vegetation programme, maintenance, audits and tests.

3.3 Dependencies and Overlap

For SA Power Networks to adopt a total Enterprise Asset Management approach across the organisation, there are a number of other areas in the business that will need to change and/ or will be impacted by the way it plans to manage its assets in the future.

Enterprise Asset Management should not be confused with the tools that enable it. Asset Management is a set of processes that manage assets through their lifecycle. These processes must be implemented in a pragmatic way and to be effective and truly embed the changes that are significant in terms of culture and systems we need to take a continuous improvement approach.
Enterprise Asset Management comprises many functional capabilities that have been identified and are contained within the business cases outlined in the figure below.



The following discussion outlines the key dependencies between the related business cases:

- BC01 CIS and CRM
    - The current CIS O/V system is interfaced with SAP with respect to the Customer Connection activity with 'Work Orders' being duplicated in both systems.
    - The current SAP functionality relies upon SAP standard configuration as well as a level of 'enhancements' that will continue to be required unless SA Power Networks adopts the available 'Utilities' specific functionality available in the industry specific solution.
    - The level of integration regarding the Customer data is rudimentary at current and requires an uplift including customer, connection point, asset and work.
- BC02a Customer Facing Initiatives
    - Customer facing initiatives such as 'Power at My Place' and the Single Light Out Process will be improved with the greater level of customer & asset data integration, offering even greater opportunities in the future.
    - The REX application used for Customer Connections will also require modification dependent upon the selection of CIS and the resulting trigger for work in SAP.
- BC04 Financial Management
    - The definition of an asset for Asset Management and Financial purposes needs to be defined. This level is unlikely to be the same, however there does need to be a systematic linkage between the physical asset used for asset management purposes and the financial asset used for depreciation purposes.
    - There needs to be an understanding of the financial requirements for Regulatory and Operational Reporting and how these attributes are captured throughout the

business processes, and this must be built into an over-arching design across the landscape.

- BC05a Supply Chain and Procurement
    - With an improved maintenance program a maintenance plan is established for each asset from the beginning and resource requirements defined for maintenance activities via the use of compatible units well in advance. This in turn allows for a greater degree of inventory planning and should be built into the Supply Chain and Procurement processes. The MRP processes may be able to be executed in a more scientific manner.
    - With an accurate understanding of materials consumed on unplanned work the historical consumption patterns will enable greater forecasting capability.
    - The material master for major equipment items should include 'asset' related attributes that are collected when defined by the Network Standards group. This data may then be systematically passed on to the 'equipment' master for asset management (SAP) and operational purposes (ADMS)
- BC05b Project, Program and Portfolio Management
    - In order for the maintenance program to be managed it is imperative that the business may visually manage the program and quickly understand the associated risk profiles for work. This implies and effective integration of maintenance tasks into the program & portfolio at a level that makes sense.
    - This business case also includes uplift in the capacity planning, scheduling and dispatch functions. These capabilities are a key component of an EAM landscape and drive significant benefits in utilisation.
- BC09 SAP Foundations
    - This business case includes an upgrade to the hardware and an upgrade to the User Interface. It is imperative for user acceptance that the newer technologies are available in order to improve the user experience.
- BC10 Integrated Design & Estimation
    - The integration of design with GIS must include the asset layers in GIS with applicable statuses – in service, in construction, planned etc. To enable this all work must be assigned to assets through the lifecycle.
    - The output of the design & estimation process should trigger the creation of 'assets' at the agreed level, with the applicable status in the GIS and also in the ERP. This integration starts with the definition of Compatible Units used in the estimation process. Attributes assigned to the material items and/or compatible unit should be systematically passed to the ERP on the creation of the technical objects used to represent the asset.
- BC11 People and Culture
    - The integration if the organisation structure managed in the ERP is critical for the Approval processes utilised throughout the lifecycle of work.
    - The integration of the resources and their availability is critical in the support of the asset lifecycle, including estimation, capacity planning, scheduling & dispatch.

- BC14 IT Mobility
    - The Mobility framework is an essential pre-requisite to the EAM Mobility initiatives. The current approach to mobility in SA Power Networks is disparate resulting in a number of frameworks and applications. The result of this being a user may have multiple devices in the field or may be required to toggle through multiple applications in the course of their day.
- BC16 Field force Mobility
    - It is essential that this initiative is integrated with EAM Mobility and that there is a lifecycle approach. Field Force Mobility must be more than time sheeting and will need to include confirmations of other resources consumed, confirmation of output quantities for standard tasks (i.e. unit costing), ability to capture and view asset attribute and condition data etc.
- BC18 Systems Integration
    - The integration of large corporate systems such as SAP, ADMS, OMS, GIS and CIS O/V is critical to the success of an EAM approach. This includes the ability to simplify asset data entry & maintenance for the users as well as the ability to utilise the power of these systems to improve the efficiency of the business processes.
- BC21 Business Intelligence Enablement
    - This enablement is a critical pre-requisite piece of the puzzle. Without the analytical capability the significant and growing data quantities will not allow the business to extract the benefit of taking an EAM approach.
- BC24 Enterprise Document and Content Management
    - Again this foundation technology is a critical pre-requisite. The EAM business case will be asking users to capture a large amount of data and systematically link that data to technical objects that represent the assets and work objects. This data takes on many different forms including documents such as e-drawings, equipment schematics, CAD drawings, and photographs.
    - It is essential to the efficient business process that a user may simply access this required information about an asset whether at head office or in the field by accessing the content via an asset of a piece of work (order/project0 associated with that asset.
- BC32 Regulatory Compliance
    - The AERs benchmarking and category analysis Regulatory Information Notices are asking for a level of information that is currently not available from the SA Power Networks Corporate systems. This information is a combination of financial, asset, work (order/project), site/location, and output (unit costs) specific data.
    - It is imperative that an over-arching business & solution architecture is completed prior to the design of the financial and EAM solutions. Without a detailed architecture that supports the AERs compliance requirements any design and build effort may be subject to a review and modification at a future date.

3.4 Scope Exclusions

3.4.1 Other Business Cases

As indicated by the dependencies and overlap section above the following Business Cases contain initiatives that although related are out of scope of this EAM Business Case:

- BC01 CIS and CRM
- BC02a Customer Facing Initiatives
- BC04 Financial Management
- BC05a Supply Chain & Procurement
- BC05b Project, Program and Portfolio Management
- BC09 SAP Foundations
- BC10 Integrated Design & Estimation
- BC11 People and Culture
- BC14 IT Mobility
- BC16 Field Force Mobility
- BC18 Systems Integration
- BC21 Business Intelligence Enablement
- BC24 Enterprise Document and Content Management
- BC32 Regulatory Compliance

3.4.2 AER Regulatory Information Notices (RIN) Compliance

It is important to note that the AER's Regulatory Information Notices contain information requirements that are dependent upon this business case. However, the costs and benefits associated with compliance are included in the Regulatory Compliance (BC32) Business Case.

3.4.3 Staff training on the core ERP System

This business case covers training of staff across the organisation in the use of the new capability that will be provided in the core SAP ERP system upon the successful completion of the initiatives outlined in this business case. An estimate of the appropriate amount of training required to fulfill this aim is provided under each of the options considered.

The scope of this business case does not provide for any additional SAP ERP training beyond what is necessary for appropriate staff to be skilled in these new EAM related competencies. It is assumed that ongoing SAP ERP training will be provided to all appropriate staff who need to be skilled in the use of SAP ERP.

3.4.4 Ongoing System and Data Governance Costs

Options 1 to 3 of this business case includes the provision of a system that is capable of recording and storing data that is necessary for SA Power Networks to take an Enterprise Asset Management approach. Option 3 also includes the provision for the accelerated collection of data, whereas option 1 and 2 assumes the collection of data will be part of Business As Usual. Furthermore, as increasing amounts of data are collected and recorded using existing manual and non-integrated systems under Option 1, a cost for the governance of that data has been included. For Options 2 and 3, as the collection and recording of data will become more automated and efficient, the cost of data governance is not expected to be as significant and is assumed to be covered under Business As Usual.

4. Business Options

4.1 Summary of Options

SA Power Networks has considered four options with respect to how it can take an Enterprise Asset Management approach across the whole organisation:

Option 0 – Do Nothing

This option maintains the current environment and is essentially a 'Business As Usual' approach whereby SA Power Networks perpetuates the existing processes, people, systems, and data.

The current BAU approach is characterised by:

- Siloed and non-integrated systems and tools
- Manual transfer of data between systems
- Multiple versions of the same data
- Low end-to-end process maturity across the asset lifecycle

The difficulty and cost of providing transparency, repeatability and integrity of information and consistency of decisions.

This approach will result in significant impacts to the business, especially in light of the increasing level of information required to satisfy the level of complexity and quantity of information contained in the AER's Regulatory Information Notices (RIN's). Without a change in process, system and data capabilities SA Power Networks can only meet these increased requirements with an increase in staffing levels and use of products like MS Excel.

The other point to note is that from 1 July, 2015, the AER will require reporting of actual data for the RIN's. Before then, it has advised preparing best estimates is sufficient. The need for the uplift in resources will be required just to prepare the RIN's based on best estimates. Without a change to process, system and data capability, SA Power Networks does not believe it will be able to provide actual data post 1 July 2015.

Put simply, this option does not provide for any specific initiatives to increase the current levels of capability across process, people, systems and data, and therefore leads to SA Power Networks not being able to achieve the requirements of the AER.

The cost of compliance is included in another IT Reset Business Case (BC32 Regulatory Compliance) and has not been included in this option.

Option 1 - Business as Usual (BAU)

This option utilises and extends the existing processes and systems in order to meet the requirements of the changing business environment including a move towards enterprise asset management and alignment to ISO 55000.

The current BAU approach is characterised by:

- Siloed and non-integrated systems and tools
- Manual transfer of data between systems
- Multiple versions of the same data
- Low end-to-end process maturity across the asset lifecycle

The difficulty and cost of providing transparency, repeatability and integrity of information and consistency of decisions.

Without a change in process, system and data capabilities SA Power Networks can only meet these increased requirements with an increase in staffing levels and continued use of products like MS Excel or other manual, non-integrated systems, which are currently being widely used across the business.

Option 1 will include the costing of activities and resources to improve asset management capabilities with the same tools, processes, and systems.

Option 2 - A Balanced Approach towards Enterprise Asset Management

This option proposes to enhance and upgrade SA Power Networks' capabilities (process, people, systems and data) in order to move away from a siloed and non-integrated approach towards an Enterprise approach. As this represents a significant transformational change, the rate of change across business functions, capabilities and asset types will be balanced by an assessment of the realistic capacity of the business to absorb the rate of change.

The in scope improved capability required to support the EAM lifecycle includes:

- Asset Management Strategies and Asset Planning
- Design & Estimation
- Construction
- Operate and Maintain
- Decommission & Dispose
- Capabilities required across the lifecycle include:
- Document & Records Management
- Mobility for EAM
- Asset analytics
- Geo spatial enablement

Option 3 - An Optimistic Approach towards Enterprise Asset Management

This option extends the capability uplift included in Option 2 and proposes a more aggressive implementation of solutions across business functions, capabilities and asset types that is balanced by an assessment of the maximum capacity of the business to absorb the rate of change.

4.2 Option 0 – Do Nothing

This option maintains the current environment and is essentially a 'Business As Usual' approach whereby SA Power Networks perpetuates the existing processes, people, systems, and data.

This approach will result in significant impacts to the business, especially in light of the increasing level of information required to satisfy the level of complexity and quantity of information contained in the AER's Regulatory Information Notices (RIN's). Without a change in process, system and data capabilities SA Power Networks can only meet these increased requirements with an increase in staffing levels and use of products like MS Excel.

The other point to note is that from 1 July, 2015, the AER will require reporting of actual data for the RIN's. Before then, it has advised preparing best estimates is sufficient. The need for the uplift in resources will be required just to prepare the RIN's based on best estimates. Without a change to process, system and data capability, SA Power Networks does not believe it will be able to provide actual data post 1 July 2015.

Put simply, this option does not provide for any specific initiatives to increase the current levels of capability across process, people, systems and data, and therefore will lead to SA Power Networks not being able to achieve the requirements of the AER.

The cost of compliance is included in another IT Reset Business Case (BC32 Regulatory Compliance) and has not been included in this option.

The current state can be summarised as follows across the three key capabilities:

1. **Asset Management Accountability**
    - The adoption of International Asset Management Standard ISO 55000 as the Asset Management Policy and Strategy will not allow for the desired level of change without the development and modification of supporting business processes, systems, data and people capabilities.
    - The on-going support of people in the execution of processes and use of supporting systems is limited, leading to poor adoption and usage and therefore unreliable data and reports.
    - The current business process maturity is low, with each business area developing its own processes to support day-to-day activities evidenced by the number of disparate systems (and databases) resulting in inefficient processes due to the lack of an integrated enterprise approach.
2. **Asset Information Management**
    - There are multiple processes across the different asset classes that are not clearly documented or aligned with evolving technology solutions. Not having an enterprise approach results in the development of point technology solutions, an expanding list of disparate systems and asset databases, and the reliance upon the knowledge held within an aging workforce rather than corporate systems. That is, there is reliance upon people to make up for the shortcomings in the data resulting in under/over investment.
    - There is limited ability to locate assets in both a spatial and network dimension.
    - There is no ability to associate customers with assets in a spatial or network dimension.
    - The data and information governance maturity is low and although 'developing' there is little evidence of an integrated enterprise approach.

- The system landscape is complex with multiple point-to-point interfaces, the result being overlaps and redundancy in the data, further complicating the analysis required to support the decision making process.
- There is no common understanding across the business of the Business Risk associated with an asset and the association of that risk to the priority of a given piece of work.
- There is no association of a given asset for maintenance purposes with the asset for financial purposes within the Corporate ERP.

3. Asset Lifecycle Management

- There is no 'in-system' view of an asset's lifecycle, which results in a heavy reliance on the knowledge of a few key individuals.
- There are multiple approaches to mobility across the asset lifecycle, resulting in an increased cost to the organisation.
- There are multiple systems utilised across the lifecycle that are not integrated and aligned with the process. For example:
  - CAD and GIS systems are not integrated;
  - CAD and Estimation systems are not integrated;
  - SCADA systems with asset condition information is not integrated with the asset in the corporate ERP used for asset maintenance;
  - The Outage Management System is not effectively interfaced to the ERP used for asset maintenance, nor is it effectively integrated with scheduling and dispatch - all this requires switching across multiple applications for staff working in the field;
  - close out processes are not integrated from a drawing, GIS and ERP asset point of view.
- There is no geo-enablement of the business process which inhibits the businesses ability to effectively manage the routing, scheduling, work planning & bundling and data entry processes.

Examples of current business scenarios that could be vastly improved given and increased level of capability include:

- With the increasing average age of the Network Asset base the number of inspections required increases and the amount data to be collected at each inspection increases. Currently, this data is captured using a variety of mobility platforms and devices and the data stored in a variety of disparate systems (often duplicated), which necessitates the business to manually join the data in an attempt to perform asset analysis functions.

  Without an investment in integrated systems and increasing demand for more information, the business can only respond by increasing the number of people managing the process and data.
- There are an increasing number of Quality of Supply complaints and enquiries, which is likely to continue without an investment in integrated systems that include condition and load monitoring data. Due to the disparate systems and databases, the business cannot easily associate a customer with the applicable network asset and view the asset history and load monitoring data for that asset. This results in many hours of effort per customer enquiry and

detracts from the organisation's ability to forecast and predict before a customer is forced to lodge an enquiry.

- Without an investment in integrated systems and ever increasing demand for more information the business can only respond by increasing the number of people managing the process and data.
- In order to keep costs of manufacture down, modern network equipment is not made to the same standards, and the material components used are less robust.
- Without the condition and load monitoring data it is difficult to predict issues with assets or groups of assets and it is believed anecdotally that SA Power Networks is missing out on Warranty Claims.

