SA Power Networks

Supporting document 5.28

KPMG - Deliverability Review

2020-25 Revised Regulatory Proposal

10 December 2019

KPMG

Independent review of the deliverability of SAPN's regulatory resubmission for IT expenditure

SA Power Networks

—

December 2019

Contents

Inherent Limitations

This report has been prepared as outlined in the Scope Section. The services provided in connection with this engagement comprise an advisory engagement, which is not subject to assurance or other standards issued by the Australian Auditing and Assurance Standards Board and consequently no opinions or conclusions intended to convey assurance have been expressed.

No warranty of completeness, accuracy or reliability is given in relation to the statements and representations made by, and the information and documentation provided by, SA Power Networks (SAPN) and its personnel consulted as part of the process.

KPMG has indicated within this report the sources of the information provided. We have not sought to independently verify those sources unless otherwise noted within the report.

KPMG is under no obligation in any circumstance to update this report, in either oral or written form, for events occurring after the report has been issued in final form.

The findings in this report have been formed on the above basis.

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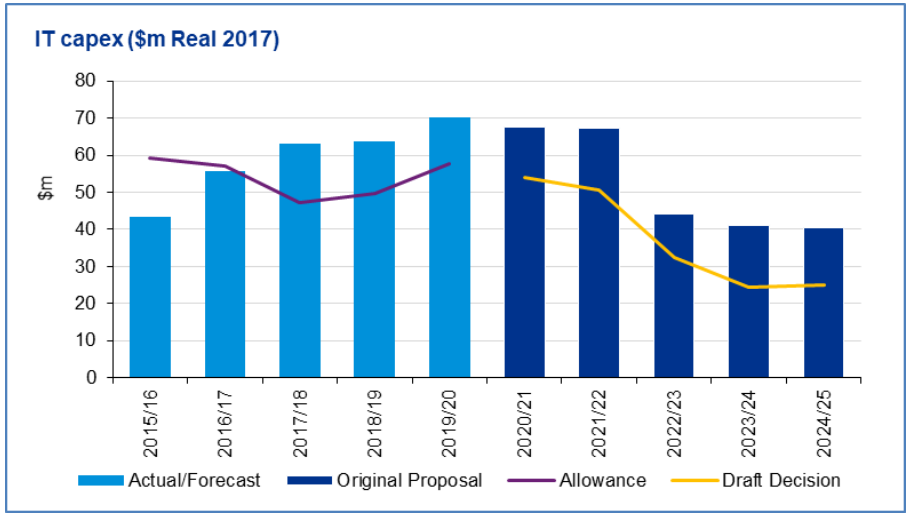
KPMG

Executive summary

Executive Summary

Background

In January 2019 SAPN submitted its proposal to the AER for a decision on its allowed revenues for the next regulatory control period, 2020/21 to 2024/25 ("RCP 2020-25"). As part of this submission SAPN proposed a program of IT capital expenditure totalling $260.5m (Real $Dec 2017) which represented a reduction against its actual and forecast total for RCP 2015-20 of approx. 12%. This is illustrated in the chart below which also shows the original allowance provided by the AER for RCP 2015-20.



In its proposal, SAPN noted a number of changes that had to be made to the 2015-20 IT plan that resulted in the different expenditure profile shown above, including:

- 'Power of Choice' and metering contestability that weren't originally funded
- outage response and associated field scheduling and mobility improvements stemming from the major network outage experienced in South Australia in 2016.

AER draft decision

The table below shows the breakdown of the total proposed capex and the AER's draft decision on the individual projects.

The AER disallowed expenditure on four of the proposed projects citing issues related to:

- inadequate options analysis
- overstatement of benefits and calculation of repex deferrals
- deliverability of the overall quantum of IT capex in the 5-year period
- inadequate risk analysis.

As a result, the AER reduced the allowed IT capex by approximately 31%, including a total amount of $196.8m ($m Real Dec 2019) in its draft decision.

Category ($m Real 2017)	**Original Proposal**	**AER Draft Decision**
Recurrent capex	**136.2**	**136.2**
Non-Recurrent capex	**124.3**	**49.8**
Assets and Work Management	40.7	-
Billing/CRM Replacement	25.5	25.5
SAP S/4 Upgrade	24.6	-
Geographic Information System Consolidation	13.8	13.8
5 Minute Rule Change	7.7	7.7
Ring-Fencing	3.8	3.8
Worker Safety - Fatigue Management	5.3	-
Network Protection System Replacement	2.8	2.8
(rounding)	0.1	
TOTAL IT Capex	**260.5**	**186.0** [1]

[1] *Excludes modelling adjustment of ($6m) Real 2020.*

Executive Summary

IT Capital expenditure re-submission

In response to the AER's draft decision, SAPN has reassessed its overall program of work in IT for RCP 2020-25 and put forward a revised program which seeks to address the regulator's concerns and to provide the necessary evidence of its prudence and efficiency. The revised program is summarised below.

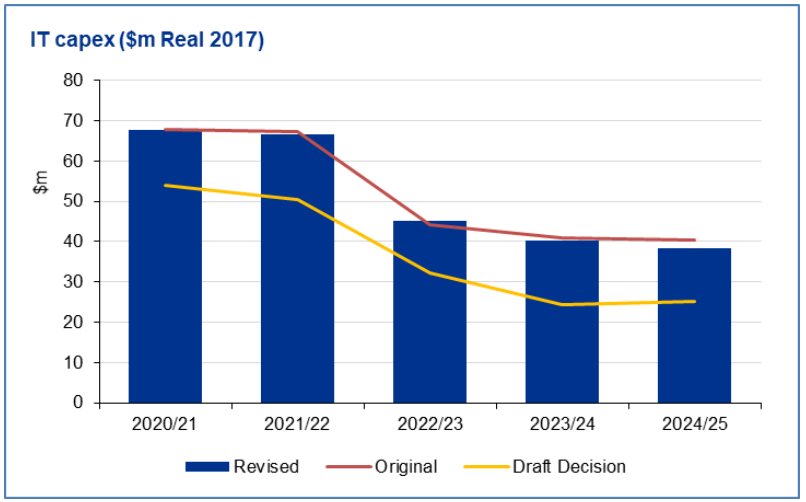
Category	Original Proposal $m Real 2017	Re-submission $m Real 2017
Recurrent capex	**136.2**	**136.2**
Non-Recurrent capex	**124.3**	**122.1**
Assets and Work Management	40.7	38.7
Billing/CRM Replacement	25.5	25.5
SAP S/4 Upgrade	24.6	24.6
Geographic Information System Consolidation	13.8	13.8
5 Minute Rule Change	7.7	7.7
Ring-Fencing	3.8	3.8
Worker Safety - Fatigue Management	5.3	-
Network Protection System Replacement	2.8	2.8
Utilities Cyber Maturity Uplift	-	5.1
(rounding)	0.1	0.1
TOTAL IT Capex	**260.5**	**258.3**

Key changes to the program are:

- accepting the removal of the Worker Safety – Fatigue Management project
- addition of the Utilities Cyber Maturity Uplift project that was not envisaged at the time of the original proposal, the need for which has progressed during 2019
- minor reduction in the cost of the Assets & Work Management program, re-assessment of the benefits from repex deferral and clarifying alignment to the repex business case.