4.2.1 Option 0 Delivery and Change Management Costs

Not Applicable as this option is 'do nothing'.

4.2.2 Option 0 Delivery Cost Assumptions

The cost of compliance is included in another IT Reset Business Case (BC32 Regulatory Compliance) and has not been included in this option.

4.2.3 Option 0 Change Management Cost Assumptions

Not Applicable as this option is 'do nothing'.

The cost of compliance is included in another IT Reset Business Case (BC32 Regulatory Compliance) and has not been included in this option.

4.2.4 Option 0 Opex Step Change

The table below is a summary of the current recurrent/ ongoing costs.

Table 6 Recurrent opex costs ($M Real 2013/14)

2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Opex 2015/16 - 2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	Total Opex
2.620	2.662	2.706	2.753	2.801	2.852	**13.775**	2.906	2.964	3.021	3.083	3.149	3.217	3.289	**38.024**

4.2.5 Option 0 Opex Step Change Assumptions

1. No changes will be made to the underlying processes, people, systems and data used to manage the asset base.
2. Gartner sources[17] have suggested that SA Power Networks will be able to reduce new equipment purchases by 3% to 5% given robust asset maintenance processes and data.
3. Given the BAU current state with disparate and incomplete data, lack of structured condition and load data and siloed processes across the lifecycle, it is reasonable to assume that SA Power Networks is investing in new equipment earlier than is optimal.
4. There are some 2,000 Quality of Supply enquires /complaints each year and this number is growing. Without the integrated data (customer to asset association) and the load and performance data, SA Power Networks employees spend approximately 4 hours per enquiry on gathering the data.
5. Without taking an EAM approach it is likely that there will be either increasing levels of unplanned outages or an over-investment in the replacement program.
6. The cost of AER RIN compliance is included in another IT Reset Business Case (BC32 Regulatory Compliance) and has not been included in this option.

[17] Gartner Paper, 2 April 2008/IN Number G00156193

4.2.6 Option 0 Expected Benefits

There are no incremental benefits as this option is essentially a 'do nothing' option and any cost/benefit associated with compliance is included in another IT Reset Business Case (BC32 Regulatory Compliance).

4.2.7 Option 0 Expected Disbenefits

Table 7 Expected disbenefits

Disbenefit	Consequence outcome (Value, Measure)
The lack of asset condition data means maintenance strategies cannot be effectively defined to maximise use of the asset base.	In order to ensure the Customer Service levels are met there is likely to be premature levels of capital investment.
Without the integrated data (customer to asset association) and the load & performance data, SA Power Networks employees spend approximately 4 hours per enquiry on gathering the data, before analysis may begin.	• Waiting for the customer complaints/ enquiries to trigger the review rather than having the ability to pre-empt the customer issues creating Level of Service issues. • Without adequate data the number of enquiries has been growing and it is likely they will continue to grow, increasing the load on engineering resources. • Possibility for over/under investment in the asset base.
Increased risk of assets failing and not being able to deliver the service expected of customers and regulators	• Using existing processes and systems will increase the risk of system failure, resulting in a degradation of service. This could lead to unsatisfactory levels of service, both from a customer point of view, as well as from the regulator's viewpoint. • Possibility for over/under investment in the asset base.
Staff inadequately trained to maintain assets and distribution network	One of the key parts of implementing EAM is to train staff to a level that maintains the asset infrastructure as effectively and efficiently as possible. Not proceeding with the initiatives will mean staff will not be given the opportunity to improve their skills.
Increased operating expenditure required to maintain the network	Although there will be savings by choosing the Do Nothing option, there is likely to be a greater cost, which will come with inefficiently maintaining assets using outdated systems and processes by staff who are adequately trained.

Disbenefit	Consequence outcome (Value, Measure)
Lack of capability to meet 'Smart Grid' requirements	The Customer base is expecting the 'Smart Grid' to be readily available in the future. Without an EAM centred approach and adequate processes, systems, data and trained people it is unlikely that SA Power Networks will be able to support and maintain a Smart Grid environment.
There is an element of reduced capability to manage risk on the network at present due to disparate and/or lack of data available. There is no line of sight from Asset Risk to the Business and therefore levels of service and the actual piece of work being prioritised for the field.	• The possible outcomes due to the incorrect work being completed on the asset range from minor to substantial in size. • Network assets will not be optimally maintained from vegetation management point of view, leading to greater business risk.

4.2.8 Option 0 Timescale

Not Applicable as this option is 'do nothing'.

4.2.9 Option 0 Major Business Risks

The following risk assessment has been conducted in accordance with the SA Power Networks' corporate risk framework, including the application of the appropriate qualitative measures of likelihood and consequence, and the resulting overall risk rating as defined in Appendix D. Major business risks of proceeding with this option are as follows.

Table 8 Major business risks of not proceeding with the project

Risk ID	Risk Description (Risk Line Item)	Consequence Description	Inherent Likelihood	Inherent Consequences	Risk Rating
	Without an EAM approach Asset Management related data (load data, condition data, asset attribute data, asset history data) continues to be captured in disparate systems. In order to increase the utilisation and lifespan of the aging assets, far more information about condition and associated risks is needed.	Business must continue to bring increasing amounts of disparate data together using 'off-system' tools, leading to data integrity issues and a reduction in the ability to respond quickly resulting in the potential for: • Underutilisation of the asset base; • Under/Over capital investment; • Increasing Quality of Supply issues; • Increasing levels of unplanned outages; • Degradation in the level of Customer Service ; • Asset management analysis not focused on the right assets; • Restricted ability to plan and predict future costs; • Limited ability to recover costs via Warranty claims as necessary repair works are not always identified in time and assets with warranty periods are not identified in the 'corporate system' .	Likely (4)	Major (4)	HIGH (8)
	Continued inability to locate and group assets on a map and associate planned work and work history to those assets.	• Unable to more effectively bundle work and therefore increase productivity; • The levels of duplication and re-work will increase as the level of maintenance required on the aging assets increase;	Likely (4)	Minor (2)	MEDIUM (6)

	Inability to quickly locate customers in both a spatial and network asset dimension.	The increasing levels of Quality of Supply complaints will result in: • The need for increased resources • Decreasing levels of customer service	Likely (4)	Minor (2)	MEDIUM (6)
	Detailed knowledge of the network residing with an aging workforce and not captured in corporate systems	The intellectual property of key asset management resources is lost, resulting in: • Under/Over capital investment; • Increasing Quality of Supply issues; • Increasing levels of unplanned outages; • Degradation in the level of Customer Service ; • Asset management analysis not focusing on the right assets; • Restricted ability to plan and predict future costs; • Reduced ability to recover costs via Warranty claims • The cost of training new staff with the required knowledge to adequately operate and maintain the network.	Likely (4)	Major (4)	HIGH (8)
	The current business processes are not aligned with ISO 55000 and EAM 'good practice'	• The benefits associated with EAM initiatives may not be fully realised. • Business units will continue to develop non-integrated and informal processes.	Possible (3)	Minor (2)	LOW (5)
	The current system landscape is very complex with multiple point to point interfaces.	• There is redundancy across systems and data resulting in increasing cost to the business. • The complex architecture results in higher maintenance cost and increased efforts in error handling.	Likely (4)	Moderate (3)	HIGH (7)

	Asset Management related data is not captured to a level of detail required by the AER in the Corporate systems.	Business must capture asset data and asset expenditure details in alternative 'off-system' applications leading to data integrity issues, increased audit costs and increased manual effort to meet regulatory deadlines.	Possible (3)	Moderate (3)	MEDIUM (6)
	Under-utilisation of capability in existing systems including the Corporate ERP (SAP).	• Poor return on IT investment. • Additional cost to achieve equivalent functionality	Likely (4)	Moderate (3)	HIGH (7)
	Lack of Business Risk Control due to the inability to target network investment at the highest risk reduction work.	The possible outcomes due to the incorrect work being completed on the network range from minor to quite major in size.	Likely (4)	Major (4)	HIGH (8)

4.3 Option 1 – Business As Usual

This option utilises and extends the existing processes and systems in order to meet the requirements of the changing business environment including a move towards enterprise asset management and alignment to ISO 55000.

The current BAU approach is characterised by:

- Siloed and non-integrated systems and tools
- Manual transfer of data between systems
- Multiple versions of the same data
- Low end-to-end process maturity across the asset lifecycle
- The difficulty and cost of providing transparency, repeatability and integrity of information and consistency of decisions.

Without a change in process, system and data capabilities SA Power Networks can only meet these increased requirements with an increase in staffing levels and continued use of products like MS Excel or other manual, non-integrated systems, which are currently being widely used across the business.

Option 1 will include the costing of activities and resources to improve asset management capabilities with the same tools, processes, and systems.

4.3.1 Requirements Scope Inclusions

The high level scope of this option includes initiatives that seek to drive improvements across the three key Asset Management capabilities and are detailed as follows:

Asset Management Capability	Initiative	Discussion
Asset Management Accountability	EAM Blueprint	• Continued adoption of ISO 55000 as the Asset Management Standard for SA Power Networks. ○ Definition of the Asset Management Policy, Strategy and Objectives. ○ Definition of the Asset Management Plans. • In order to enact the chosen Asset Management Standard prepare an Enterprise Asset Management Blueprint that sets the foundation for subsequent initiatives, that includes: ○ Adoption of an agreed Governance model. ○ Definition of Asset Management processes. ○ Define and agree the asset management roles, responsibilities and accountabilities. ○ Ensure those filling the asset management roles have the capacity and appropriate level of capability, up-skilling as necessary. ○ Definition of the system and data requirements. ○ Definition of the information requirements.

Asset Management Capability	Initiative	Discussion
		○ Definition of a roadmap of initiatives for the way forward, including the depth and breadth of assets to be addressed in the asset data and condition data initiatives.
Asset Information Management	Asset Data	• Implement an Asset Data & Information Governance model across the business. • Implement asset data attribute configuration in SAP, including: • Confirmation of the asset data structure defining the single source of truth for each data element and integration rules with other sources; • Definition of the master data standards for each data element; • Definition of the asset attribute data required by asset class such as brand, model, type, rating, duty, physical location and network location; • Data cleansing • Continuation of existing data capture processes used to maintain the data. • A vegetation and bushfire management capability to track and monitor vegetation and growth rates over time.
	EAM Mobility	• Extend ESRI Asset tool to cater for additional asset classes • Extend ESRI data storage agreements
	Condition Data	• Implement asset condition attribute configuration in SAP.
Asset Lifecycle Management		

4.3.2 Scope Exclusions

The scope of this option excludes the following initiatives:

Asset Management Capability	Initiative	Discussion
Asset Management Accountability		
Asset Information Management	Asset Data	• Implement improved asset data capture processes (including creation, maintenance and display) and

Asset Management Capability	Initiative	Discussion
		maintain reliable asset related information, including: ○ Enable views of the asset data that include the following dimensions: ▪ Maintenance ▪ Geo spatial ▪ Network connectivity ▪ Customer ▪ Operational ▪ Financial ▪ Environmental & Safety • Implement improved asset data capture processes (include creation, maintenance & display) for Real Estate and Fleet assets. • Implementation of Linear Asset management to assist with segmentation of the network asset.
	EAM Document & Records Management	• Implement Document and Records Management for EAM, based upon an enterprise wide framework defined in the Document Management Business Case (BC24), including: ○ Integrate documents such as e-drawings, equipment schematics, CAD drawings, and photographs with technical objects (equipment, task lists) that represent the asset. ○ Integration of imagery from Lidar, Drone and other sources with technical objects representing the asset for asset management purposes.
	EAM Mobility	• Implement improved mobile capability for EAM based upon a based upon an enterprise wide framework defined in the IT Mobility Business Case (BC14), including: ○ Mobile asset inspections; ○ Field force asset information display & updates; ○ Access to drawings, equipment manuals and other documents associated with the asset.
	Condition Data	• Implement improved processes by which asset condition and performance data is created, maintained and displayed, including: ○ Historical asset condition and measurement data;

Asset Management Capability	Initiative	Discussion
		○ Planned and completed work history; ○ Integrated with the asset data capture processes. • Implement real time condition monitoring through the transfer of condition and/or performance data from systems such as ADMS to the ERP for asset management purposes.
	Analytics	• Implement improved asset analytics capability, including: ○ Ability to analyse and forecast the relationship of asset condition to asset and network performance over time (e.g., probability of failure, connection point reliability). ○ Monitoring of performance indicators such as SAIDI & SAIFI by identifying assets or asset groups that directly affect such indicators. ○ Investment modelling capability including 'what if' scenario analytics
Asset Lifecycle Management	Process	• Implementation of integrated asset life cycle processes as per the EAM Blueprint, including touch points with: ○ Network Standards; ○ Design and Estimation; ○ Material master data management; ○ Collection of asset data throughout the lifecycle; ○ Assignment of all network related asset work to an asset for asset history purposes. • Implement the following processes and capability: ○ Asset Management Program development; ○ Preventative Maintenance Program: ▪ Realign and cleanse Maintenance Planning data in the ERP (maintenance strategy, maintenance plan, task lists); ○ Work Management processes including: ▪ Inspections, Connections, Preventative & Corrective maintenance ▪ Outage Management ▪ Vegetation management ○ Condition Based Maintenance and Reliability Centred Maintenance ; and ○ A Rotable concept (including refurbishment) for

Asset Management Capability	Initiative	Discussion
		key assets such as transformers. • Implement required system interfaces required to support the agreed processes defined in the EAM blueprint, including: ○ Integration of SAP with GIS enabling more efficient asset data maintenance and work management processes; ○ Integration of SAP with ADMS for the management of the switching process; ○ Integration of SAP with OMS for the management of unplanned outages; ○ Integration of SAP with Customer Information System (CIS O/V replacement) to enable the linkage of asset, customer and work. • Integration with EAM related initiatives that are the subject of the following Business Cases: ○ BC02a Customer Facing Initiatives ○ BC04 Financial Management ○ BC05a Supply Chain & Procurement ○ BC05b Project, Program and Portfolio Management ○ BC09 SAP Foundations ○ BC10 Integrated Design & Estimation ○ BC11 People and Culture ○ BC14 IT Mobility ○ BC16 Field Force Mobility ○ BC18 Systems Integration ○ BC21 Business Intelligence Enablement ○ BC24 Enterprise Document and Content Management ○ BC32 Regulatory Compliance • Implement the process / capability to support Real Estate and Fleet. • Implement enhanced asset management process / capability including: ○ Work Clearance Management to enable the tagging process (includes SAP / ADMS / OMS interfaces); ○ Implement Operational Risk Management to assist with operational risk management and improve environmental, health and safety

Asset Management Capability	Initiative	Discussion
		standards. • Implement enhanced reliability process and software. Investigate Augmented Reality technology
	EAM Document & Records Management	• Implement Document and Records Management for EAM, based upon an enterprise wide framework defined in the Document Management Business Case (BC24), including: ○ Integrate documents such as e-drawings, equipment schematics, CAD drawings, and photographs with work management objects (notifications, orders, projects, measurement documents). • Integration of imagery from Lidar, Drone and other sources with work management objects (notifications, orders…).
	EAM Mobility	• Implement improved mobile capability for EAM based upon a based upon an enterprise wide framework defined in the IT Mobility Business Case (BC14), including: ○ Mobile work delivery and dispatch; ○ Mobile asset inspections; ○ Geo enablement; ○ Access to drawings, equipment manuals and other documents associated with the asset.
	Condition Data	• Implement real time condition monitoring through the transfer of condition and/or performance data from systems such as ADMS to the ERP triggering the creation of work management objects (notifications, orders) for asset management purposes.
	Analytics	• Implement improved asset analytics capability, including: ○ Ability to model whole of life asset cost over time; ○ Integrated Business Risk Management framework; ○ Ability to deliver Level of Service performance reporting. • Implementation of improved analytics to support the following processes: ○ Real Estate and Fleet;

Asset Management Capability	Initiative	Discussion
		○ Work Clearance Management ○ Operational Risk Management
	Geo Enablement	• Implement required system interfaces required to support the agreed processes defined in the EAM blueprint, including: ○ Geo enablement of SAP through integration with GIS enabling more efficient asset data maintenance and work management processes; ○ Extension of geo enablement to mobility. • Investigate ability to store Lidar images to the right geo-location

4.3.3 Option 1 Delivery and Change Management Costs

The table below is a summary of the capital project delivery and change management costs. A detailed breakdown of these costs is provided in the attached MS Excel Financial Assessment spreadsheet (refer to Appendix A).

Table 9 Delivery and Change Management costs by Business Unit ($M Real 2013/14)

Business Unit	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total 2015/16 - 2019/20	2020/21	2021/22	2022/23	Total
IT Delivery and Change Mgmt	2.301	3.261	3.261	3.261	3.261	3.261	**16.307**	1.631	-	-	**20.238**
Non-IT Delivery and Change Mgmt	0.242	0.196	0.196	0.196	0.196	0.196	**0.982**	0.098	-	-	**1.322**
TOTAL	**2.542**	**3.458**	**3.458**	**3.458**	**3.458**	**3.458**	**17.289**	**1.729**	**-**	**-**	**21.560**

Table 23 outlines the combined IT and non-IT capital costs by initiative.

Table 10 Delivery and Change Management costs by Business Unit ($M Real 2013/14)

Project Name	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Capital 2015/16 - 2019/20	2020/21	2021/22	2022/23	Total
EAM Blueprint Option 1	0.605	-	-	-	-	-	**-**	-	-	-	**0.605**
Asset and Condition Data Option 1	1.937	3.458	3.458	3.458	3.458	3.458	**17.289**	1.729	-	-	**20.955**
TOTAL CAPITAL	**2.542**	**3.458**	**3.458**	**3.458**	**3.458**	**3.458**	**17.289**	**1.729**	**-**	**-**	**21.560**

4.3.4 Option 1 Delivery Cost Assumptions

The following assumptions have been made in the estimation of the delivery cost:

EAM Blueprint

- The EAM Blueprint will commence in the 2nd Half of 2014.
- The key output will be a roadmap with defined initiatives.

Asset Data

- Commences 2nd Half of 2014.
- Includes SAP configuration.
- Includes data cleansing costs.

EAM Document & Records Management

- Without investment in additional system capability the business will continue to use current processes (LAN etc.)

EAM Mobility

- The ESRI tool will be extended to include each asset class over a 6 year period.

Condition Data

- Commences 2nd Half of 2014.
- Includes SAP configuration

Analytics

- Without investment in additional system capability the business will continue to use current processes.

Process

- Existing processes will be utilised.

Geo enablement

- Without investment in additional system capability the business will continue to use current processes.

AER Compliance

- The cost of compliance is included in another IT Reset Business Case (BC32 Regulatory Compliance) and has not been included in this option.

Please note that a cost for accelerated collection of asset and condition data has not been included and have assumed this data will be collected as part of business as usual. Any data requirements to ensure Regulatory compliance will be the subject of the Business Case BC32 Regulatory Compliance.

4.3.5 Option 1 Change Management Cost Assumptions

The following assumptions have been made when estimating the Change Management costs:

1. Training of 60 Asset Inspection resources in the extended use of the ESRI tool as new asset classes are included.
2. Training of 150 Field resources in the collection of the extra data fields required for asset attributes.
3. Operational Change Management, including IT training and support are included.
4. A detailed breakdown of these costs is provided in the Financial Evaluation Worksheet attached to this document.
5. Ongoing training of staff in the general use of the corporate ERP system has not been included in this option.

4.3.6 Option 1 Opex Step Change

The table below is a summary of the option 1 opex step change costs for the 2015-2010 regulatory control period and the 13 year investment period.

Table 11 Recurrent opex costs ($M Real 2013/14)

2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Opex 2015/16 - 2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	Total Opex
2.478	2.597	2.720	2.848	2.981	3.121	**14.267**	3.267	3.420	3.582	3.753	3.934	4.127	4.226	**43.054**

4.3.7 Option 1 Opex Step Change Assumptions

1. Data Storage costs for the data captured using the ESRI tool have been included.
2. There is an operating cost paid to ESRI each month for use of the tool and as it will need to be extended by each asset class, this cost is expected to rise as asset classes are brought into the tool.
3. As the amount of data captured in the disparate systems increases, it is expected that the number of FTEs involved in the data collection, management, quality audit and analytical processes will increase.
4. Gartner sources[18] have suggested that SA Power Networks will be able to reduce new equipment purchases by 3% to 5% given robust asset maintenance processes and data.
5. Given the BAU current state with disparate and incomplete data, lack of structured condition and load data and siloed processes across the lifecycle, it is reasonable to assume that SA Power Networks is investing in new equipment earlier than is optimal. This is likely to be less than Option 0, however without integrated data it is likely to remain a cost.
6. There are some 2,000 Quality of Supply enquires /complaints each year and this number is growing. Without the integrated data (customer to asset association) and the load and performance data, SA Power Networks employees spend approximately 4 hours per enquiry on gathering the data. This cost is related to the un-integrated and disparate data and as this will be unchanged it has been included.
7. Without taking an EAM approach it is likely that there will be either increasing levels of unplanned outages or an over-investment in the replacement program. Again although less than Option 0, without integration and the continuation of disparate data is likely to continue.
8. The cost of compliance is included in another IT Reset Business Case (BC32 Regulatory Compliance) and has not been included in this option.

[18] Gartner Paper, 2 April 2008/IN Number G00156193

4.3.8 Option 1 Expected Benefits

It is important to note that benefits will begin to be realised with each release of capability, although on the whole there can only be a marginal improvement until such time as integrated systems and data sets are available for analytical purposes.

Please note that due to the lack of current cost information and the associated complexity with benefit calculation, a number of the benefits have been represented as intangible with no value assigned to them, however it is very clear that marginal benefits are likely to be available.

Please also note that although we have made references to indicative improvement ranges we have chosen to take a conservative approach to the benefit calculations.

Table 12 Expected benefits

Benefit Type	Benefit Effect	Benefit	Measure	Date Benefit Expected	Value
Intangible	Direct	Extended asset lives due to the focus on complete asset lifecycle costs and the improved maintenance standards.	With extended asset lives one can expect a greater return from the existing asset base, timelier capital investment and an improvement in customer service measures.	2018	This will be marginal until such time as integrated asset information is available.
Intangible	Direct	Greater return on asset base through the enhanced ability to determine whether to repair, refurbish or replace equipment.	The combination of asset information, condition data and an analytical capability lead to improved costs of maintenance and timelier capital expenditure.	2018	This will be marginal until such time as integrated asset information is available.
Intangible	Direct	Increased ability to plan and predict future cost	The combination of asset information, condition data and an analytical capability lead to improved costs of maintenance and timelier capital expenditure.	2016	This will be marginal until such time as integrated asset information is available.
Intangible	Direct	Improved Risk Control	Equipment failure can put people in danger and cascade into other systems representing business risk. Good maintenance practise reduces the chance of such failure	2018	This will be marginal until such time as integrated asset information is available.

Benefit Type	Benefit Effect	Benefit	Measure	Date Benefit Expected	Value
Intangible	Direct	Asset condition data will drive effective maintenance strategies that extend asset life and reduced unplanned outages	The number of unplanned outages will be reduced resulting in a lower cost in unplanned overtime.	Jan 2015	Will be marginal u. Up to $171 k pa
Intangible	Direct	Improved maintenance processes leads to improved inventory and materials management	Greater certainty of the maintenance schedule and a reduction in unplanned events allows for less waste and re-work resulting in a lower material cost	July 2018	Will be marginal Up to $12k pa
intangible	Direct	Reduction in Inventory levels	Inventory levels will be reduced through the more robust maintenance planning processes leading to improved inventory planning	July 2018	Will be marginal Up to $21k pa

4.3.9 Option 1 Expected Disbenefits

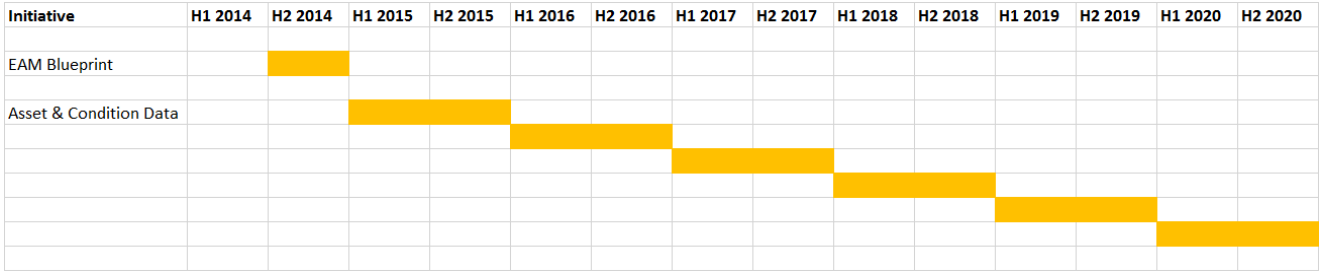
Table 13 Expected disbenefits

Disbenefit	Consequence outcome (Value, Measure)
The lack of asset condition data means maintenance strategies cannot be effectively defined to maximise use of the asset base.	In order to ensure the Customer Service levels are met there is likely to be premature levels of capital investment until such time as integrated asset and condition data is available.
Without the integrated data (customer to asset association) and the load & performance data, SA Power Networks employees spend approximately 4 hours per enquiry on gathering the data, before analysis may begin.	• Waiting for the customer complaints/ enquiries to trigger the review rather than having the ability to pre-empt the customer issues creating Level of Service issues. • Without adequate data the number of enquiries has been growing and it is likely they will continue to grow, increasing the load on engineering resources. • Possibility for over/under investment in the asset base.

Disbenefit	Consequence outcome (Value, Measure)
Increased risk of assets failing and not being able to deliver the service expected of customers and regulators	• Using existing processes and systems will increase the risk of system failure, resulting in a degradation of service. This could lead to unsatisfactory levels of service, both from a customer point of view, as well as from the regulator's viewpoint. • Possibility for over/under investment in the asset base.
Staff inadequately trained to maintain assets and distribution network	One of the key parts of implementing EAM is to train staff to a level that maintains the asset infrastructure as effectively and efficiently as possible. Not proceeding with the initiatives will mean staff will not be given the opportunity to improve their skills.
Increased operating expenditure required to maintain the network	There is likely to be a greater cost, which will come with inefficiently maintaining assets using outdated systems and processes by staff who are adequately trained.
Lack of capability to meet 'Smart Grid' requirements	The Customer base is expecting the 'Smart Grid' to be readily available in the future. Without an EAM centred approach and adequate processes, systems, data and trained people it is unlikely that SA Power Networks will be able to support and maintain a Smart Grid environment.
There is an element of reduced capability to manage risk on the network at present due to disparate and/or lack of data available. There is no line of sight from Asset Risk to the Business and therefore levels of service and the actual piece of work being prioritised for the field.	• The possible outcomes due to the incorrect work being completed on the asset range from minor to substantial in size. • Network assets will not be optimally maintained from vegetation management point of view, leading to greater business risk.

4.3.10 Option 1 Timescale

The following figure displays a high level schedule of the initiatives that have been identified:



4.3.11 Option 1 Major Business Risks

The following risk assessment has been conducted in accordance with the SA Power Networks' corporate risk framework, including the application of the appropriate qualitative measures of likelihood and consequence, and the resulting overall risk rating as defined in Appendix D. Major business risks of proceeding with this option are as follows.

Table 14 Major business risks of not proceeding with the project

Risk ID	Risk Description (Risk Line Item)	Consequence Description	Inherent Likelihood	Inherent Consequences	Risk Rating
	The Asset Management related data (load data, condition data, asset attribute data, asset history data) continues to be captured in disparate systems. In order to increase the utilisation and lifespan of the aging assets, far more information about condition and associated risks is needed.	Business must continue to bring increasing amounts of disparate data together using 'off-system' tools, leading to data integrity issues and a reduction in the ability to respond quickly resulting in the potential for: • Underutilisation of the asset base; • Under/Over capital investment; • Increasing Quality of Supply issues; • Increasing levels of unplanned outages; • Degradation in the level of Customer Service ; • Asset management analysis not focused on the right assets; • Restricted ability to plan and predict future costs; • Limited ability to recover costs via Warranty claims as necessary repair works are not always identified in time and assets with warranty periods are not identified in the 'corporate system' .	Likely (4)	Major (4)	HIGH (8)

	Continued inability to locate and group assets on a map and associate planned work and work history to those assets.	• Unable to more effectively bundle work and therefore increase productivity; • The levels of duplication and re-work will increase as the level of maintenance required on the aging assets increase;	Likely (4)	Minor (2)	MEDIUM (6)
	Inability to quickly locate customers in both a spatial and network asset dimension.	The increasing levels of Quality of Supply complaints will result in: • The need for increased resources • Decreasing levels of customer service	Likely (4)	Minor (2)	MEDIUM (6)
	Detailed knowledge of the network residing with an aging workforce and not captured in corporate systems	The intellectual property of key asset management resources is lost, resulting in: • Under/Over capital investment; • Increasing Quality of Supply issues; • Increasing levels of unplanned outages; • Degradation in the level of Customer Service ; • Asset management analysis not focusing on the right assets; • Restricted ability to plan and predict future costs; • Reduced ability to recover costs via Warranty claims • The cost of training new staff with the required knowledge to adequately operate and maintain the network.	Likely (4)	Major (4)	HIGH (8)
	The current business processes are not aligned with ISO 55000 and EAM 'good practice'	• The benefits associated with EAM initiatives may not be fully realised despite the adoption of ISO 55000 as a framework. Changes are required to existing business processes.	Possible (3)	Minor (2)	LOW (5)

	The current system landscape is very complex with multiple point to point interfaces.	• There is redundancy across systems and data resulting in increasing cost to the business. • The complex architecture results in higher maintenance cost and increased efforts in error handling.	Likely (4)	Moderate (3)	HIGH (7)
	Asset Management related data is not captured to a level of detail required by the AER in the Corporate systems.	Business must capture asset data and asset expenditure details in alternative 'off-system' applications leading to data integrity issues, increased audit costs and increased manual effort to meet regulatory deadlines.	Possible (3)	Moderate (3)	MEDIUM (6)
	Under-utilisation of capability in existing systems including the Corporate ERP (SAP).	• Poor return on IT investment. • Additional cost to achieve equivalent functionality	Likely (4)	Moderate (3)	HIGH (7)
	Lack of Business Risk Control due to the inability to target network investment at the highest risk reduction work.	The possible outcomes due to the incorrect work being completed on the network range from minor to quite major in size.	Likely (4)	Major (4)	HIGH (8)

4.4 Option 2 – A Balanced Approach Towards Enterprise Asset Management

This option represents a balanced approach towards Enterprise Asset Management across the organisation.

SA Power Networks wishes to enhance and upgrade existing Enterprise Asset Management capabilities across process, people, systems and data, in order to move away from a siloed and non-integrated approach towards an Enterprise approach to Asset Management. This is a significant transformational step for the business and as such it would not be deemed prudent to do so in one stage. It is necessary to balance the rate of change across the business functions, capabilities and asset types with what is realistically achievable over the period to 2020.