SAPN has provided addenda to the business cases for each of the disallowed projects to specifically address the issues raised by the AER in its draft decision.

The revised IT capex program across the 5-year period of RCP 2020-25 is illustrated below against the original submission and Draft Decision.



Executive Summary

Traffic Lights:

- *Evidence supporting SAPNs response obtained*
- *Some evidence obtained but some gaps or inconsistencies identified*
- *Little or no evidence. Evidence may actually contradict the response.*

Summary of findings

Deliverability

- SAPN has repeatedly demonstrated its delivery capability within the 2015 - 2020 RCP, which is larger than the IT portfolio proposed for 2020 - 2025.
- SAPN has a mature approach to project governance and delivery which has seen an uplift in capability over the 2015-2020 period.
- SAPN IT use an "Agile by default" approach which includes business representatives throughout the delivery. Change management effort is spread throughout a project which, coupled with automated testing, reduces the warranty period required as the business is involved in testing throughout the project.
- The project pipeline is actively managed, giving consideration to project dependencies and balancing delivery of large, medium and small projects along with the resource profiles required to deliver them. A highly contingent IT workforce provides the flexibility to scale as required, whilst the incoming pipeline provides the mechanism to forecast and manage resource demand.
- SAPN has adopted a sound approach to planned portfolio delivery, benefits management and monitoring, and has taken a prudent approach to scheduling the major projects within the portfolio.

Business case assessments

SAP S/4 upgrade

- SAPN has conducted further analysis, including consultation with third party support vendors, SAP and a Solution Integrator, as well as interviews with organisations who have used or are using third party support to determine whether using third party support for the SAP solution (ECC6 transitioning to S/4) is viable.
- SAPN has been able to demonstrate that although a third party support vendor is cheaper in the short term, it is the most costly option in the mid to long term and that its proposal to continue the SAP S/4 Upgrade in the 2020-2025 RCP is the most prudent and efficient option.

Business case assessments continued

Assets & work management

- NPV analysis is now over 15 years and includes the eventual cost of repex with sensitivity analysis evidencing that realistic changes to assumptions will not impact the NPV decision.
- Repex reduction is clearly stated in the overall repex forecast.
- Evidence has been provided to support WSE improvement using recent actual data and sensitivity analysis.
- Program activity is scheduled to avoid the SAP S/4 upgrade in 2022/23 with the major part of the effort scheduled for the latter part of the RCP when there is less activity from similar major system replacement and upgrade programs of work.

Ring-Fencing Compliance

- SAPN has considered the option of excluding Enerven from its IT systems and provided an NPV analysis that supports the chosen option of implementing a separate company code for Enerven in SAP as being the most efficient way of ensuring compliance with the Ring-Fencing Guideline.
- The key driver of regulatory compliance is supported by an independent compliance assessment.

Utilities Cyber Maturity Uplift

- Whilst noting that the relevant regulation or rule is not yet formally enacted, there is strong evidence to support the fact that a mandated level of cyber maturity is likely to be in place within SAPN's next regulatory period.
- A comprehensive analysis has been conducted that considered the prudence and efficiency of the costs of the program.


KPMG
Approach

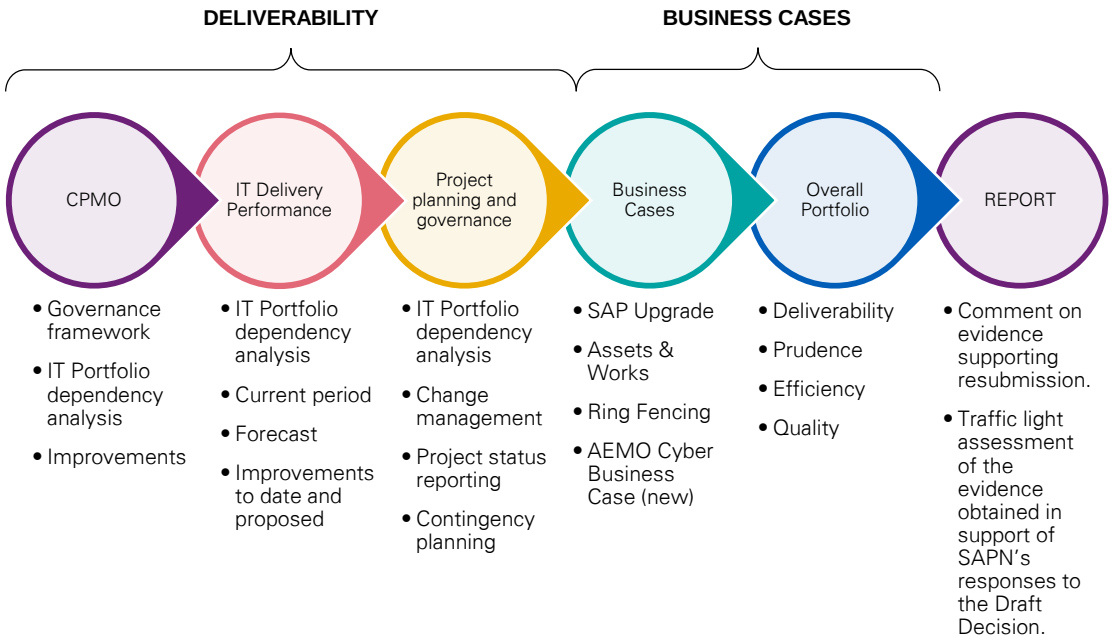
A tailored approach

Overview

KPMG has been engaged by SAPN to undertake an independent assessment, focussing on SAPN's response to the questions raised by EMCa and the AER in the Draft Determination, of its revised IT submission to help it evidence that the resubmitted IT expenditure proposal is Deliverable, Prudent and Efficient, and meets the AER's Criteria.

Our approach has been tailored to the specific requirements of SAPN and addresses two key aspects of its IT re-submission:

- Deliverability of the overall program of capital expenditure, and
- Specific business cases that the AER disallowed or otherwise commented on.



Activities

In undertaking our review we have reviewed various documentation, models and correspondence provided by SAPN and interviewed a number of relevant staff and management (refer Appendices 1 and 2). Where appropriate we have undertaken our own modelling to assist in our assessment of the model results presented by SAPN. We have taken account of our knowledge and understanding of related matters from our wider industry and client experience in order to validate the reasonableness of SAPN's responses and their alignment to industry practices.

Traffic Light Assessment

We rate each area on a traffic light system according to the degree to which we have obtained evidence that supports SAPN's responses to the issues raised by the AER in its draft decision.

Evidence that supports SAPN's response to the issues raised by the AER has been obtained and assessed.

Some evidence obtained that supports the response but some gaps or inconsistencies identified.

Little or no evidence provided. Evidence may actually contradict the response.