4.4.1 Requirements Scope Inclusions

The high level scope of this option includes initiatives that seek to drive improvements across the three key Asset Management capabilities and are detailed as follows:

Asset Management Capability	Initiative	Discussion

Asset Management Accountability	EAM Blueprint	• Continued adoption of ISO 55000 as the Asset Management Standard for SA Power Networks.
		  ○ Definition of the Asset Management Policy, Strategy and Objectives.
		  ○ Definition of the Asset Management Plans.
		• In order to enact the chosen Asset Management Standard prepare an Enterprise Asset Management Blueprint that sets the foundation for subsequent initiatives, that includes:
		  ○ Adoption of an agreed Governance model.
		  ○ Definition of Asset Management processes.
		  ○ Define and agree the asset management roles, responsibilities and accountabilities.
		  ○ Ensure those filling the asset management roles have the capacity and appropriate level of capability, up-skilling as necessary.
		  ○ Definition of the system and data requirements.
		  ○ Definition of the information requirements.
		  ○ Definition of a roadmap of initiatives for the way forward, including the depth and breadth of assets to be addressed in the asset data and condition data initiatives.

Asset Information Management	Asset Data	• Implement an Asset Data & Information Governance model across the business. • Implement improved asset data capture processes

Asset Management Capability	Initiative	Discussion
		(including creation, maintenance and display) and maintain reliable asset related information, including: ○ Confirmation of the asset data structure defining the single source of truth for each data element and integration rules with other sources; ○ Definition of the master data standards for each data element; ○ Definition of the asset attribute data required by asset class such as brand, model, type, rating, duty, physical location and network location; ○ Enable views of the asset data that include the following dimensions: ▪ Maintenance ▪ Geo spatial ▪ Network connectivity ▪ Customer ▪ Operational ▪ Financial ▪ Environmental & Safety ▪ Vegetation Management ○ A vegetation and bushfire management capability to track and monitor vegetation and growth rates over time. ○ Implementation of Linear Asset management to assist with segmentation of the network asset.
	EAM Document & Records Management	• Implement Document and Records Management for EAM, based upon an enterprise wide framework defined in the Document Management Business Case (BC24), including: ○ Integrate documents such as e-drawings, equipment schematics, CAD drawings, and photographs with technical objects (equipment, task lists) that represent the asset.
	EAM Mobility	• Implement improved mobile capability for EAM based upon a based upon an enterprise wide framework defined in the IT Mobility Business Case (BC14), including:

Asset Management Capability	Initiative	Discussion
		○ Mobile asset inspections; ○ Field force asset information display & updates; ○ Access to drawings, equipment manuals and other documents associated with the asset.
	Condition Data	• Implement improved processes by which asset condition and performance data is created, maintained and displayed, including: ○ Historical asset condition and measurement data; ○ Planned and completed work history; ○ Integrated with the asset data capture processes.
	Analytics	• Implement improved asset analytics capability, including: ○ Ability to analyse and forecast the relationship of asset condition to asset and network performance over time (e.g., probability of failure, connection point reliability).
Asset Lifecycle Management	Process	• Implementation of integrated asset life cycle processes as per the EAM Blueprint, including touch points with: ○ Network Standards; ○ Design and Estimation; ○ Material master data management; ○ Collection of asset data throughout the lifecycle; ○ Assignment of all network related asset work to an asset for asset history purposes. • Implement the following processes and capability: ○ Asset Management Program development; ○ Preventative Maintenance Program: ▪ Realign and cleanse Maintenance Planning data in the ERP (maintenance strategy, maintenance plan, task lists); ○ Work Management processes including: ▪ Inspections, Connections, Preventative & Corrective maintenance ▪ Outage Management ▪ Vegetation management

Asset Management Capability	Initiative	Discussion
		○ Condition Based Maintenance and Reliability Centred Maintenance ; and ○ A Rotable concept (including refurbishment) for key assets such as transformers. • Implement required system interfaces required to support the agreed processes defined in the EAM blueprint, including: ○ Integration of SAP with GIS enabling more efficient asset data maintenance and work management processes; ○ Integration of SAP with ADMS for the management of the switching process; ○ Integration of SAP with OMS for the management of unplanned outages; ○ Integration of SAP with Customer Information System (CIS O/V replacement) to enable the linkage of asset, customer and work. • Integration with EAM related initiatives that are the subject of the following Business Cases: ○ BC02a Customer Facing Initiatives ○ BC04 Financial Management ○ BC05a Supply Chain & Procurement ○ BC05b Project, Program and Portfolio Management ○ BC09 SAP Foundations ○ BC10 Integrated Design & Estimation ○ BC11 People and Culture ○ BC14 IT Mobility ○ BC16 Field Force Mobility ○ BC18 Systems Integration ○ BC21 Business Intelligence Enablement ○ BC24 Enterprise Document and Content Management ○ BC32 Regulatory Compliance
	EAM Document & Records Management	• Implement Document and Records Management for EAM, based upon an enterprise wide framework defined in the Document Management Business Case (BC24), including: ○ Integrate documents such as e-drawings, equipment schematics, CAD drawings, and photographs with work management objects

Asset Management Capability	Initiative	Discussion
		(notifications, orders, projects, measurement documents).
	EAM Mobility	• Implement improved mobile capability for EAM based upon a based upon an enterprise wide framework defined in the IT Mobility Business Case (BC14), including: ○ Mobile work delivery and dispatch; ○ Mobile asset inspections; ○ Geo enablement; ○ Access to drawings, equipment manuals and other documents associated with the asset.
	Analytics	• Implement improved asset analytics capability, including: ○ Ability to model whole of life asset cost over time; ○ Integrated Business Risk Management framework; ○ Ability to deliver Level of Service performance reporting.
	Geo Enablement	• Implement required system interfaces required to support the agreed processes defined in the EAM blueprint, including: ○ Geo enablement of SAP through integration with GIS enabling more efficient asset data maintenance and work management processes; ○ Extension of geo enablement to mobility.

4.4.2 Scope Exclusions

The scope of this option excludes the following initiatives that should be addressed beyond 2020 based upon the SA Power Networks Strategic Plan foundation of 'Innovation and Relentless Improvement'.

Asset Management Capability	Initiative	Discussion
Asset Information Management	Asset Data	• Implement improved asset data capture processes (include creation, maintenance & display) for Real Estate and Fleet assets.
	EAM Document & Records	• Integration of imagery from Lidar, Drone and other sources with technical objects representing the asset for asset management purposes.

Asset Management Capability	Initiative	Discussion
	Management	
	Condition Data	• Implement real time condition monitoring through the transfer of condition and/or performance data from systems such as ADMS to the ERP for asset management purposes.
	Analytics	• Implement improved asset analytics capability, including: ○ Monitoring of performance indicators such as SAIDI & SAIFI by identifying assets or asset groups that directly affect such indicators. ○ Investment modelling capability including 'what if' scenario analytics
Asset Lifecycle Management	Process	• Implement the process / capability to support Real Estate and Fleet. • Implement enhanced asset management process / capability including: ○ Work Clearance Management to enable the tagging process (includes SAP / ADMS / OMS interfaces); ○ Implement Operational Risk Management to assist with operational risk management and improve environmental, health and safety standards. • Implement enhanced reliability process and software. • Investigate Augmented Reality technology
	EAM Document & Records Management	• Integration of imagery from Lidar, Drone and other sources with work management objects (notifications, orders).
	Condition Data	• Implement real time condition monitoring through the transfer of condition and/or performance data from systems such as ADMS to the ERP triggering the creation of work management objects (notifications, orders) for asset management purposes.
	Analytics	• Implementation of improved analytics to support the following processes: ○ Real Estate and Fleet; ○ Work Clearance Management ○ Operational Risk Management
	Geo Enablement	• Investigate ability to store Lidar images to the right geo-location.

4.4.3 Option 2 Delivery and Change Management Costs

The table below is a summary of the capital project delivery and change management costs. A detailed breakdown of these costs is provided in the attached MS Excel Financial Assessment spreadsheet (refer to Appendix A).

Table 15 Delivery and Change Management costs by Business Unit ($M Real 2013/14)

Business Unit	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total 2015/16 - 2019/20	2020/21	2021/22	2022/23	Total
IT Delivery and Change Mgmt	0.517	2.087	3.473	2.712	1.531	1.556	**11.359**	1.111	0.342	-	**13.330**
Non-IT Delivery and Change Mgmt	0.287	1.122	1.845	2.234	1.270	0.990	**7.460**	1.429	0.673	-	**9.849**
TOTAL	**0.805**	**3.209**	**5.318**	**4.945**	**2.801**	**2.546**	**18.819**	**2.540**	**1.015**	**-**	**23.179**

Table 16 outlines the combined IT and non-IT capital costs by initiative.

Table 16 Delivery and Change Management costs by Business Unit ($M Real 2013/14)

Project Name	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total 2015/16 - 2019/20	2020/21	2021/22	2022/23	Total
EAM Blueprint	0.805	-	-	-	-	-	**-**	-	-	-	**0.805**
Asset Data	-	1.555	1.958	1.856	0.075	0.072	**5.517**	-	-	-	**5.517**
Document management	-	0.777	-	-	-	-	**0.777**	-	-	-	**0.777**
Mobility	-	0.635	1.878	-	-	-	**2.513**	-	-	-	**2.513**
Condition data	-	-	0.386	0.717	0.398	-	**1.502**	-	-	-	**1.502**
Analytics	-	0.217	0.433	0.228	0.226	0.434	**1.538**	0.205	-	-	**1.742**
Processes	-	0.025	0.662	2.007	2.003	1.399	**6.095**	-	-	-	**6.095**
Geo enablement	-	-	-	-	-	0.640	**0.640**	2.335	1.015	-	**3.990**
Enterprise Asset Management Recurrent Functional Upgrade	-	-	-	0.139	0.099	-	**0.237**	-	-	-	**0.237**
TOTAL CAPITAL	**0.805**	**3.209**	**5.318**	**4.945**	**2.801**	**2.546**	**18.819**	**2.540**	**1.015**	**-**	**23.179**

4.4.4 Option 2 Delivery Cost Assumptions

The following assumptions have been made in the estimation of the delivery cost:

EAM Blueprint

- The EAM Blueprint will commence in the 2nd Half of 2014.
- Other initiatives will commence on completion and adoption of the Blueprint roadmap.
- The following initiatives will align to the Roadmap that is a deliverable of the Blueprint.

Asset Data

- Commences immediately after the Blueprint.
- Includes data cleansing costs.
- Includes interface development.
- Assumes use of mobile and document management solution for data collection and maintenance.
- No extra licence costs.
- Training of six people for an average of 10 days over the second year (2015).

EAM Document & Records Management

- Commence immediately after the Blueprint.
- Assumes the document and records management systems and framework are in place to be leveraged for EAM purposes.
- Includes integration with Technical and work management objects.
- No extra licence costs.
- Training of 60 people in Network for an average of 1 day.
- Training of 100 people in Field Services for an average of 1 day.

EAM Mobility

- Commence second half 2015.
- Assumes the mobility systems and framework are in place to be leveraged for EAM purposes.
- Includes asset inspection, field force asset data maintenance, access to drawings, manuals, photos, geo enabled.
- No extra licence costs.
- Train 60 people in Network for an average of 1 day.
- Train 100 people in Field Services for an average of 1 day.

Condition Data

- Commence second half 2016.
- Includes data cleansing costs.
- No extra licence costs.
- Assumes use of mobile and document management solution for data collection and maintenance.
- Train 50 people in Network for an average of 2 days.

Analytics

- Include 4 6 month cycles of delivery commencing first half 2016.
- Assumes the Business Intelligence framework and systems are in place to be leveraged.

- Scope for each block – asset information; condition information; process/whole of life performance; Level of Service performance.
- No extra licence costs.
- Train 10 people in each cycle for an average of 1 day.

Process

- Commence second half 2016.
- Extends over three years.
- Includes – asset inspections; connections; preventative & corrective maintenance; Outage management; vegetation management; maintenance plans & planning data; rotables; and integration with other business case initiatives.
- Train 100 people an average of 5 days each year.

Geo enablement

- Commence second half 2019.
- SAP provides a service for Geo.e which has been estimated at $500k.
- No extra licence costs from SAP or ESRI.
- No extra software costs as SA Power Networks already has ESRI ArcGIS software in use.
- Train 400 people for an average of 5 days.

Please note that we have not included a cost for accelerated collection of asset and condition data and have assumed this data will be collected as part of business as usual. Any data requirements to ensure Regulatory compliance will be the subject of the Business Case BC32 Regulatory Compliance.

4.4.5 Option 2 Change Management Cost Assumptions

The following assumptions have been made when estimating the Change Management costs:

6. Training of staff during and post-delivery of the new systems and processes has been provided for all new initiatives detailed in this option.
7. Ongoing training of staff with regards to the use of the SAP ERP system outside the scope of the new functionality provided under this business case is not included in the cost of Change Management.
8. Operational Change Management, including IT training and support are included.
9. The amount includes change costs during Planning & Delivery, post-implementation and warranty stages.
10. A detailed breakdown of these costs is provided in the Financial Evaluation Worksheet attached to this document.

4.4.6 Option 2 Opex Step Change

The table below is a summary of the option 2 opex step change costs for the 2015-2010 regulatory control period and the 13 year investment period.

There are recurrent software maintenance costs associated with Mobility applications.

Table 17 Recurrent opex costs ($M Real 2013/14)

2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Opex 2015/16 - 2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	Total Opex
-	-	0.318	0.318	0.318	0.318	**1.273**	0.570	0.318	0.318	0.318	0.318	0.318	0.318	**3.753**

4.4.7 Option 2 Opex Step Change Assumptions

Opex step change costs are comprised of:

1. Annual software maintenance fees of 22% of original purchase price.
2. Uplift of resources to support Geo enablement and Mobility.
3. The cost of data governance has not been included as part of Recurrent Costs and is assumed to be included in Business As Usual.
4. From time to time, there will be a requirement to apply upgrades and patches to the corporate systems, which will impact the modules used by EAM processes. The costs related to this work is not included in recurring costs for this Business Case as it applies across the entire landscape and will included in the overall ongoing upgrade and enhancement costs.

4.4.8 Option 2 Expected Benefits

It is important to note that benefits will begin to be realised with each release of capability.

For example:

- Users today need to go to multiple sources (multiple user interfaces) to obtain asset attribute data which in the future will be readily accessed from a single user interface although the data elements may be stored in different systems (i.e. asset brand, model etc. will be in the ERP whereas geo spatial data will be stored in the GIS). This type of benefit is included as an increase in workforce productivity and increased levels of customer service.
- Users today will again need to access multiple systems to obtain asset specifications, drawings etc. In the future with a document & record management system a user will be able to access this information from a single point, again resulting in a productivity increases and increased levels of customer service.

However, due to the complexity in the calculation of the benefits associated with the early initiatives the tangible benefit calculations will not commence until such time as the condition data initiative has been completed at which time the bulk of the process initiatives and associated analytics improvements will have been delivered.

Please note that due to the lack of current cost information and the associated complexity with benefit calculation, a number of the benefits have been represented as intangible with no value assigned to them, however it is very clear that substantial benefits are available

Please also note that although we have references to indicative improvement ranges we have chosen to take a conservative approach to the benefit calculations.