KPMG
Observations

IT Program deliverability

Overall assessment summary

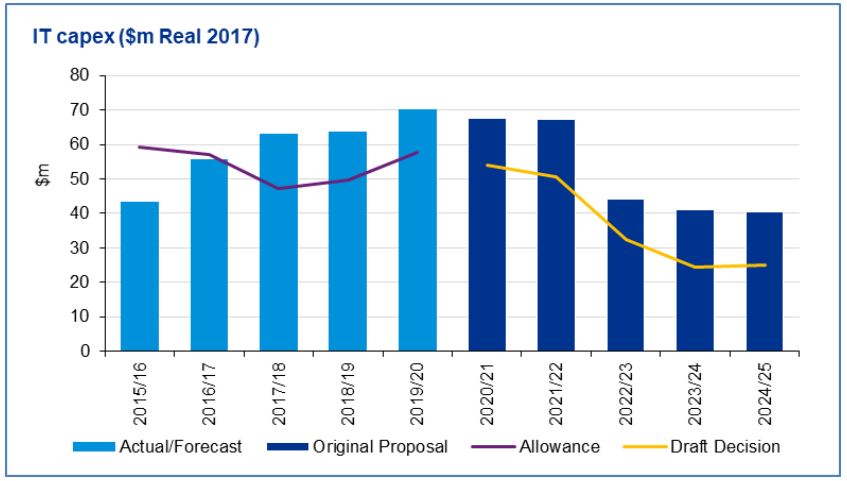
The table below summarises SAPN's responses to the AER's Draft Decision and provides our traffic light assessment of each response. In the following pages we discuss the original proposal, the concerns raised by the AER in its Draft Decision, SAPN's response to it and the evidence we have obtained in relation to that response.

AER Comment in Draft Decision	Summary of SAPN Response	Assessment
SA Power Networks has not significantly changed its expenditure forecasting methodology for the 2015–20 regulatory control period, which indicates a bias towards overestimation of expenditure	SAPN's results in the 2015- 2020 RCP demonstrate an ability to deliver to and within the overall budget (delivering 9.2% over the allowance). SAPN's CRM and Billing forecasts have remained stable since first developed in 2010, with inflation accounting for the only rise in estimates. Other sizeable instances of delivery within the estimated budget were also evidenced.	
Some projects in the 2015–20 period are behind schedule, such that there is a high likelihood that delivery will extend into the 2020–25 regulatory control period	A small number of projects were identified as having scheduling issues through the use of lead indicators so allowing corrective action to be taken. Only certain specific long-term and recurrent projects have been planned to extend into the next RCP with all contingencies and dependencies accounted for in the planning. On-going CPMO monitoring of performance and delivery through the use of lead indicators enable a considered response to any issues including potential project delays.	
SA Power Networks understated and/or underestimated the delivery risk of the majority of its projects within its planned portfolio	Schedules prepared at a lower level of detail than those displayed in the original submission show that projects are not planned 'back to back' but planned to allow movement and flexibility in the overall delivery program. Coupled with SAPN's Agile by Default IT delivery approach, which has proven successful in the delivery of the 2015 – 2020 RCP IT portfolio, and a smaller program of work overall in the next RCP, this mitigates the perceived delivery risk	
It is not clear if and/or how SA Power Networks has taken account of the interdependencies of project completion delays and utilisation of project deliverability resources	Schedules prepared at a lower level of detail than in the original submission show that projects are planned to allow movement and flexibility in the delivery program. SAPN utilises an Agile approach to delivery that manages 'gaps' in the schedule to deliver smaller projects whilst also managing resource profiles to ensure specialist skill sets are actively utilised and readily available resources are scaled up or down based on project demand. Dependencies are captured and managed at various levels within the portfolio, from the Investment Steering Committee, down through Architecture Review Forums and to Program and Project Managers.	
In a number of dependent projects, the portfolio view shows an overlap of project-end and project-start times, which can considerably increase the risk of a total portfolio expenditure overrun	The detailed schedules show that projects are not planned 'back to back' but planned to allow movement and flexibility in the delivery program. Truly dependent projects, such as within the SAP Upgrade program of work which incorporates the SAP upgrade and a Business Warehouse (BW) upgrade, are not scheduled back to back but within months of each other to allow sufficient flex, whilst managing demand. Many of the same SAP resources will move to the BW project and be provided time to regroup for the next major delivery.	

IT Program deliverability - continued

Overview of initial program

In January 2019, SAPN submitted its proposal to the AER for a decision on its allowed revenues for the next regulatory control period, 2020/21 to 2024/25 ("RCP 2020-25"). As part of the original proposal, SAPN proposed a program of IT capital expenditure totalling $260.5m (Real 2017) which represented a reduction against its actual and forecast total for RCP 2015-20 of 12%. This is illustrated in the chart below which also shows the allowance provided by the AER for RCP 2015-20.



The total proposed IT capex was approximately 52% recurrent expenditure with the rest comprised of eight (8) individual projects, the largest of which were:

- Asset & Work Management ($40.7m)
- Billing/CRM Replacement ($25.5m)
- SAP S/4 Upgrade ($24.6m).

AER draft decision

In its draft decision the AER reduced the proposed IT capex by a total of $74.4m (Real 2017) by disallowing four specific projects. In so doing they noted that:

"Given that our forecast removes the proposed capex for four projects, we do not consider that there are likely to be any issues with SA Power Networks delivering this program over the period and therefore we have made no deliverability adjustment on this basis." [1]

In making its draft decision, the AER relied on a report by EMCa who undertook an assessment of SAPN's IT program at a portfolio level. EMCa made the following comments in regard to the deliverability of the proposed program (KPMG highlighting):

- *"SA Power Networks has not significantly changed its expenditure forecasting methodology for the 2015–20 regulatory control period, which indicates a* ***bias towards overestimation of expenditure***
- *some projects in the 2015–20 period are behind schedule, such that there is a high likelihood that* ***delivery will extend*** *into the 2020–25 regulatory control period, with consequent implications for dependent projects SA Power Networks proposed*
- *SA Power Networks understated and/or* ***underestimated the delivery risk*** *of the majority of its projects within its planned portfolio*
- *it is not clear if and/or how SA Power Networks has taken account of the* ***interdependencies of project completion delays*** *and utilisation of project deliverability resources*
- *in a number of dependent projects, the portfolio view shows an* ***overlap of project end and project-start times****, which can considerably increase the risk of a total portfolio expenditure overrun."*

EMCa considered that a 25-30% time contingency should be added to all projects in the IT portfolio. Given SAPN's re-submission re-instates the disallowed projects, it is likely that the AER will reconsider its position on deliverability.

[1] *Draft Decision – Attachment 5 – Capital Expenditure, p 5-68*

IT Program deliverability - continued

Previous IT submission (RCP 2015-20)

In its draft decision for SAPN's previous regulatory proposal (RCP 2015-20) the AER also raised issues about deliverability of that whole IT program, stating it was:

"…not satisfied that … SA Power Networks is likely to deliver the full program in the 2015–20 regulatory control period as proposed."

The AER expressed concerns as to the complexity of the program coupled with SAPN's apparent lack of experience and maturity of processes in managing a highly outsourced program of work.

At that time, SAPN responded by reducing the quantum of work proposed and evidencing its capacity to deliver. The AER settled on an IT capex allowance of $264.9m (Real 2014/15) ($285.7m Real 2019/20).

We note that, during the current period, despite the inevitable disruption of the need to cater for metering contestability and respond to the total state power outage of September 2016 (neither of which were part of the original allowance), SAPN is still expecting to deliver a total value of IT capex that exceeds its original allowance by approx. 9%.

The processes, structures and frameworks put in place by SAPN that have enabled the delivery of the current regulatory period's IT program and provide evidence as to SAPN's ability to deliver its proposed program for RCP 2020-25, are discussed further in the following pages of this report.

SAPN response

In response to the AER's draft decision, SAPN have put forward the following arguments in defence of the deliverability of its proposed IT program.

- Where required, such as for the SAP S/4 Upgrade, external expertise is utilised for planning projects, otherwise all project plans are based on past internal experience and learnings.
- Other than for SAP Upgrade, all the proposed projects are based on existing programs of work and proofs of concept undertaken in the current regulatory period.
- An 'Agile' delivery approach has allowed SAPN to manage delivery risk and maintain value creation as circumstances change.
- Mature processes enable utilisation of a flexible and contingent workforce, retaining skills where appropriate whilst allowing staff numbers to scale with changing needs.
- A mature CPMO function that uses lead indicators to predict emerging issues and prevent impact on project delivery ahead of time.
- Mature IT delivery capability has enabled delivery of a similar quantum of work during the current RCP.
- They maintain a standardised portfolio view (complete with high level dependencies) and regularly updated technology roadmaps to ensure project and technology interdependencies are identified and managed.

In the following sections of this report we have detailed our assessment of SAPN's capability to deliver a significant program of work.

IT Program deliverability - continued

Introduction

In order to assess IT Program deliverability, KPMG were asked to consider three broad areas, covering the Corporate Portfolio Management Office, IT deliverability performance and SAPN's project planning and governance processes.

These areas were assessed individually and holistically, assessing key aspects of deliverability including prioritisation, dependency management, effort estimation and benefit tracking to form a view of SAPN's IT Program deliverability capability, in light of its reinstatement of most of the disallowed business cases in their resubmission.

Corporate Portfolio Management Office (CPMO)

To support their portfolio of work SAPN has established a skilled and experienced IT project delivery team that work collaboratively to deliver the projects that make up the portfolio.

SAPN's CPMO has developed a strong governance framework that oversees projects from inception at the Project Brief and then business case level, through to deployment and benefit realisation.

- Before a project may commence, a 'Rigour Test' is applied. This test determines whether the plan is realistic; the project's definition of success; related dependencies; and defines realistic, outcome focussed measures that can be applied and actively monitored for the life of the project and beyond (SAPN employ systematic benefits realisation tracking).
- IT projects are actively monitored using lead indicators to predict project success. An amber or red status on a leading indicator provides the project manager time to make adjustments to the project which enhance the likelihood of success. These measures include the level of business and IT stakeholder engagement and commitment, and the level of sponsor commitment.
- Major projects are discussed monthly at the Investment Steering Committee (ISC) meeting. Project status and dependencies are discussed and impacts are negotiated.
- Dependencies are recorded in status report text and via meetings at team and ISC level. Technical dependencies are documented and managed through Architectural Review Forums.
- Project and Program Managers manage project dependencies. Whilst there is no holistic portfolio view of program and project dependencies, there is no evidence that this missing artefact has a negative impact on project delivery.

The CPMO has instigated measures to more formally capture and track dependencies, however at the time of writing this is in the early stages of delivery. Measures are also being put in place for the CPMO to track projects against their approved capex regulatory submissions.

Given the approach to project delivery discussed in the following section, these have little negative impact on overall reliability of project delivery. In our assessment, we gained evidence that the CPMO has a high level of maturity and capability, with an ongoing program of continuous improvement.

IT Delivery Performance

SAPN IT use an Agile approach to project delivery, wherever it is considered feasible to do so.

Agile is a project management methodology that uses short, time-boxed cycles called 'sprints' to focus on continuous improvement in the development of a product, experience or service, allowing faster execution and delivery to users. A key principle includes having cross-functional teams to reduce organisational friction and centring itself on customer satisfaction.

Agile differs from the traditional waterfall method of project delivery in a variety of ways, including involvement of the business upfront and throughout the project as integral members of the team. This, in turn, can lessen the need for an extensive change management effort as the business is involved from the beginning, designing and testing of deliverables (acceptance criteria are defined and agreed by the whole team) throughout the delivery cycle.

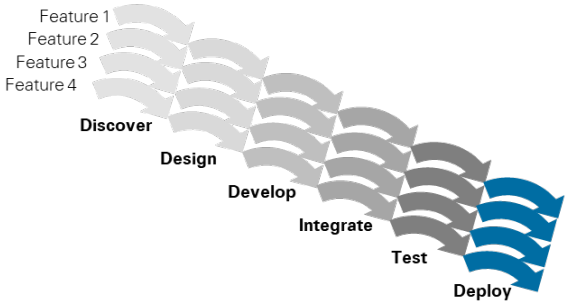
Because Agile projects are designed to deliver features incrementally, it provides greater flexibility to change focus and priorities with a rapidity that is not possible on a waterfall project.

See over for an overview of the differences between an Agile and traditional waterfall approach to IT project delivery.

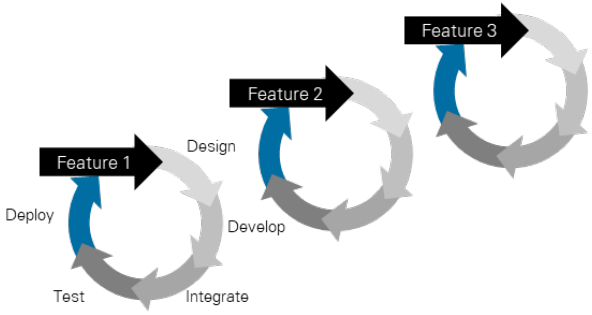
IT Program deliverability - continued

The below diagrams summarise the key differences between Waterfall and Agile projects:

Waterfall



Agile



	Waterfall	Agile
Team	Large, functional teams	Small, cross-functional teams
Customer and business involvement	Heavy at the beginning and end	Constant collaboration
Design	Predict and design all features up front with exhaustive documentation	Modularise and prioritise design features; welcome changes to undeveloped modules
Development	Build all features at once to exact specifications	Iterative; build what is proving valuable, providing flexibility in adapting to change requests
Testing and integration	Integrate and test when development is complete	Continuous, real-time testing and integration
Delivery	Large, infrequent releases	Rapid, frequent increments
Change Management	Heavy investment toward the end, with qualified change managers	Business own and champion the change
Warranty	Typically a static period set between one and three months	Risk based, short warranty periods based on continuous releases into Production

IT Program deliverability - continued

IT Delivery Performance continued

SAPN's preference for, and capability in, delivering Agile projects has allowed them to deliver a value of IT capex in RCP 2015-20 that exceeds its original allowance by approximately 9%. Through the practices and techniques described earlier in this report, as the need arose within the 2015 -2020 RCP, SAPN have effectively and strategically re-planned and resourced to deliver new priorities such as Metering Contestability. SAPN's experience in estimating the cost and effort required to deliver has meant delivery value has been maintained throughout. For example, the CRM and Billing program cost and effort forecast has not changed beyond indexation allowances, since it was first proposed in the 2015-2020 RCP submission.

It is noted that the high level schedule presented to the AER in the initial submission appears to show projects being delivered 'back to back' with little contingency in place for project 'over runs'. Schedules prepared at a more detailed level show the projects are not planned 'back to back' but are planned such as to allow movement in the delivery program, in some cases, such as the SAP Upgrade, by as much as three months with the possibility to extend to six months if deemed necessary.