Table 18 Expected benefits

Benefit Type	Benefit Effect	Benefit	Measure	Date Benefit Expected	Value
Intangible	Direct	Extended asset lives due to the focus on complete asset lifecycle costs and the improved maintenance standards	With extended asset lives one can expect a greater return from the existing asset base, timelier capital investment and an improvement in customer service measures.	2018	
Intangible	Direct	Greater return on asset base through the enhanced ability to determine whether to repair, refurbish or replace equipment.	The combination of asset information, condition data and an analytical capability lead to improved costs of maintenance and timelier capital expenditure.	2018	
Intangible	Direct	Increased ability to plan and predict future cost	The combination of asset information, condition data and an analytical capability lead to improved costs of maintenance and timelier capital expenditure.	2016	

Benefit Type	Benefit Effect	Benefit	Measure	Date Benefit Expected	Value
Intangible	Direct	Improved Quality of Supply via better response time to customers	The time currently taken to analyse disparate systems and data will be significantly reduced	2017	
Intangible	Direct	Improved processes will improve the ability to make successful warranty claims	The number of successful warranty claims will increase	2018	
Intangible	Direct	Improved planning & scheduling of personnel and maintenance activities	The ability to bundle work more effectively will reduce business risk and allow for optimal use of resources	2018	
Intangible	Indirect	Reduced Inventory levels through improved planning & scheduling of personnel and maintenance activities	Reduced inventory levels achieved through a more reliable and robust plan of work	2018	
Intangible	Direct	Asset condition data will drive effective maintenance strategies that extend asset life and reduced unplanned outages	The 'Energy not Supplied' due to 'unassisted equipment failure' will be reduced, resulting in a value of customer reliability (VCR) benefit.	2018	
Intangible	Direct	Improved Risk Control	Equipment failure can put people in danger and cascade into other systems representing business risk. Good maintenance practise reduces the chance of such failure	2018	
Inangible	Direct	Asset condition data will drive effective maintenance strategies that extend asset life and reduced unplanned outages	The number of unplanned outages will be reduced resulting in a lower cost in unplanned overtime.	July 2018	

Benefit Type	Benefit Effect	Benefit	Measure	Date Benefit Expected	Value
Tangible	Direct	Improved maintenance processes leads to enhanced workforce productivity	Productivity of all resources will be improved from Maintenance planners bundling work using increased knowledge and mapping technologies through to field execution and close out. In addition there will be less duplication of effort - data entry in one place rather than across multiple systems & databases	July 2017	$4,263,872 per annum
Tangible	Direct	Improved maintenance processes leads to improved inventory and materials management	Greater certainty of the maintenance schedule and a reduction in unplanned events allows for less waste and re-work resulting in a lower material cost	July 2017	$95,322 per annum

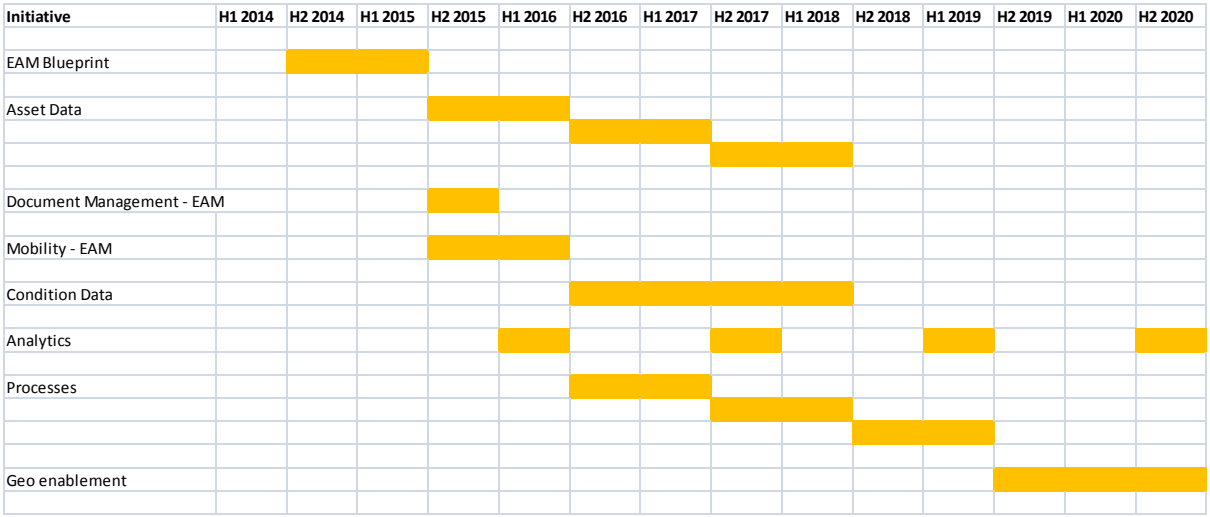
4.4.9 Option 2 Expected Disbenefits

Table 19 Expected disbenefits

Disbenefit	Consequence outcome (Value, Measure)
Short-medium term cultural impact	• Implementing EAM as detailed will have an impact on a large number of staff members across the business. Despite long-term benefits from this change, in the short-medium term there will be significant effort required to manage this change to ensure the success of these initiatives. This commitment to change must come from all levels of the organisation. • Failure to adequately manage this change will not only result in the financial cost, but could also lead to even more inefficient management of the network, and increased staff turnover.

4.4.10 Option 2 Timescale

The following figure displays a high level schedule of the initiatives that have been identified:



The following table outlines at a high level the key initiatives and their phases:

Table 20 Project timescale

Timescale Activity	Start Date	End Date
EAM Blueprint		
Planning	01/09/2014	30/06/2015
Asset Data – Phase 1		
Planning	01/07/2015	30/09/2015
Delivery	01/10/2015	30/04/2016
Support & Embed	01/05/2016	30/06/2016
Benefit Realisation	01/07/2016	ongoing
Asset Data – Phase 2		
Planning	01/07/2016	30/09/2016
Delivery	01/10/2016	30/04/2017
Support & Embed	01/05/2017	30/06/2017
Benefit Realisation	01/07/2017	Ongoing
Asset Data – Phase 3		
Planning	01/07/2017	31/09/2017
Delivery	01/10/2017	30/04/2018
Support & Embed	01/05/2018	30/06/2018
Benefit Realisation	01/07/2018	Ongoing
Document & Records Management - EAM		
Planning	01/07/2015	31/07/2015

Timescale Activity	Start Date	End Date
Delivery	01/08/2015	30/11/2015
Support & Embed	01/12/2015	31/12/2015
Benefit Realisation	01/01/2016	ongoing
Mobility - EAM		
Planning	01/07/2015	31/08/2015
Delivery	01/09/2015	31/03/2016
Support & Embed	01/04/2016	30/06/2016
Benefit Realisation	01/07/2016	ongoing
Condition & Measurement Data		
Planning	01/07/2016	30/09/2016
Delivery	01/10/2016	31/03/2018
Support & Embed	01/04/2018	30/06/2018
Benefit Realisation	01/07/2018	ongoing
Analytics – Phase 1		
Planning	01/01/2016	31/02/2016
Delivery	01/02/2016	31/05/2016
Support & Embed	01/05/2016	30/06/2016
Benefit Realisation	01/07/2016	ongoing
Analytics – Phase 2		
Planning	01/07/2017	31/07/2017
Delivery	01/08/2017	30/11/2017
Support & Embed	01/12/2017	31/12/2017
Benefit Realisation	01/01/2018	ongoing
Analytics – Phase 3		
Planning	01/01/2019	31/02/2019
Delivery	01/02/2019	31/05/2019
Support & Embed	01/05/2019	30/06/2019
Benefit Realisation	01/07/2019	ongoing
Analytics – Phase 4		
Planning	01/07/2020	31/07/2020
Delivery	01/08/2020	30/11/2020
Support & Embed	01/12/2020	31/12/2020
Benefit Realisation	01/01/2021	ongoing
EAM Processes – Phase 1		

Timescale Activity	Start Date	End Date
Planning	01/07/2016	31/08/2016
Delivery	01/09/2016	31/03/2017
Support & Embed	01/04/2017	30/06/2017
Benefit Realisation	01/07/2017	Ongoing
EAM Processes – Phase 2		
Planning	01/07/2017	31/08/2017
Delivery	01/09/2017	31/03/2018
Support & Embed	01/04/2018	30/06/2018
Benefit Realisation	01/07/2018	Ongoing
EAM Processes – Phase 3		
Planning	01/07/2018	31/08/2018
Delivery	01/09/2018	31/03/2019
Support & Embed	01/04/2019	30/06/2019
Benefit Realisation	01/07/2019	ongoing
Geo Enablement		
Planning	01/07/2018	30/09/2018
Delivery	01/10/2018	30/09/2019
Support & Embed	01/10/2019	31/12/2019
Benefit Realisation	01/01/2020	ongoing

4.4.11 Option 2 Major Business Risks

The following risk assessment has been conducted in accordance with the SA Power Networks' corporate risk framework, including the application of the appropriate qualitative measures of likelihood and consequence, and the resulting overall risk rating as defined in Appendix D. Major business risks of this option are as follows.

Table 21 Major business risks associated with Option 2

Risk ID	Risk Description (Risk Line Item)	Consequence Description	Inherent Likelihood	Inherent Consequences	Risk Rating
	Insufficient senior management support to roll out EAM	The impact and effort required to roll out the EAM initiatives detailed in this Business Case across SA Power Networks should not be under-estimated. This needs to be understood at all levels of management across the organisation, and commitment must be sought that all efforts will be made to ensure the success of these initiatives, before, during and after their implementation.	Possible (3)	Major (4)	HIGH (7)
	Inadequate understanding and provision for change management	The changes resulting from the implementation of these initiatives is likely to impact most staff at SA Power Networks. Managing such significant change across the organisation is critical to the overall and long-term success of this Business Case.	Possible (3)	Moderate (3)	MEDIUM (6)
	Lack of commitment to training	A significant level of training will be required to ensure all staff are familiar with the Asset Management Strategy & Standards as well as the new processes, systems, data and analytical tools.	Possible (3)	Moderate (3)	MEDIUM (6)
	Business does not take a business process change approach and takes a systems implementation approach.	Using old processes with the new system capabilities will not enable the business to realise the available benefits.	Possible (3)	Moderate (3)	MEDIUM (6)
	The critical integration between the inter-dependent initiatives contained in relevant business cases are not managed or well understood.	This will result in inefficient end-to-end processes and the business will not realise the full benefits of an EAM approach	Possible (3)	Moderate (3)	MEDIUM (6)

4.5 Option 3 – Optimistic Approach towards Enterprise Asset Management

This option represents an optimistic move towards an Enterprise approach to Asset Management.

4.5.1 **Requirements** Scope Inclusions

The high level scope of this option includes the following initiatives ***in addition to*** the full scope of the initiatives included in Option 2:

1. **Asset Management Accountability**
    - There are no extra initiatives to those include in Option 2.

2. **Asset Information Management**
    - Implement improved asset data capture processes (include creation, maintenance and display) for Real Estate and Fleet assets.
    - An acceleration of asset & condition data collection.
    - Implement real time condition monitoring through the transfer of condition and/or performance data from systems such as ADMS to the core ERP system for asset management purposes.
    - Integration of imagery from Lidar, drone and other sources with technical and work management objects representing the asset for asset management purposes.
    - Implementation of Linear Asset Management to assist with segmentation of the network asset.
    - Implement improved asset analytics capability, including:
        - Monitoring of performance indicators such as SAIDI & SAIFI by identifying assets or asset groups that directly affect such indicators.
        - Investment modelling capability including 'what if' scenario analytics

3. **Asset Lifecycle Management**
    - Implement the process / capability to support Real Estate and Fleet.
    - Implement enhanced asset management process / capability including:
        - Work Clearance Management to enable the tagging process (includes SAP / ADMS / OMS interfaces);
        - Implement Operational Risk Management to assist with operational risk management and improve environmental, health and safety standards.
    - Implement enhanced reliability process and software.
    - Investigate Augmented Reality technology.
    - Investigate ability to store Lidar images to the right geo-location.

4.5.2 Option 3 Delivery and Change Management Costs

The table below is a summary of the capital project delivery and change management costs. A detailed breakdown of these costs is provided in the attached MS Excel Financial Assessment spreadsheet (refer to Appendix A).

Table 22 Delivery and Change Management costs by Business Unit ($M Real 2013/14)

Business Unit	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total 2015/16 - 2019/20	2020/21	2021/22	2022/23	Total
IT Delivery and Change Mgmt	0.517	2.387	16.829	22.411	9.215	1.844	**52.685**	1.949	0.465	0.062	**55.679**
Non-IT Delivery and Change Mgmt	0.287	1.346	2.919	2.900	1.531	0.646	**9.341**	1.837	0.704	0.016	**12.186**
TOTAL	**0.805**	**3.733**	**19.748**	**25.311**	**10.746**	**2.490**	**62.027**	**3.786**	**1.169**	**0.077**	**67.864**

Table 23 outlines the combined IT and non-IT capital costs by initiative.

Table 23 Delivery and Change Management costs by Business Unit ($M Real 2013/14)

Project Name	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Capital 2015/16 - 2019/20	2020/21	2021/22	2022/23	Total
EAM Blueprint	0.805	-	-	-	-	-	**-**	-	-	-	0.805
Asset Data	-	1.555	13.544	13.426	-	0.554	**29.080**	0.867	-	-	29.947
Document management	-	0.745	-	-	0.499	0.330	**1.574**	-	-	-	1.574
Mobility	-	0.635	1.878	-	-	-	**2.513**	-	-	-	2.513
Condition data	-	-	1.570	8.394	7.375	-	**17.339**	-	-	-	17.339
Analytics	-	0.205	0.409	0.205	0.409	0.992	**2.221**	0.583	-	-	2.804
Processes	-	0.593	2.347	3.148	2.364	-	**8.451**	-	-	-	8.451
Geo enablement	-	-	-	-	-	0.613	**0.613**	2.335	1.169	0.077	4.195
Enterprise Asset Management Recurrent Functional Upgrade	-	-	-	0.139	0.099	-	**0.237**	-	-	-	0.237
TOTAL CAPITAL	**0.805**	**3.733**	**19.748**	**25.311**	**10.746**	**2.490**	**62.027**	**3.786**	**1.169**	**0.077**	**67.864**

4.5.3 Option 3 Delivery Cost Assumptions

In addition to the assumptions documented for option 2, the following assumptions have been made in the estimation of the delivery cost:

Asset Data

- Linear Asset data commences 2nd Half 2019
- Real Estate and Fleet data commences 1st Half 2020
- Includes data cleansing costs
- Includes interface development
- No extra licence costs
- Train 60 people for an average of 2 days
- Engage 50 Contractors to collect asset attribute data over a 2 year period

EAM Document & Records Management

- Commence 2nd half 2018
- Integration of Lidar with technical and Work Management objects
- No extra licence costs
- Train 60 people in Network for an average of 1 day
- Train 100 people in Field Services for an average of 1 day

EAM Mobility

- There are no extra defined Mobility initiatives. However now the framework is in place each piece of delivered functionality should consider the user experience and mobility as part of the deliverable.

Condition Data

- Commence 2nd Half 2018
- Includes interface development to include load & performance data from external systems, which in turn can trigger the creation of maintenance notifications in the ERP.
- Includes extra software to assist the integration as per the SAP Value Roadmap.
- Train 10 people for an average of 1 days
- Engage 30 Contractors to collect asset condition data over a 2 year period

Analytics

- Include two deliverable blocks (6 month + 12 month)
- Includes SAIDI/SAIFI performance & Condition Monitoring
- Includes Real Estate/Fleet/WCM/ORM process performance reports
- No extra licence costs
- Train 10 people in each cycle for an average of 1 day

Process

- Commence 2nd Half 2018
- Extends over 2.5 years in 3 phases
- Includes Work Clearance Management (WCM); Operational Risk Management (ORM)
- Includes enhanced Reliability software and Augmented Reality investigation
- Includes Real estate and Fleet processes
- Train 150 people an average of 3 days each year

Geo enablement

- Commence 1st Half 2020
- Investigation into the ability to store Lidar images to the correct geo location.

4.5.4 Option 3 Change Management Cost Assumptions

The following assumptions have been made when estimating the cost change management:

1. Training of staff during and post-delivery of the new systems and processes has been provided for all new initiatives detailed in this option.
2. Ongoing training of staff with regards to the use of the SAP ERP system outside the scope of the new functionality provided under this business case is not included in the cost of Change Management.
3. Operational Change Management, including IT training and support are included in these costs.
4. The amount includes change costs during Planning & Delivery, and post-implementation/ warranty stages.
5. A detailed breakdown of these costs is provided in the Financial Evaluation Worksheet attached to this document.

4.5.5 Option 3 Opex Step Change

There are recurrent software maintenance costs associated with the purchase of additional applications to support the business process. The table below is a summary of the option 3 opex step change costs for the 2015-2010 regulatory control period and the 13 year investment period.

Table 24 Recurrent opex costs ($M Real 2013/14)

2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total 2015/16 - 2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	Total
		0.3	0.3	0.4	0.4									
		1	1	5	9	**1.588**								
-	-	8	8	7	4		0.764	0.764	0.764	0.764	0.764	0.764	0.764	**6.938**

4.5.6 Option 3 Opex Step Change Assumptions

Opex step change costs include:

1. Annual software maintenance fees of 22% of original purchase price.
2. Uplift of resources to support Mobility and Geo enablement applications.
3. The cost of data governance has not been included as part of Recurrent Costs and is assumed to be included in Business As Usual.
4. From time to time, there will be a requirement to apply upgrades and patches to the corporate systems, which will impact the modules used by EAM processes. The costs related to this work is not included in recurring costs for this Business Case as it applies across the entire landscape and will included in the overall ongoing upgrade and enhancement costs.

4.5.7 Option 3 Expected Benefits

It is important to note that benefits will begin to be realised with each release of capability.

For example:

- Users today need to go to multiple sources (multiple user interfaces) to obtain asset attribute data which in the future will be readily accessed from a single user interface although the data elements may be stored in different systems (i.e. asset brand, model etc. will be in the ERP whereas geo spatial data will be stored in the GIS). This type of benefit is included as an increase in workforce productivity and increased levels of customer service.
- Users today will again need to access multiple system to obtain asset specifications, drawings etc. In the future with a document & record management system a user will be able to access this information from a single point, again resulting in a productivity increases and increased levels of customer service.

However, due to the complexity in the calculation of the benefits associated with the early initiatives (that are very obviously there) we have taken the approach that the tangible benefit calculations will not commence until such time as the condition data initiative has been completed at which time the bulk of the process initiatives will have been delivered and associated analytics improvements.

Please note that due to the lack of current cost information and the associated complexity with benefit calculation, a number of the benefits have been represented as intangible with no value assigned to them.

Please also note that although we have references to indicative improvement ranges we have chosen to take a conservative approach to the benefit calculations.

Table 25 Expected benefits

Benefit Type	Benefit Effect	Benefit	Measure	Date Benefit Expected	Value
Intangible	Direct	Extended asset lives due to the focus on complete asset lifecycle costs and the improved maintenance standards.	With extended asset lives one can expect a greater return from the existing asset base, timelier capital investment and an improvement in customer service measures.	2018	
Intangible	Direct	Greater return on asset base through the enhanced ability to determine whether to repair, refurbish or replace equipment.	The combination of asset information, condition data and an analytical capability lead to improved costs of maintenance and timelier capital expenditure.	2018	
Intangible	Direct	Increased ability to plan and predict future cost	The combination of asset information, condition data and an analytical capability lead to improved costs of maintenance and timelier capital expenditure	2016	

Benefit Type	Benefit Effect	Benefit	Measure	Date Benefit Expected	Value
Intangible	Direct	Improved Quality of Supply response time to customers.	The hours taken today to analyse disparate systems & data will be significantly reduced in the future, especially with the introduction of real time condition monitoring.	2017	
Intangible	Direct	Improved processes will improve the ability to make successful warranty claims	The number of successful warranty claims will increase	2018	
Intangible	Direct	Improved planning & scheduling of personnel and maintenance activities	The ability to bundle work more effectively will reduce business risk and allow for optimal use of resources	2018	
Intangible	Indirect	Reduced Inventory levels through improved planning & scheduling of personnel and maintenance activities	Reduced inventory levels achieved through a more reliable and robust plan of work	2018	
Intangible	Direct	Asset condition data will drive effective maintenance strategies that extend asset life and reduced unplanned outages	The 'Energy not Supplied' due to 'unassisted equipment failure' will be reduced, resulting in a value of customer reliability (VCR) benefit.	2018	
		With real time load and condition monitoring and other capability increases this benefit will increase	Incremental reduction in the number of unassisted equipment failures.	2019	
Intangible	Direct	Improved Risk Control	Equipment failure can put people in danger and cascade into other systems representing business risk. Good maintenance practise reduces the chance of such failure	2018	
Intangible	Direct	With the reduction in disparate systems there will be an opportunity to retire stand-alone systems and applications	This will be represented in a lower cost of ownership across the systems landscape	2016	

Benefit Type	Benefit Effect	Benefit	Measure	Date Benefit Expected	Value
Tangible	Direct	Improved maintenance processes leads to enhanced workforce productivity	Productivity of all resources will be improved from Maintenance planners bundling work using increased knowledge and mapping technologies through to field execution and close out. In addition there will be less duplication of effort - data entry in one place rather than across multiple systems & databases	July 2018	$8,527,743 per annum
		With real time load and condition monitoring and other capability increases this benefit will increase	Incremental increase in workforce productivity	July 2019	$5,329,839 per annum
Tangible	Direct	Improved maintenance processes leads to improved inventory and materials management.	Greater certainty of the maintenance schedule and a reduction in unplanned events allows for less waste and re-work resulting in a lower material cost	July 2018	$95,322 per annum
		With real time load and condition monitoring and other capability increases this benefit will increase	Incremental increase in the material savings due to less waste and re-work.	July 2019	$152,516 per annum

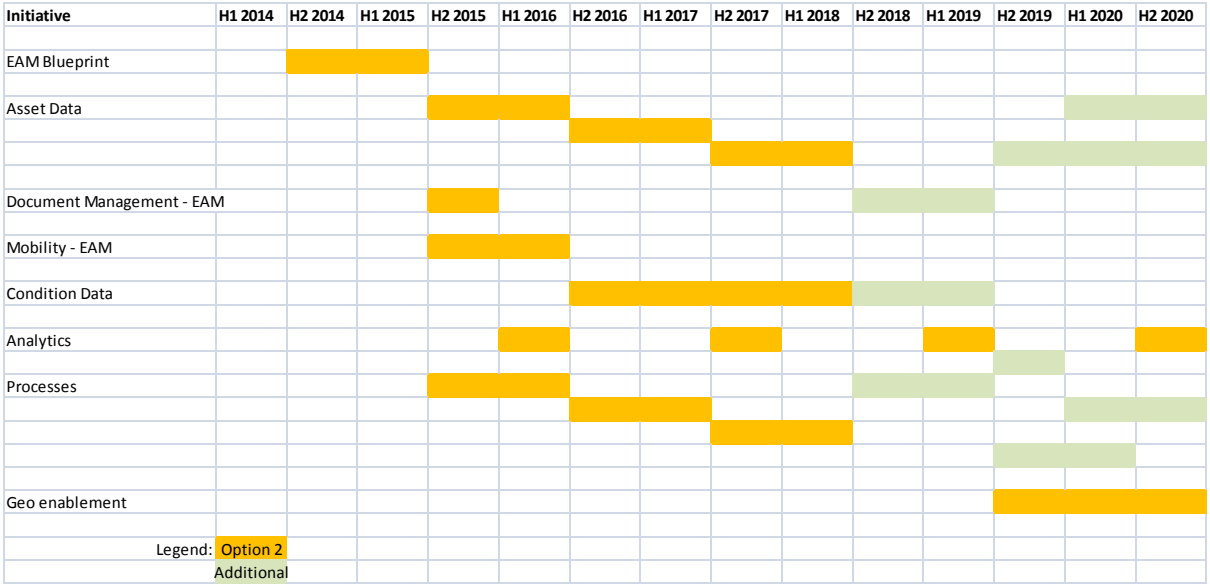
4.5.8 Option 3 Expected Disbenefits

Table 26 Expected disbenefits

Disbenefit	Consequence outcome (Value, Measure)
Short-medium term cultural impact	• Implementing EAM as detailed will have an impact on a large number of staff members across the business. Despite long-term benefits from this change, in the short-medium term there will be significant effort required to manage this change to ensure the success of these initiatives. This commitment to change must come from all levels of the organisation. • Failure to adequately manage this change will not only result in the financial cost, but could also lead to even more inefficient management of the network, and increased staff turnover.

4.5.9 Option 3 Timescale

The following figure displays a high level schedule of the initiatives that have been identified:



The following table outlines at a high level the key initiatives and their phases, with those extra initiatives included as part of Option 3 in the shaded rows:

Table 27 Project timescale

Timescale Activity	Start Date	End Date
EAM Blueprint		
Planning	01/07/2014	31/12/2014
Delivery	n/a	
Support & Embed	n/a	
Benefit Realisation	n/a	

Timescale Activity	Start Date	End Date
Asset Data – Phase 1		
Planning		
Delivery	01/07/2015	30/09/2015
Support & Embed	01/10/2015	30/04/2016
Benefit Realisation	01/05/2016	30/06/2016
Asset Data – Phase 2	01/07/2016	ongoing
Planning		
Delivery	01/07/2016	30/09/2016
Support & Embed	01/10/2016	30/04/2017
Benefit Realisation	01/05/2017	30/06/2017
Asset Data – Phase 3	01/07/2017	Ongoing
Planning		
Delivery	01/07/2015	30/09/2015
Support & Embed	01/10/2015	30/04/2016
Benefit Realisation	01/05/2016	30/06/2016
Asset Data – Phase 4 (linear assets)		
Planning	01/07/2019	31/08/2019
Delivery	01/09/2019	30/04/2020
Support & Embed	01/05/2020	30/06/2020
Benefit Realisation	01/07/2020	Ongoing
Asset Data – Phase 5 (Real Estate & Fleet)		
Planning	01/01/2020	31/01/2020
Delivery	01/02/2020	31/05/2020
Support & Embed	01/06/2020	31/07/2020
Benefit Realisation	01/08/2020	Ongoing
Document & Records Management - EAM		
Planning	01/07/2015	31/07/2015
Delivery	01/08/2015	30/11/2015
Support & Embed	01/12/2015	31/12/2015
Benefit Realisation	01/01/2016	ongoing
Document & Records Management - Lidar		
Planning	01/07/2018	31/07/2018
Delivery	01/08/2018	31/12/2018
Support & Embed	01/01/2019	28/02/2019

Timescale Activity	Start Date	End Date
Benefit Realisation	01/03/2019	ongoing
Mobility - EAM		
Planning	01/07/2015	31/08/2015
Delivery	01/09/2015	31/03/2016
Support & Embed	01/04/2016	30/06/2016
Benefit Realisation	01/07/2015	ongoing
Condition & Measurement Data		
Planning	01/07/2016	30/09/2016
Delivery	01/10/2016	31/03/2018
Support & Embed	01/04/2018	30/06/2018
Benefit Realisation	01/07/2018	ongoing
Condition & Measurement Data – real time		
Planning	01/07/2018	30/09/2018
Delivery	01/10/2018	31/05/2019
Support & Embed	01/06/2019	31/07/2019
Benefit Realisation	01/08/2019	ongoing
Analytics – Phase 1		
Planning	01/01/2016	31/02/2016
Delivery	01/02/2016	31/05/2016
Support & Embed	01/05/2016	30/06/2016
Benefit Realisation	01/07/2016	ongoing
Analytics – Phase 2		
Planning	01/07/2017	31/07/2017
Delivery	01/08/2017	30/11/2017
Support & Embed	01/12/2017	31/12/2017
Benefit Realisation	01/01/2018	ongoing
Analytics – Phase 3		
Planning	01/01/2019	31/02/2019
Delivery	01/02/2019	31/05/2019
Support & Embed	01/05/2019	30/06/2019
Benefit Realisation	01/07/2019	ongoing
Analytics – Phase 4		
Planning	01/07/2020	31/07/2020
Delivery	01/08/2020	30/11/2020

Timescale Activity	Start Date	End Date
Support & Embed	01/12/2020	31/12/2020
Benefit Realisation	01/01/2021	ongoing
Analytics – Phase 5 –SAIDI/SAIFI/Condition Monitoring		
Planning	01/07/2019	31/07/2019
Delivery	01/08/2019	30/11/2019
Support & Embed	01/12/2019	31/12/2019
Benefit Realisation	01/01/2020	ongoing
Analytics – Phase 6 – Real Estate/Fleet/WCM/ORM		
Planning	01/01/2020	28/02/2020
Delivery	01/03/2020	31/10/2020
Support & Embed	01/11/2020	31/12/2020
Benefit Realisation	01/01/2021	ongoing
EAM Processes – Phase 1		
Planning	01/07/2015	31/08/2015
Delivery	01/09/2015	31/03/2016
Support & Embed	01/04/2016	30/06/2016
Benefit Realisation	01/07/2016	Ongoing
EAM Processes – Phase 2		
Planning	01/07/2016	31/08/2016
Delivery	01/09/2016	31/03/2017
Support & Embed	01/04/2017	30/06/2017
Benefit Realisation	01/07/2017	Ongoing
EAM Processes – Phase 3		
Planning	01/07/2017	31/08/2017
Delivery	01/09/2017	31/03/2018
Support & Embed	01/04/2018	30/06/2018
Benefit Realisation	01/07/2018	ongoing
EAM Processes – Phase 4 – WCM/ORM		
Planning	01/07/2018	31/08/2018
Delivery	01/09/2018	30/04/2019
Support & Embed	01/05/2019	30/06/2019
Benefit Realisation	01/07/2019	ongoing
EAM Processes – Phase 5 – Enhanced Reliability		

Timescale Activity	Start Date	End Date
Planning	01/07/2019	31/08/2019
Delivery	01/09/2019	30/04/2020
Support & Embed	01/05/2020	30/06/2020
Benefit Realisation	01/07/2020	ongoing
EAM Processes – Phase 6 – Real Estate & Fleet		
Planning	01/01/2020	28/02/2020
Delivery	01/03/2020	31/10/2020
Support & Embed	01/11/2020	31/12/2020
Benefit Realisation	01/01/2021	ongoing
Geo Enablement		
Planning	01/07/2019	30/09/2019
Delivery	01/10/2019	30/09/2020
Support & Embed	01/10/2020	31/12/2020
Benefit Realisation	01/01/2021	ongoing
Geo Enablement – Lidar investigation		
Planning	01/01/2021	31/03/2021
Delivery	n/a	n/a
Support & Embed	n/a	n/a
Benefit Realisation	n/a	n/a

4.5.10 Option 3 Major Business Risks

The following risk assessment has been conducted in accordance with the SA Power Networks' corporate risk framework, including the application of the appropriate qualitative measures of likelihood and consequence, and the resulting overall risk rating as defined in Appendix D. Major business risks of this option are as follows.