- SAPN create a view of the IT program, scaling projects as Large, Medium and Small.
- The large projects form the major projects to be delivered in the Regulatory Control Period, the medium projects are scheduled to be completed in between the major projects.
- The IT Agile Epics (work that can be broken down into smaller tasks) are displayed on a wall, around which the Agile teams meet and discuss progress and any blockers.
- The pipeline of work is managed such that where blockers or other challenges to delivery of a large or medium project arise, small projects can be initiated in order to keep SAPN's skilled and highly contingent workforce productive. The workforce can also be scaled up or down based on project demand.
- The outcomes to be achieved throughout the life of a project are tracked and measured according to a plan defined with the CPMO, which in itself is building accountability and responsibility within the organisation. The Agile projects are governed under the same methodology as waterfall projects and this continues post deployment via reported benefits tracking, which continues to hold the business to account for the outcomes achieved.
- User testing throughout an Agile project is coupled with automated testing wherever feasible to do so. This increases the thoroughness and reliability of testing without extending project timeframes (it is performed overnight, to consistently and repeatedly regression test) and leads to fewer post deployment defects. This enables a risk based warranty period to be determined for each individual project.
- Change management effort is spread out through the duration of the project in line with continuous delivery. Agile teams include both IT and business staff over the life of the project.

Past performance and project carry over

- A number of multi-year projects commenced in the current RCP (including the Billing and CRM program, GIS project and SAP Upgrade) have been deliberately planned to carry over into the 2020 - 2025 RCP.
- There is only one project forecast to spill over in to the next RCP, being the OMS upgrade. Whilst the integrations between OMS (OT) and the IT Systems (IT) will be delivered in the current RCP as scheduled, the practical need to avoid the storm season for the final element of the OMS implementation and the related warranty period, using primarily external vendor support, will carry the project into the new RCP. This will not impact any of the projects to be delivered in the 2020-2025 RCP.
- The IT portfolio was adjusted to incorporate legislative changes occurring within the 2015 – 2020 RCP involving significant technology impacts. SAPN's re-planned portfolio of work has been delivered on schedule and within the overall budget allowance.
- The 2015 – 2020 IT schedule was replanned to allow for the implementation of Metering and Contestability requirements that were legislated within the 2015-2020 RCP. (SAPN's Metering and Contestability submission was rejected in its 2015-2020 regulatory submission, primarily on the grounds it had not been legislated at the time of SAPN's submission).
- The budget allowed for the CRM and Billing program in the 2020 - 2025 RCP has not changed, beyond indexation allowances, since it was first proposed in the 2015-2020 RCP submission.

Overall assessment summary

The table below summarises SAPN's responses to the AER's Draft Decision and provides our traffic light assessment of each response. In the following pages we discuss the original proposal, the concerns raised by the AER in its Draft Decision, SAPN's response to it and the evidence we have obtained in relation to that response.

AER Comment in Draft Decision	Summary of SAPN Response	Assessment
SA Power Networks' business case does not consider a third party support option.	[redacted]	
SAP could extend the deadline it issued in 2015.	SAP have provided confirmation via email that they do not intend to extend support beyond 2025	
Delaying the upgrade delays the significant business change risks it poses to the whole IT portfolio.	The SAP pre-projects which are scheduled to overlap the CRM & Billing program are predominantly technical upgrades with little significant business change impact. The main technical upgrade is scheduled to avoid all other major programs and allow sufficient room for unforeseen slippage without impacting those other projects. Post-conversion projects have been allocated plenty of contingency time to allow for completion within the RCP.	
SA Power Networks has not established that upgrading is lower cost than third party support.	[redacted]	
SA Power Networks has not established that third party support is not feasible to maintain service standards.	[redacted]	
Deliverability – Much of the portfolio activity is scheduled to avoid the SAP S/4 upgrade in 2022/23. The SAP Upgrade schedule shows, at a lower level of detail, the planning and balancing of the portfolio to ensure that the SAP Upgrade can be delivered within the period specified. The time allowed for the technical SAP Upgrade contains a time contingency which incorporates the dependent project delivery timetable. The dependent project (SAP BW Upgrade) itself, also includes a time contingency.		

Business Cases

SAP S/4 Upgrade - continued

Overview of initial Business case proposal

SAPN, like many DNSPs, utilises a SAP solution. SAPN uses SAP as its core system across the enterprise in areas covering customer, assets, and work management as well as for finance, planning, procurement and warehouse management, human resources and payroll.

SAPN's initial submission proposed an upgrade of the existing version of SAP (ECC6) to the current version of SAP (S/4), over three regulatory control periods. The work commenced in the current RCP, however the majority of work was scheduled to occur within RCP 2020-2025. The primary driver for the business case was that SAP will cease support of SAPN's core business system, from 31 December 2025.

The proposed option constituted $29.8m of capex, $24.6m of which will be incurred within RCP 2020-25, $1m in RCP 2015-2020 and a further $4.2m is projected for the RCP 2025-2030. An offsetting reduction in net opex of $2.3m over three RCPs is also included.

AER response in draft determination

In its draft decision, the AER disallowed the entirety of the proposed expenditure under the SAP S/4 Upgrade program noting that SAPN had not adequately considered options to defer the upgrade in favour of lower cost alternatives, specifically that SAPN had not established that upgrading "*is lower cost than third party support*".[1]

The AER also noted that SAPN had not established that third party support would impair support service standards. To support this case, the AER stated "*other organisations with significant security requirements have adopted third party support … and SA Power Networks has not discussed whether and how its operations differ sufficiently such that the risks of third party support rule it out as a reasonable alternative*".[2]

In doing so, the AER referenced a newspaper article reporting that 10 government agencies had signed with a particular third party support vendor. The newspaper article originated from promotional material issued by the vendor in a press release the day before the newspaper article was published[3]. The press release names four of the 10 agencies supported by the third party support vendor, namely NSW Department of Family and Community Services; Victorian Government Department of Economic Development, Jobs, Transport and Resources; Australian Hearing; and Open Universities Australia.

A high level of alignment is not clear between each of these organisations' security requirements and the security requirements of SA Power Networks, a critical infrastructure provider.

The AER also noted that SAP could extend its 2025 'End of Support' deadline. Whilst this has occurred in the past, it is unlikely, based on previous SAP announcements, to be a material extension and any formal announcement is likely be too late for SAPN to rely upon.

For example, SAP R/3 support was scheduled to end by December 31 2010. The extension to the deadline was announced in late September 2010, only three months before the original deadline expired leaving no time to plan the upgrade. The end of support deadline was extended for a period of two years and three months to 31 March 2013. Given the greater than 10 years notice provided by SAP for the end of ECC6 support and the previous history of a late, minor extension noted above, adopting a 'wait & see' approach would likely put SAPN at significant risk of having insufficient time in which to upgrade or implement a new solution within the extension period in order to avoid support issues.

SAPN's response

In response to the AER's appraisal, SAPN has undertaken further analysis to assess whether moving to third party support would be cheaper than upgrading and whether there would be any reduction in service standards.

[redacted] and interviews with SAP, SAPN has re-stated it's position that upgrading SAP is the most prudent option.