Table 28 Major business risks associated with Option 3

Risk ID	Risk Description (Risk Line Item)	Consequence Description	Inherent Likelihood	Inherent Consequences	Risk Rating
	Insufficient senior management support to roll out EAM	The impact and effort required to roll out the EAM initiatives detailed in this Business Case across SA Power Networks should not be under-estimated. This needs to be understood at all levels of management across the organisation, and commitment must be sought that all efforts will be made to ensure the success of these initiatives, before, during and after their implementation.	Possible (3)	Major (4)	HIGH (7)
	Inadequate understanding and provision for change management	The changes resulting from the implementation of these initiatives is likely to impact most staff at SA Power Networks. Managing such significant change across the organisation is critical to the overall and long-term success of this Business Case.	Possible (3)	Moderate (3)	MEDIUM (6)
	Lack of commitment to training	A significant level of training will be required to ensure all staff are familiar with the Asset Management Strategy & Standards as well as the new processes, systems, data and analytical tools.	Possible (3)	Moderate (3)	MEDIUM (6)
	Business does not take a business process change approach and takes a systems implementation approach.	Using old processes with the new system capabilities will not enable the business to realise the available benefits	Possible (3)	Moderate (3)	MEDIUM (6)
	The critical integration between the inter-dependent initiatives contained in relevant business cases are not managed or well understood.	This will result in inefficient end-to-end processes and the business will not realise the full benefits of an EAM approach	Possible (3)	Moderate (3)	MEDIUM (6)

Risk ID	Risk Description (Risk Line Item)	Consequence Description	Inherent Likelihood	Inherent Consequences	Risk Rating
	Too much change to fundamental system and processes around asset management in too short a timeframe	The amount of change detailed in this option in the timeframe will lead to new systems and processes not being adequately implemented and understood, leading to resistance to change and lack of acceptance of the new approach to asset management.	Possible (3)	Major (4)	HIGH (7)

5. Investment Appraisal

5.1 Investment Appraisal

Table 29 Invest appraisal breakdown

Option	Measure Type	Value
0	NPV[1] (Net Present Value)	-$26,391,191
	PI (Profitability Index)	n/a
1	NPV[1] (Net Present Value)	-$46,932,883
	PI (Profitability Index)	0.0
2	NPV[1] (Net Present Value)	*$2,076,916*
	PI (Profitability Index)	1.1
3	NPV[1] (Net Present Value)	*-$6,174,727*
	PI (Profitability Index)	0.9

[1] *Calculated over 13 years from 2014/15*

Note:
The time over which the Net Present Value is 13 years, from 2014/15 to 2026/27. This is to allow for ten years of benefits to be included in the NPV calculation, which is considered a realistic timeframe for SA Power Networks to benefit from the investment made.

6. High Level Summary of Options

Option 0	Option 1	Option 2	Option 3
DO NOTHING Maintain the current environment. This is essentially a 'Business As Usual' approach whereby SA Power Networks perpetuates the existing processes, people, systems, and data.	**BUSINESS AS USUAL** Utilise and extend the existing processes and systems in order to meet the requirements of the changing business environment, including a move towards enterprise asset management and alignment to ISO 55000.	**BALANCED APPROACH TOWARDS EAM** • Enhance and upgrade SA Power Networks capabilities (process, people, systems and data) in order to move away from a siloed and non-integrated approach towards and Enterprise approach. It would not be prudent to make such a transformational change in one step. The rate of change across business functions/capabilities and asset types will be balanced by an assessment of the realistic capacity of the business to absorb the rate of change. • The in scope improved capability required to support the EAM lifecycle includes: • Asset Management Strategies and Asset Planning ✓ Business Planning & Investment Management ✓ Asset Management Strategies & Planning • Design & Estimation ✓ Asset & estimation data • Construction ✓ Asset & estimation data ✓ GIS interfaces • Operate and Maintain ✓ Technical asset management ✓ Preventative, Predictive, Corrective & condition-based maintenance etc. ✓ SAP / GIS / ADMS / OMS/ CIS interfaces (Tagging, switching etc.) ✓ Work Clearance / Safety management • Decommission & Dispose ✓ Asset disposal • Capabilities required across the lifecycle include: • Document & Records Management • Mobility for EAM • Asset analytics • Geo spatial enablement	**OPTIMISTIC APPROACH TOWARDS EAM** • This Option includes the same capability set that is included in Option 2. • The difference between the two options being the rate of change. This option proposes a more aggressive implementation of solutions across business functions/capabilities and asset types that is balanced by an assessment of the maximum capacity of the business to absorb the rate of change.

7. Recommendation

Following an analysis of the options SA Power Networks recommends the Option 2 – A Balanced Approach to Enterprise Asset Management.

Option 2 provides the best solution for SA Power networks to improve its capability around the way it manages its assets, both network and non-network, which will lead to:

- achieving its strategic goal of excellence in asset management;
- meeting the National Electricity Objective; and
- meeting the challenges of the dynamic operating environment it is working in.

Other key reasons for this recommendation are:

1. The option best aligns with SA Power Network's corporate and IT strategic objectives.
2. The options satisfies the National Electricity Rules Expenditure criteria for being the most efficient cost option for achieving the objectives, and reflects the costs of a prudent operator.

The recommendation is supported by comparing each of the options against the following criteria:

Criteria	Option 0 Do Nothing	Option 1 Business As Usual	Option 2 EAM Balanced Approach	Option 3 Optimistic Approach
Delivery, Recurrent & OCM Costs ($ Real 2013/14)	$38,024,265	$64,614,917	$26,932,147	$74,802,390
NPV ($)	-$26,391,191	-$46,932,883	$2,076,916	-$6,174,727
Overall Risk Rating	HIGH	HIGH	MEDIUM	HIGH
Benefits	None	None	Tangible/ Intangible	Tangible/ Intangible
Alignment to Corporate Strategy & Programs	✘	✘	✓	✓
Alignment to IT Strategy & Programs	✘	✘	✓	✘
Relationship to NER Expenditure Objectives	✘	✘	✓	✓
Relationship to NER Expenditure Criteria	✘	✘	✓	✘
Meets Initiative(s) Scope	✘	✘	✓	✓

8. Document Authorisation and History

8.1 References

The following documents were referenced in completion of this document:

Ref	Document Name	Date	Version	Author
	SA Power Networks 7 Year SAP Value Roadmap	15 Nov 13	1.2	SAP/ SA Power Networks
	SA Power Networks EAM Roadmap	04 Dec 13	3.0	Len Harms (Vesta)
	SA Power Networks EAM Roadmap	28 Jan 14	4.3	Len Harms (Vesta)
	IT Strategic Plan 2013 to 2017	18 Apr 13	1.1	SA Power Networks
	SAPN Value Roadmap Tool		50	SA Power Networks
	IT Price Reset – business case guidelines	12 Dec 13	2	SA Power Networks
	SA Power Networks Strategic Plan 2014 - 2018	November 13		SA Power Networks

8.2 Acronyms and Abbreviations

Acronym / Abbreviation	Definition
EAM	Enterprise Asset Management
ADMS	Advanced Distribution Management System
GIS	Geographic/ Geospatial Information System
SAIDI	
SAIFI	

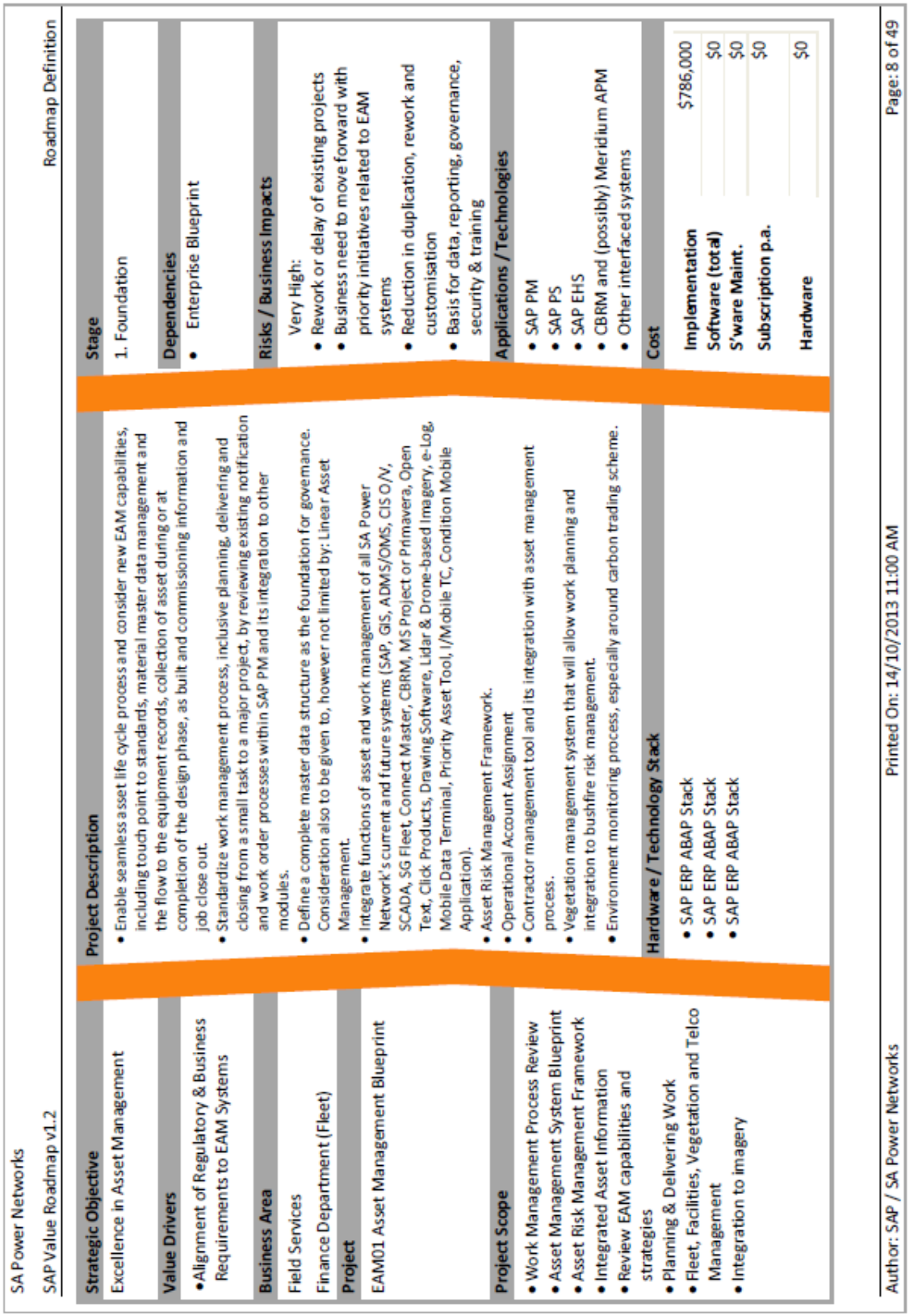
Appendix A FINANCIAL DATA

Appendix B CROSS REFERENCE TO IT INITIATIVES

The following table includes a cross reference from the capabilities and initiatives included in the Business Case to those initiatives identified by IT:

Asset Management Capability	Initiative	Discussion
Asset Management Accountability	EAM Blueprint	• EAM01 Asset Management Blueprint
Asset Information Management	Asset Data	• EAM06 Enhanced Asset Data • FIE02 Financial Asset Register (linkage of financial & technical asset) • FIE08 Property Management
	EAM Document & Records Management	• EAM05 Asset Document Management FIE08 Property Management
	EAM Mobility	• EAM11 Mobility (EAM) • ResetProjID197 Enterprise Mobility – Condition Based Risk Maintenance • ResetProjID198 Enterprise Mobility - Asset Data and Condition Data capture
	Condition Data	• EAM04 Condition & Performance Monitoring
	Analytics	• EAM03 Business Analytics FIE08 Property Management
Asset Lifecycle Management	Process	• EAM02 Foundation Realisation • EAM07 Enhanced Asset Management (only includes an investigation into augmented reality technology). • EAM13 System Productivity FIE08 Property Management
	EAM Document & Records Management	• EAM05 Asset Document Management
	EAM Mobility	• EAM11 Mobility (EAM)
	Analytics	• EAM03 Business Analytics FIE08 Property Management
	Geo Enablement	• EAM08 GIS for EAM and ERP Geo-Enablement

Appendix C EAM IT INITIATIVES



SA Power Networks

SAP Value Roadmap v1.2

Roadmap Definition

Strategic Objective

Excellence in Asset Management

Value Drivers

- Efficiency in work identification, planning, scheduling, execution & history

Business Area

Field Services

Finance Department (Fleet)

Information Technology

Network Management

People & Culture (Facilities)

Project

EAM02 Foundation Realisation

Project Scope

- SAP PM configuration re-alignment
- Implementation of interfaces to SAP PM

Project Description

- Implement the agreed processes in asset management system from the Asset Management Blueprint, in conjunction with "Enhanced Master Data" project.
- Implement required interfaces to other systems in SA Power Networks to support the agreed processes in Asset Management Blueprint. Activate required Enterprise Service Bundles in EAM based on the Blueprint.

Hardware / Technology Stack

- SAP ERP ABAP Stack
- SAP ERP ABAP Stack

Stage

1. Foundation

Dependencies

- Asset Management Blueprint

Risks / Business Impacts

Very High:

- Integration with existing projects
- Limited ability to return to basic SAP due to existing dependencies and customisations
- Regularity Reporting
- Worker Safety
- Data collection to support business reporting and analytics

Applications / Technologies

- SAP PM
- SAP EHS
- Other interfaced systems

Cost

Implementation	$2,002,000
Software (total)	$0
S'ware Maint.	$0
Subscription p.a.	$0
Hardware	$0

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SA Power Networks

SAP Value Roadmap v1.2 — Roadmap Definition

Strategic Objective

Excellence in Asset Management

Value Drivers

- Improve business monitoring, decision making and initiative selection

Business Area

Field Services

Information Technology

Network Management

People & Culture (Facilities)

Project

EAM03 Business Analytics

Project Scope

- Standard Report Set
- PM Information System
- Operations Account Assignment
- Program Management
- Costing Opex and Capex
- SAIDI and SAIFI
- Reporting

Project Description

- Determine standard report set and or expand the usage of PM Information System, BI or BO for EAM reporting.
- Enable Program Management by analysing trend of replacement and maintenance costs (optimisation, budget and forecast preparation).
- Enable Costing OPEX and CAPEX by comparing costs of replacement against costs of asset maintenance (inspection, corrective and reactive).
- Enable monitoring of performance indicators, such as SAIDI and SAIFI by identifying assets or asset groups that cause increase of minutes loss and investing in the assets that cause reliability decrease.
- Enable reporting to Executive, Asset Managers and Operations team.

Hardware / Technology Stack

- SAP ERP ABAP Stack
- SAP ABAP BW + BusinessObjects

Stage

2. Core

Dependencies

- Enhanced Asset Data
- Business Intelligence

Risks / Business Impacts

Very High:

- Regulatory Reporting
- Equipment Reliability, Network Availability

Applications / Technologies

- SAP PM
- SAP BI and Business Objects

Cost

Implementation	$424,000
Software (total)	$0
S'ware Maint.	$0
Subscription p.a.	$0
Hardware	$0

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SAP Value Roadmap v1.2

Roadmap Definition

Strategic Objective

Excellence in Asset Management

Value Drivers

- Improve the protection of Asset

Business Area

Network Management

Project

EAM04 Condition & Performance Monitoring

Project Scope

- Real time condition monitoring
- MII - Machine Integration and Interface

Project Description

- Enable the ability of certain Assets to transfer condition or performance data automatically to ERP system through the use of SAP MII, SAP PI, or other integration systems.