1. AER, Draft decision SA Power Networks Distribution Determination 2020 to 2025 Attachment 5
2. ibid
3. https://www.riministreet.com/press-releases/01282019

Business Cases

SAP S/4 Upgrade - continued

SAPN's response continued

In confirming their original position on the SAP Upgrade submission, that is, that the SAP Upgrade conducted over seven years, is the most prudent option to enable SA Power Networks to continue to deliver critical services to customers, SAPN has demonstrated that:

- The upgrade is the lowest cost option over the longer term, thereby ensuring lowest costs to customers.
- [redacted]
- The end of support date published by SAP is unlikely to shift. However, were an extension to be granted it is unlikely to occur within a timeframe that would allow SAPN to respond in a prudent and efficient manner.
- Deliverability will not be impacted. The SAP Upgrade has been planned within the IT portfolio of work with technical dependencies documented. Room for project slippage has been allowed within the plan (which incorporates the technical SAP upgrade and a subsequent SAP Business Warehouse (SAP BW) upgrade). The schedule allows sufficient flex, whilst managing demand. Resource planning shows many of the same SAP resources will move to the SAP BW project and be provided time to regroup for the next major delivery.

We have assessed SAPN's analysis and evidence provided and consider the results substantiate SAPN's assertion that the upgrade is the most prudent option over the 2020 – 2025 and 2025 – 2030 RCPs.

Asset & Work Management

Overall assessment summary

The table below summarises SAPN's responses to the AER's Draft Decision and provides our traffic light assessment of each response. In the following pages we discuss the original proposal, the concerns raised by the AER in its Draft Decision, SAPN's response to it and the evidence we have obtained in relation to that response.

AER Comment in Draft Decision	Summary of SAPN Response	Assessment
NPV analysis excluded the eventual cost of deferred repex	Have included eventual cost of deferred repex based on a 10 year deferral assumption and performed sensitivity analysis on this assumption. Benefit categories explicitly defined to now include repex reduction due to bundling and other previously non-quantified benefits.	
NPV is negative unless average deferral length exceeds 39 years	Revised NPV analysis indicates a positive NPV under the chosen assumptions and for a range of plausible scenarios. Additional benefits previously only qualitatively included now quantified. 15 Year NPV calculated as +$24.4m using a deferral length of 10 years.	
Insufficient NPV analysis period to adequately assess costs and benefits and potential impact of shorter life IT assets on prices not considered	NPV analysis extended to 15 years Impact on consumer prices referenced in customer consultation. Short term increase in prices offset by longer term gains.	
No evidence of A&W deferral benefits in the repex forecast	Repex forecast defines a base case without the impact of this program which is then reduced by an amount exceeding the value of deferred repex resulting from the AWM program.	
Forecast improvement in work selection effectiveness solely based on SME judgement and no comparison provided with historical increase in WSE	Additional evidence provided to support the forecast improvement in WSE. Whilst still based on SME judgement as to the constraints on a small sample of tasks, sensitivity analysis shows that reasonable variation in the resultant WSE improvement does not impact the NPV result (i.e. positive over a 15 year period).	
Estimated improvements in WSE are not consistent with the statement that CBRM repex forecasts assume perfect allocation of work	CBRM forecasts only used for the Poles asset class of which only about one third has its renewal forecast based on 'perfect allocation'.	
Deliverability – Program activity is scheduled to avoid the SAP S/4 upgrade in 2022/23 with the major part of the effort scheduled for the latter part of the RCP when there is less activity from similar major system replacement and upgrade programs of work.		

Business Cases

Asset & Work Management - continued

Overview of initial Business case proposal

Throughout the current regulatory period (RCP 2015-20), SAPN has been delivering a number of initiatives under its Enterprise Asset Management (EAM) Blueprint expenditure for which was approved by the AER in 2015. This program of work was aimed at improving the efficiency of managing the asset lifecycle as well as enabling better regulatory reporting.

The proposed Assets & Work Management (AWM) program was envisaged as an extension of the EAM program which built on the foundational capability put in place in this period, to gain further efficiencies in asset management and so increase repex deferral in the network.

The AWM program was proposed as a 10 year exercise of approx. $80m expenditure with just over half of that falling in RCP 2020-25 - $40.8m ($ Dec 2017) or $44.9m ($ Dec 2019).

The selected option (of the three costed and considered) had a NPV of +$28.2m and whilst that was the lowest of the three, was considered to be the practical option with the others representing too high a delivery risk in the context of the whole IT program for RCP 2020-25.

AER response in draft determination

In its draft decision, the AER disallowed the entirety of the proposed expenditure under the AWM program citing the construction of the NPV calculations, the time period over which the calculations were performed and certain assumptions in relation to the repex benefits to be gained from the program.

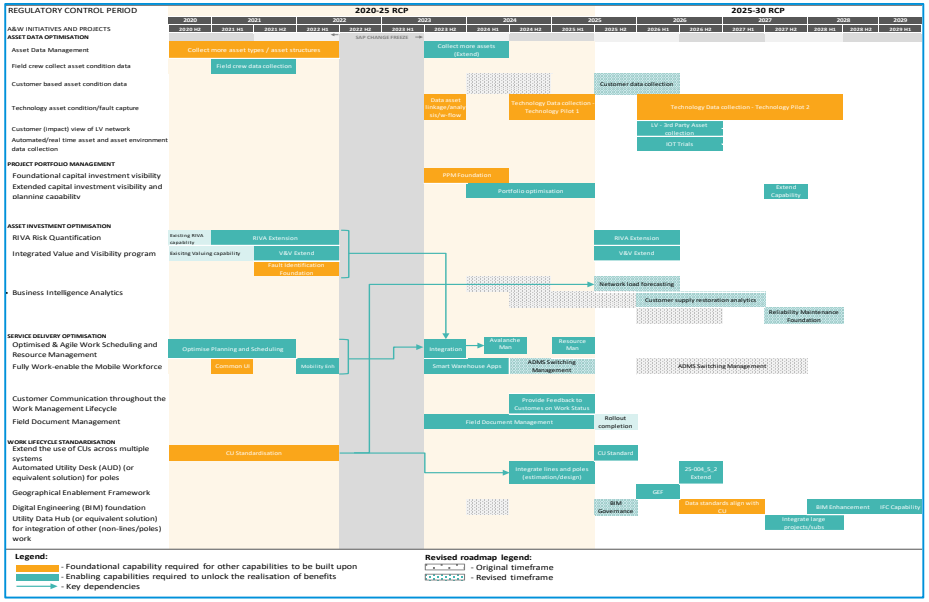
In addition, the AER commented that it could not identify the expected increase in repex deferral in the overall repex forecast as well as expressing concerns as to the method and modelling of the repex forecast.

SAPN's response

In response to the AER's concerns, SAPN has undertaken a reassessment of the AWM program. The program steering committee has re-analysed how each element of the program contributes to the benefits being proposed and re-scheduled certain elements such as to facilitate the earlier delivery of those benefits.

The full 10 year program has been split so that the first five years in RCP 2020-25 have been costed and planned, whilst the program elements left to fall after that RCP have been postponed for future consideration and evaluation following assessment of the initial part of the program.