Hardware / Technology Stack

- SAP ERP ABAP Stack
- SAP NW Java Stack
- SCADA/DMS

Stage

3. Enhanced

Dependencies

- Enhanced Asset Data

Risks / Business Impacts

High:

- Equipment Reliability, Network Availability
- Efficiency of and broader scope in data collection to support Asset analytics

Applications / Technologies

- SAP PM
- SAP MII (Manufacturing Integration and Intelligence)
- ADMS
- Smart Meter System
- Possible other integration tools

Cost

Implementation	$318,000
Software (total)	$631,000
S'ware Maint.	$555,000
Subscription p.a.	$0
Hardware	$0

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SAP Value Roadmap v1.2

Roadmap Definition

Strategic Objective

Excellence in Asset Management

Value Drivers

- Retention and improvement of Corporate knowledge

Business Area

Field Services

Finance Department (Fleet)

Project

EAM05 Asset Document Management

Project Scope

- Storing documents against ERP objects
- Centralised record management
- Content storage for Network Access Requests
- Integration to imagery from Lidar, Drone and other avenues

Project Description

- Enable integration of ERP EAM objects (Technical Objects, Task Lists, etc.) to document database that may contain e-Drawing, CAD, drawing or work schematic, etc. Enable integration of ERP EAM process (notifications, orders, measurement documents, etc.) to document database that contains inspection pictures (from MDT, drone-based assessment, or others), images or documents required to do a job, etc.
- Review content management options for Network Access Requests.
- Meger of documents and images that are currently stored in many places and business have difficulty in aligning them to specific process or Assets

Hardware / Technology Stack

- SAP ERP ABAP Stack
- SAP ERP ABAP Add-On + OpenText Enterprise Library

Stage

2. Core

Dependencies

- Enterprise Content Management / Document Management

Risks / Business Impacts

Very High:

- Legal / Regulatory Compliance
- Worker Safety

Applications / Technologies

- SAP PM
- SAP Extended ECM by OpenText
- OpenText Shared Document Access for SAP Solutions
- OpenText TempBox

Cost

Implementation	$318,000
Software (total)	$0
S'ware Maint.	$0
Subscription p.a.	$0
Hardware	$0

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SAP Value Roadmap v1.2 — Roadmap Definition

Strategic Objective

Excellence in Asset Management

Value Drivers

- Improved understanding (accuracy & condition) of the Asset Base

Business Area

Field Services

Finance Department (Fleet)

Information Technology

Network Management

People & Culture (Facilities)

Project

EAM06 Enhanced Asset Data

Project Scope

- Asset Data Structure, Completeness & Quality
- Asset Data Governance Tool
- Maintenance Planning Data
- Serialized Parts (Rotables)
- Master Data Management
- Network Asset Management - Linear Asset
- Conditions of Asset
- Fleet, Facilities, Vegetation and Telco Assets
- Integration to imagery

Project Description

- Realign and clean Asset data hierarchy based on the agreed structure made during the blueprint.
- Realign master data to fulfil integration with GIS and ADMS. Realign catalogue codes with Reliability Centred Maintenance initiatives.
- Realign and clean maintenance planning data (task list, strategy and maintenance plan) in accordance to the business blueprint.
- Apply interfaces with SA Power Network's other systems (GIS, ADMS/OMS, SCADA, Connect Master, SG Fleet) to have a single source of true managed Assets database.
- Apply rotables concept.
- Apply measuring data as required.
- Integrate managed / maintained Assets against Financial and Real Estate Assets.

Hardware / Technology Stack

- SAP ERP ABAP Stack
- GIS
- SCADA/DMS

Stage

2. Core

Dependencies

- Asset Management Blueprint

Risks / Business Impacts

Very High:

- Integration with existing projects
- Regulatory Reporting
- Equipment Reliability, Network Availability
- Efficient integration with related data sources, master / slave relationships defined
- Improved Business Decision Making and Initiative Selection

Applications / Technologies

- SAP PM
- GIS
- ADMS
- Other interfaced systems

Cost

Implementation	$3,159,000
Software (total)	$0
S'ware Maint.	$0
Subscription p.a.	$0
Hardware	$0

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SAP Value Roadmap v1.2 — Roadmap Definition

Strategic Objective

Excellence in Asset Management

Value Drivers

- Risk reduction and improved control through systemisation of Manual or Off-System processes

Business Area

Field Services

Network Management

Project

EAM07 Enhanced Asset Management

Project Scope

- Future Operating Model
- Operational Risk Mgmt (ORM)
- Work Clearance Mgmt(WCM)
- Netweaver Business Client (NBWC) / Signature Portal
- Maintenance Cost Budgeting
- Evaluation of Backlog Maintenance
- Augmented Reality
- Reliability Software
- SODS Orphans

Project Description

- Implement Work Clearance Management (WCM) to enable tagging process and interfaced to Operational Systems.
- Implement Operational Risk Management (ORM).
- Implement asset management requirements to support Future Operational Model.
- Implement Maintenance Cost Budgeting.
- Implement reliability programs and software.
- Investigate the usability of Augmented Reality technology.
- Replace SODS functions that are not transferred to ADMS, customers' notification system for planned outages (integration with Automated Customer Notification).

Hardware / Technology Stack

- SAP ERP ABAP Stack
- SAP ERP ABAP Stack + SAP ABAP BW
- SAP ERP ABAP Stack
- SAP ERP ABAP Stack
- SAP ERP ABAP Stack
- SCADA/DMS

Stage

3. Enhanced

Dependencies

- Asset Management Blueprint
- Mobility
- ADMS/Network Control (Part of)
- Enhanced Asset Data

Risks / Business Impacts

Very High:

- Experienced user based required
- Inventing business requirement to match technology
- Linking of Asset data to business financials
- Improved EAM system user experience, uptake & accuracy

Applications / Technologies

- SAP WCM, EHS, PM, ORM
- SAP Maintenance Cost Budgeting (MCB)
- SAP Netweaver
- Augmented Reality technology
- Reliability software
- ADMS

Cost

Implementation	$2,859,000
Software (total)	$168,000
S'ware Maint.	$111,000
Subscription p.a.	$0
Hardware	$0

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SAP Value Roadmap v1.2

Roadmap Definition

Strategic Objective

Excellence in Asset Management

Value Drivers

- Improved understanding (accuracy & condition) of the Asset Base
- Efficiency & accuracy in work identification, planning, scheduling, execution & history

Business Area

Field Services

Network Management

Project

EAM08 GIS for EAM and ERP Geo-Enablement

Project Description

- Enable GIS to provide multi level of capability including routing, navigation, work planning among others and add overlay of tenure and zoning information.
- Enable ERP Geo-Enablement to allow user to use map as the data viewing, entry and update portal to ERP, and also able to view and execute another ERP process step from a map.
- Reduce clutter in Corporate GIS systems, where it only should store geo-spatial attributes and ERP will keep the other "business" attributes.
- Enable user to access Bushfire Risk and Disconnection List on spatial context.
- Enable the visualisation of data and statistics associated with an asset in a geographical representation.
- Enable integration of GIS with drawing management system, especially for 2D CAD.
- Review the ability to store images generated from Lidar Technology to the right geo-location.
- Replace SODS functions that are not transferred to ADMS, such as the unique number for a switching device (maintain number plates).

Project Scope

- GIS - Tenure and Zoning
- Multilevel GIS support
- Visualisation
- Geo Enable ERP
- Bushfire Area & Disconnection List
- Tel/Comms - GIS
- Integration to drawing system and Lidar imagery

Hardware / Technology Stack

- SAP ERP ABAP Stack
- SAP ERP ABAP Stack + ESRI GIS
- GIS
- ACAD

Stage

2. Core

Dependencies

- Enhanced Asset Data (Part of)
- Drawing Management Strategy (Part of)
- Mobility
- ADMS/Network Control (Part of)
- CRM Foundation and Enhanced Customer to Network Connectivity

Risks / Business Impacts

Very High:

- Integration with existing projects
- Single point of data entry, data reused, consistent between systems & accurate
- Enabler for Enhanced Asset Data
- Improved EAM system user experience, uptake & accuracy
- Improved capacity scheduling
- Efficiency of and broader scope in data collection

Applications / Technologies

- SAP PM, PS, Real Estate (RE)
- SAP Geo.e (GIS Integration)
- GIS
- Drawing system (ACAD)

Cost

Implementation	$1,600,000
Software (total)	$0
S'ware Maint.	$0
Subscription p.a.	$0
Hardware	$0

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SAP Value Roadmap v1.2

Roadmap Definition

Strategic Objective

Excellence in Delivery of Services

Value Drivers

- Real time feedback and improved accuracy of field data

Business Area

Field Services

Network Management

People & Culture (Facilities)

Project

EAM11 Mobility (EAM)

Project Scope

- Field Force Enablement
- Mobile Asset Inspections
- Mobile Work Delivery / Dispatch
- Study on Existing System
- Field Force Automation
- CBRM Mobile Field Capture
- Mobile Communication Hub in Vehicles
- Paperless Jobs
- Syclo

Project Description

- Enable one point of entry for mobility solution.
- Enable field force to manage their work (timesheeting, order update, etc.) and report on asset condition or inspection while they are on the job and will update asset management system automatically, which means paperless jobs.
- Enable mobile work delivery and dispatch.
- Enable field force to pull job manuals documentation while on the job, i.e. replace current manual "Job Folder" process (e.g. Open Text for document and records management).
- Enable field force to pull risk report from CBRM and capture risk information then input it back to it.
- Enable field force to report their status (OH&S), on remote location, and the vehicle can report on its condition through vehicle on-board tracking system and communication hub, such as e-Log.
- Extend to inlcude capture of condition data, predominately images, from other 'mobile' devices, for example, drones.

Hardware / Technology Stack

- SAP ERP ABAP Stack
- SAP Mobile Platform / NW Gateway (ABAP)
- SAP ERP ABAP Add-On + OpenText Enterprise Library
- CBRM
- SAP ERP ABAP Stack
- ClickMobile

Stage

2. Core

Dependencies

- Enhanced Asset Data
- Organisation, Skills and Accreditation
- Mobility

Risks / Business Impacts

Very High:

- Improved deployment decisions and responsive customer feedback
- Early initiation of related processes from the field, e.g. work identification and inventory demands
- Improved EAM system user experience, uptake & accuracy
- Reduction in return to base requirements
- Mobility doe collection of condition data and asset information

Applications / Technologies

- SAP PM, HR / CATS
- Sydo
- Open Text
- e-Log
- Vehicle tracking system
- CBRM
- Priority Asset Tool
- ClickMobile

Cost

Implementation	$953,000
Software (total)	$0
S'ware Maint.	$0
Subscription p.a.	$0
Hardware	$0

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SAP Value Roadmap v1.2

Roadmap Definition

Strategic Objective

Excellence in Asset Management

Value Drivers

- User adoption of EAM systems

Business Area

Field Services
Finance Department (Fleet)
Information Technology
Network Management
People & Culture (Facilities)

Project

EAM13 System Productivity

Project Scope

- Continuous User Training

Project Description

- Enable business to have a centralised training plan and framework as a guidance for system usage.
- Create sets of training media for the agreed solutions from the Asset Management Blueprint using Online Training Development Tools
- Develop SAP context sensitive help for EAM (and other related modules) (Non-Online Training Development Tools).
- Create and deploy context-sensitive user help, transaction documentation, training simulations, test scripts, and e-learning materials.
- Enable monitoring of end user experience metrics on application errors, user operations and navigation response times, and detailed screen-level application usage

Hardware / Technology Stack

- SAP Solution Manager (Dual Stack)
- Agent installed on Citrix Servers

Stage

2. Core

Dependencies

- Asset Management Blueprint
- Online Learning Development

Risks / Business Impacts

Very High:

- Alignment of business practices to business requirements through EAM systems
- Reduction in off-line solutions for capability within EAM systems
- Efficiency in work identification, planning, scheduling & execution
- Data collection to support business

Applications / Technologies

- SAP Workforce Performance Builder
- KNOA

Cost

Implementation	$873,000
Software (total)	$0
S'ware Maint.	$0
Subscription p.a.	$0
Hardware	$0

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SAP Value Roadmap v1.2

Roadmap Definition

Strategic Objective

Excellence in Asset Management

Value Drivers

- Improve management of Property Portfolio

Business Area

Corporate Services

Project

FIE08 Property Management

Project Scope

- All business processes relating to the Property Portfolio, i.e. Acquisition, Construction, Disposal of Properties and for example handling incoming & outbound invoices

Project Description

- Enable improved visibility, greater process standardization and integration, and automated collaboration with service providers.
- Improve efficiency of processing accounts and management of property transactions and actions.

Hardware / Technology Stack

- SAP ERP ABAP Stack
- SAP ERP ABAP Stack
- SAP ERP ABAP Stack
- SAP ERP ABAP Stack
- SAP BW ABAP Stack and SAP BO

Stage

2. Core

Dependencies

- Financial Management Reporting

Risks / Business Impacts

Medium:

- 20 FTE within Corporate Services function

Applications / Technologies

- SAP ERP
- SAP FI, FI-AA
- SAP EAM
- SAP RE-FX
- SAP BW and Business Analytics

Cost

Implementation	$286,000
Software (total)	$84,000
S'ware Maint.	$56,000
Subscription p.a.	$0
Hardware	$0

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Appendix D RISK RATING DETAIL

The SA Power Networks' risk management framework defines the following quantitative measures of likelihood and consequence that are in turn used to determine the risk rating. The detailed risk assessment instructions are available on the SA Power Networks Intranet site.

8.3 Risk Likelihood Rating

Rating	Descriptor	Description	Probability	Indicative Frequency
5	Almost Certain	Is expected to occur	96 – 100%	At least one event per year
4	Likely	It will probably occur	81 – 95 %	One event per year on average
3	Possible	May occur	21 – 80%	One event per 2 – 10 years
2	Unlikely	Not likely to occur	6 – 20%	One event per 11 – 50 years
1	Rare	Most unlikely to occur	0 – 5%	One event per 51 – 100 years

8.4 Risk Consequence Rating

Rating	1 Minimal	2 Minor	3 Moderate	4 Major	5 Catastrophic
Financial	Less than $100,000	$100,000 or more, but less than $1m	$1m or more, but less than $10m	$10m or more, but less than $100m	$100m or more
OH and S	Incident but no injury	Medical treatment only	Lost time injury	Death or Permanent Disability	Multiple Fatalities
Environment	Brief spill incident. No environmental damage.	Minor spill. Pollutant on site. No environmental damage.	Escape of pollutant causing environmental damage	Significant pollution on and off site < $0.5 m	Long term environmental damage
Reputation / Customer Service	Localised customer complaints	Widespread customer complaints or Complaints to Ombudsman or Regulator	Intervention by the Ombudsman or Regulator	Repeated intervention by the Ombudsman or Regulator	Loss of Distribution Licence
	Adverse regional media coverage	Adverse State media coverage	Adverse media campaigns by customers, media, industry groups	Severe negative impact on both regulated and un-regulated businesses	Loss of Distribution Licence
Legislative and Regulatory	Minor breaches by employees resulting in customer complaints or publicity	Act or Code infringements resulting in minor fines	Severe Company or Officer fines for Act or Code Breaches	Prison sentences for Directors or Officers	Loss of Distribution Licence
	ACCC require apology and / or corrective advertising	ACCC require special offer be made to all customers / suppliers	ACCC minimum level penalties	ACCC moderate level penalties	ACCC maximum level penalties
	Directors / Officers given minimum fines	Directors / Officers given moderate fines	Directors / Officers given severe fines	Directors / Officers given prison sentences	Loss of Distribution Licence

Rating	1 Minimal	2 Minor	3 Moderate	4 Major	5 Catastrophic
Organisational	Absorbed without additional management activity	Absorbed with minimal management activity	Significant event which requires specific management	Critical event which can be endured with targeted input	Disaster which can cause collapse of the business
Reliability	2000 customers without supply for a min. of 12 hours (i.e., a medium size urban feeder)	10,000 customers without supply fora min. of 24 hours (i.e., a major storm related outage or a major substation outage)	Up to 40,000 customers without supply for a min. of 48 hours (i.e., major multiple zone substation coincident outages)	Over 40,000 customers without supply for longer than 48 hours (i.e., major geographical areas off supply)	Adelaide CBD without supply for longer than 24 hours

8.5 Level of Risk Matrix

Likelihood (Probability)	Threat Consequences				
	Minimal (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Almost Certain (5)	Medium	High	High	Extreme	Extreme
Likely (4)	Low	Medium	High	High	Extreme
Possible (3)	Low	Low	Medium	High	High
Unlikely (2)	Negligible	Low	Low	Medium	High
Rare (1)	Negligible	Negligible	Low	Low	Medium