Revised and original roadmap for chosen option (SAPN AWM Addendum)

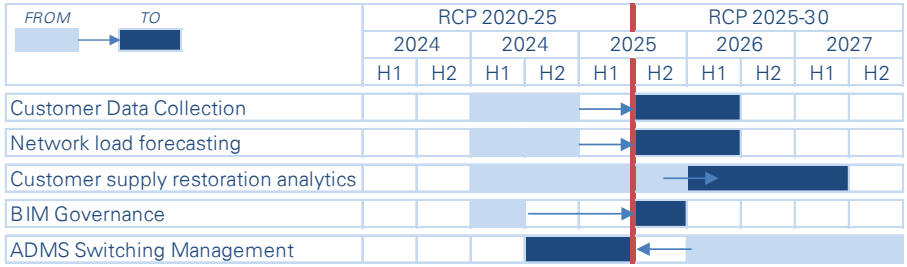


Business Cases

Asset & Work Management - continued

SAPN's response - continued

Within the overall program, the five work-streams have remained substantially unchanged with four individual projects within those work-streams being moved from RCP 2020-25 to RCP 2025-30 and one project moving the other way:



This has resulted in a minor reduction in the costs allocated to RCP 2020-25 from $40.7m to 38.7m ($Dec 2017).

Net Present Value (NPV) analysis

We have reviewed the NPV analysis undertaken by SAPN and note that the period over which the NPV is calculated is set to 15 years (2020 to 2035) which results in a positive NPV of $24.4m. The benefits included in the NPV calculation are:

- Repex deferral of 10 years – this is shown as the annual differences between the base case and chosen option for the predicted costs of task based repex, each moved out 10 years.
- Work bundling benefits, achieved through better grouping of repex activity to reduce travel and set up time etc
- Other benefits – a mix of capital and operating cash flows achieved from the individual work-streams.

The repex deferral period is set to 10 years. The eventual need to undertake the previously deferred repex is accounted for by discounting the eventual cost of that repex by the 10 year deferral period and deducting that from the original repex value. This results in the effective saving in NPV terms of the deferral.

Overall repex forecast

The benefits identified from this business case flow in to the main business repex forecasts which are described in the Repex Addendum. We noted in that document that the repex forecasts start at a base line that excludes the impact of the 2020-25 IT expenditure on the AWM program. An amount for the deferrals calculated for AWM is then deducted together with an additional productivity adjustment, to give the final proposed repex value.

Impact on customers

The AER commented that SAPN had not considered the short term impact on customers and pricing in its forecasts noting that the whilst a long term NPV may be positive, in the short term, due to the short life of IT assets, prices may actually increase as a result of this program.

In its response SAPN refers to its customer and stakeholder consultation where it outlined the relative short and long term consequences of the scenarios being presented. It notes an expressed preference for a short-term price increase in return for long term lowering of costs.

To confirm the impact on revenue from customers, i.e. through prices, KPMG undertook independent modelling of the potential impact on regulated revenues based on SAPN's forecast repex deferrals for RCP 2020-25 and 2025-30.

The AWM program increases the revenue requirement, and hence prices, in each of the years 2021/22 to 2026/27 before reverting to a decrease in prices for all years after that. As many of the benefits are on-going, the total revenue requirement decreases eventually exceed the increases such that the NPV of these cashflows to/from customers becomes positive. This indicates that this program is in the long term interests of customers despite a short term cost.

Business Cases

Asset & Work Management - continued

SAPN's response - continued

Work Selection Effectiveness

A critical part of the modelling of the assumed value of deferred repex is the use of the 'Work Selection Effectiveness' parameter (WSE). This value seeks to represent the degree to which expenditure on repex tasks is targeted at assets with a higher return on Investment (ROI). In this context, ROI is the ratio of risk value of the defect to the cost to maintain/fix it. SAPN's modelling calculated a base value for the WSE from the actual 2017 data, of 5.38% which was rounded down to 5%. i.e. the actual reduction in risk value attained in 2017 for the actual expenditure was the same as would be achieved had 5% of the expenditure been targeted at the top ROI defects.

We have reviewed this modelling and note that the Excel goal-seek function has been used to calculate the WSE based on actual 2017 data. The data is in the form of a summary of the predicted asset defect cost and risk values in the SAPN asset system, grouped by ROI – i.e. one line for each ROI ratio value with the respective sum of the costs and risk values for all asset defects with that ROI value (rounded to whole numbers).

The modelling assumes that every ROI line will have the same proportionate amount of repex spent on it in an un-targeted way (i.e. untargeted (essentially random or opportunistic) expenditure will occur equally across the entire asset defect base). Targeted expenditure, in a perfect world, would then pick up the remainder of each ROI line's assets, starting at the highest ROI and working down until the budget was exhausted.

Using the above assumptions and goal seeking a WSE value for 2017 that gives a remaining total risk value of the entire asset base of that actually achieved in 2017, results in a WSE of 5.38%. This can be interpreted as: the actual processes for identifying and rectifying defects had the same effectiveness in terms of the risk reduced per dollar spent, as strictly spending 5.38% of the budget on repairs targeting the highest ROIs in turn, the rest per the assumption above on un-targeted repex.

Once the base value is determined, the WSE is used to model the potential reduction in repex as it is assumed that the WSE value will increase as the new technology and processes enable more sophisticated and accurate targeting of higher ROI repex.

WSE increase benefit modelling

In order to estimate the impact of an increase in the WSE brought about by the technology investment, SAPN have made an estimate of what that increase might be over time. This was initially estimated by SMEs within the business but has for the resubmission, been re-assessed by analysis of recent actual data.

We have reviewed the modelling undertaken by SAPN to determine a realistic end point (at 2025) for the WSE parameter. A critical element of that modelling is the assessment by an experienced planner of the potential constraints on each task within a sample of 65 taken from an single work centre's plan. This resulted in a maximum achievable WSE of 17.4% (being an increase of 9.4% on the value at commencement of the RCP). As there is a clear potential for sampling error in this approach, SAPN have undertaken a sensitivity analysis showing that a reasonable variation, up or down, of this WSE value does not result in the NPV of the project becoming negative.

The modelling that converts the WSE increases year on year into a repex deferral estimate, perform a similar goal-seek operation as that done for the base WSE. The estimated residual risk value at the end of each year of the RCP is calculated for the proposed option, then an additional annual budget is calculated that brings the residual risk value for the base case, with no increase in WSE, to the same value. i.e. what extra expenditure is required to achieve the same risk reduction by the end of the RCP with no increase in WSE? This extra expenditure is the annual reduction in repex from the base case that goes into the NPV calculations previously described.

Business Cases

Ring-Fencing Compliance

AER Comment in Draft Decision	Summary of SAPN Response	Assessment
SA Power Networks could ensure compliance with the Ring-Fencing Guideline by excluding Enerven from use of its ICT assets, at zero capex cost.	Exclusion of Enerven considered	
SAPN has not shown that its recommended option (option 1) is the lowest cost compliance option	NPV analysis of all options conducted	
Deliverability – main program of work scheduled to avoid SAP S/4 upgrade whilst ensuring compliance as quickly as practicable.		

Overview of initial business case proposal

In its original submission, SAPN put forward a project to implement a separate company code for Enerven within its SAP system and to make additional security access improvements to other systems to which Enerven staff currently have access. The driver for this expenditure was compliance to the AER Ring-Fencing Guidelines which obligates DNSPs to "… *not disclose confidential information to any person, including a related electricity service provider…*".[1]

The proposed option constituted $3.8m of capex and an offsetting reduction in net opex of $0.32m over RCP 2020-25.

AER response in draft determination

In its draft determination, the AER appeared to accept SAPN's reasons for the expenditure, noting that the sharing of IT assets with Enerven "… *may allow Enerven staff to access information that would breach the Ring-Fencing Guideline.*". The AER did, however, refer to the lack of a full NPV analysis of the chosen option and put forward two other options it felt were possible but which hadn't been considered by SAPN.

The AER excluded the proposed costs from its draft determination as SAPN had "… *not established that this program is a lower cost means of complying with the Ring-Fencing Guideline than excluding Enerven from its shared ICT systems…*".

SAPN's response

In responding to the AER's draft decision, SAPN have undertaken additional analysis of the benefits accruing from its preferred option and undertaken an assessment of the option of excluding Enerven entirely from its shared IT assets.

SAPN has analysed its shared IT costs and identified those that are variable based on users (i.e. a loss of users is reflected in a reduction in costs) and those that are fixed and so don't vary as user numbers change. This resulted in an estimated $2.6m p.a. in costs that are currently allocated to Enerven (through the operation of the Cost Allocation Methodology - CAM) which would be retained by SAPN should Enerven cease to share those assets.

The AER also noted a potential reduction in SAPN's allowable revenues due to the operation of the Shared Assets Guideline that allocates 10% of the benefit of revenues from Enerven for shared assets, to regulated customers (calculated by SAPN as $388k p.a.). This would also be lost should Enerven be excluded from use of those assets.

We have assessed SAPN's analysis and modelling and consider the results to provide a reasonable estimation of the relative NPVs of the options considered.

We are aware of varying interpretations of the Ring-Fencing Guidelines and in particular the degree to which the ability to 'access' confidential information, without actually doing so, represents 'disclosure'. Whilst this is clearly recognised by the AER in its current review of the Guidelines[2], we consider it prudent to accept the AER's preferred interpretation and to plan to prevent access through technological controls rather than relying on manual and 'soft' controls such as training and monitoring processes.

We note that in its Ring-Fencing Compliance report for 2018-19, Deloitte recommended implementation of a separate company code within SAP for Enerven.

[1] Ring-Fencing Guideline, Electricity Distribution, November 2016 – AER

[2] Distribution Ring-fencing Guideline Update, Stakeholder workshop slides 28 & 29 August 2019; p18

Business Cases

Utilities Cyber Maturity Uplift

Comment on business case	Assessment
Note: This business case was not part of SAPN's original proposal as the need for the expenditure was not evident at the time.	
Whilst there is a well considered need for the expenditure given evidence of the impending legislation on cyber security for Australian utilities, the mandate is not yet formally in place.	
A comprehensive analysis has been conducted that considered the prudence and efficiency of the costs of the program.	
Deliverability – the nature of the work entailed by this program, being mostly process and policy development in this specialist area, means it has little impact on the deliverability of the rest of the IT program.	

Overview of initial Business case proposal

In its initial proposal, SAPN included within the proposed (and accepted) recurrent IT capex, an amount of $11.5m (Real Dec 2017) for Cyber Security described as:

"Capability to proactively identify, protect, detect, respond to and recover from cyber security threats."

This follows on from additional investments in cyber security made during RCP 2015-20 when SAPN's new enterprise cybersecurity function identified increasing and evolving cyber risks in its operating environment that warranted further and immediate allocation of resources.

At the time of developing the initial business case, the key drivers for the expenditure were defined as:

- Compliance with the Critical Infrastructure Centre's (CIC) requirements under the Security of Critical Infrastructure Act 2018 (Cth) (SCI Act), and
- The ability to effectively address and respond to cyber security threats as they evolve during the 2020-2025 RCP.

New requirements

Through its participation in AEMO's Cyber Security Industry Working Group, SAPN anticipate regulations being enacted to mandate a prescribed level of maturity under the Australian Energy Sector Cyber Security Framework (AESCSF). By the end of 2019, AEMO and the Commonwealth Department of Home Affairs are to prepare a plan for the COAG Energy Council to set out appropriate regulations for cyber security in the Australian utilities sector.

To meet the anticipated maturity requirements, SAPN has proposed a capex program of $5.1m (Real Dec 2017) and an associated opex step change of $1.6m for RCP 2020-25.

Separate report

KPMG has undertaken a separate detailed assessment of the prudence and efficiency of SAPN's Utilities Cyber Maturity Business Case. In that we conclude that it represents the actions of a prudent and efficient organisation. In that report we provide two areas of note:

- Whilst not yet formally enacted, we note strong evidence to support the fact that a prescribed level of cyber maturity is likely to be mandated within SAPN's next regulatory period
- With regard to operating expenditure, the AESCSF framework does not prescribe a frequency at which the various controls and processes should be conducted, rather leaving that to the individual organisation to define. The frequencies used by SAPN in calculating its overall opex step change are, in our view, reasonable in the circumstances, and have been defined through processes that consider the prudence and efficiency of each control. The flexibility provided by the framework does leave opportunity for SAPN to re-assess the frequency at which controls are conducted in response to changing needs as the threat environment changes over time.

Appendices

Appendix 1 - Key References

In addition to many draft and working documents, the following key documents were referenced as part of this review.

- Attachment 5: Capital Expenditure, Draft Decision - SA Power Networks 2020-25; AER
- SAPN 2020-2025 Regulatory Proposal, January 2019 – Supporting documents
  - 5.32 IT Investment Plan 2020-25
  - 5.36 SAP Upgrade Business Case
  - 5.40 Ring-Fencing Compliance IT Solution Business Case
  - 5.41 Worker Safety Fatigue Management Business case
  - 5.42 Assets & Work Program Business Case
- Review of aspects of SA Power Networks' capital expenditure, Report to the Australian Energy Regulator; Energy Market Consulting associates (EMCa), September 2019
- Utilities Cyber Maturity Uplift Business Case (Draft); SA Power Networks, November 2019
- [redacted]
- Annual Compliance Report On The Electricity Distribution Ring-fencing Guideline 2017-18; AER
- Ring-Fencing Guideline, Electricity Distribution; AER November 2016
- SA Power Networks Ring-Fencing Guideline Compliance Report for the period 1 January 2018 to 30 June 2018; Deloitte, 30 October 2018
- Distribution Ring-fencing Guideline Update - Stakeholder workshop slides - 28 & 29 August 2019; AER
- SA Power Networks, Ring-Fencing Guideline Compliance Report, 30 June 2019; Deloitte

Appendix 2 - Consultations

The following SAPN staff were consulted as part of this review.

- Cyber Security Operations Manager
- Digital Technologies Manager
- IT Capability Manager
- IT Chief Architect
- IT Portfolio Manager
- IT Reset Analyst
- IT Strategy and Architecture Consultant
- IT Strategy Consultant
- Manager, CPMO
- Manager, Cyber Security & Data Analytics
- Manager, Digital Strategy & Innovation
- Manager, IT Capital Portfolio
- Manager, IT Reset
- Project Manager x2

Appendix 3 - Glossary

AER	Australian Energy Regulator
AESCSF	Australian Energy Sector Cyber Security Framework
CAM	Cost Allocation Methodology
Capex	Capital Expenditure
CIC	Critical Infrastructure Centre
COAG	Council of Australian Governments
CPMO	Corporate Program Management Office
CRM	Customer Relationship Management
DNSP	Distribution Network Service Provider
ICT	Information Communication Technology
NEM	National Energy Market
NER	National Electricity Rules
Opex	Operating Expenditure
RCP	Regulatory Control Period
Repex	Replacement Capex
SAPN	SA Power Networks

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