SA Power Networks

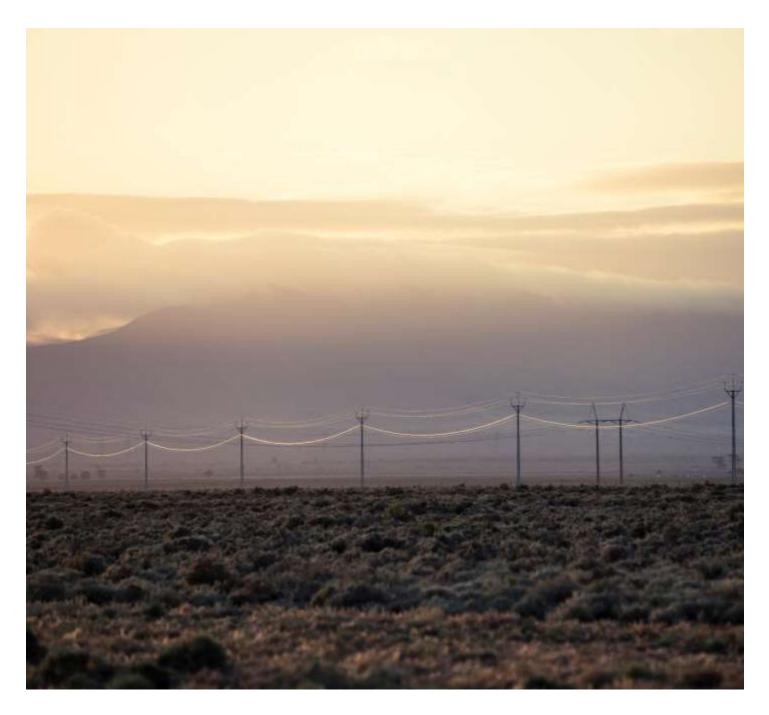## Supporting document 5.29

SAP Upgrade Business Case Addendum

2020-25 Revised Regulatory Proposal

10 December 2019

SA Power Networks

SAP Upgrade Business Case: Addendum Dec 2019 - Confidential

IT revised regulatory proposal for the 2020-2025 regulatory control period
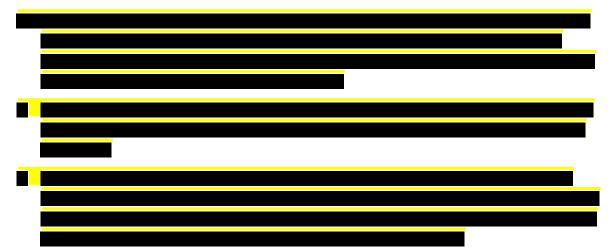
Contents

1.   Executive Summary

This is an addendum to our 'SAP Upgrade Business Case' (**original business case**) contained in our Regulatory Proposal for the 2020-25 Regulatory Control Period (RCP) submitted to the AER in January 2019.[1] The original business case should be read for further background and detail.

This addendum augments SA Power Networks' (SAPN) analysis in response to matters raised by the AER in its Draft Decision for the 2020-25 RCP, and matters raised by our customers and stakeholders in their feedback to the AER and via our own engagement processes.

As our core customer, business and asset management system maintaining an acceptable level of risk and support for SAP is fundamental to maintaining ongoing customer and network services, as well as continuing to respond to our changing network environment and customer preferences. The existing software version (SAP ECC6) is ageing and SAP have announced an end of support date of 2025. The impending withdrawal of support drove consideration of the most cost-efficient means of maintaining our existing levels of service and risk in the long term.

In response to the AER and stakeholder feedback SA Power Networks has explored additional options to determine if there is a more economically and lower risk option available for the SAP upgrade than that recommended in our original business case. Specifically, we explored the risks and costs of using third-party support to maintain the asset beyond 2025 and upgrade after that time.

Our conclusions are that:

1.   SAP have no plans to change their support end date of 2025.

5.   SAP Upgrade deliverability considerations have been key in our portfolio planning given the potential impact. We made extensive use of learnings from other entities who have upgraded already.

Thus, the SA Power Networks recommended option is to upgrade SAP with a total forecast capital expenditure ███████████████████████ is within the 2020-2025 period as:

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[1] SA Power Network Regulatory Proposal: *SAPN – 5.36 – SAP Upgrade Business Case - January 2019*

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- Is the long-term lowest risk option;
- Has the lowest deliverability risk as it spreads the Program over 7 years; and
- Provides ██████████ in benefits over 15 years.

2. Background

2.1 Original SA Power Networks Business Case

Th Original Business Case detailed the options, risks and economic analysis to ensure the SA Power Networks' core customer and business application (SAP) remained adequately supported and secure for the long term.

 SAP has been used at SA Power Networks for over 20 years and sits at the core of our integrated IT application portfolio and enables a significant number of key business functions, including:

- network asset management
- works management
- payroll and human resource management
- finance, procurement and warehouse management
- customer and network projects
- regulatory reporting and compliance
- operational decision support and analytics.

In addition, SAP functionality is currently being expanded to include customer network billing and customer management as part of the Customer Program for the 2015-20 Regulatory Control Period (**RCP**).

SAP began reducing development of our current version (SAP ECC6) in 2015 and announced that support will cease in 2025. ECC6 was implemented at SA Power Networks in 2006 and will have been in place 19 years by 2025. Beyond 2025 SAP ECC6 will be unsupported by SAP which means SA Power Networks will be unable to access security patches to mitigate cyber security risk; unable to access legal or tax changes to ensure we are meeting our obligations; effectively engage in 'break fix' endeavors when the application requires it; and will be limited in our ability to respond to emerging customer or business requirements.

Our Original Business Case explored a number of options to maintain our existing levels of service and risk including:

- Upgrading to the newer SAP S/4 version, which will be supported post 2025;
- Moving to an alternative core platform like Oracle ERP or Microsoft Dynamics; and
- Moving to a portfolio of Best of Breed applications.

We found that the most prudent approach was to upgrade to the SAP S/4 version.

We then performed a very detailed analysis of our current SAP systems, the required changes and the expected impacts of the upgrade. The analysis and planning was led by an external consulting firm with world-wide experience in upgrading SAP to S/4 - ▮▮▮▮▮▮▮ - and with significant input from SAP themselves and learnings from other companies who have already undertaken the upgrade. On this basis we developed plans and costings for a number of options to perform the upgrade including:

- Implementing an entirely new SAP S/4 system from the ground up and decommission the current system;
- Upgrading the current SAP system to SAP S/4 over a 6-year period (2 RCPs); and
- Upgrading the current SAP system to SAP S/4 over a 7-year period (3 RCPs).

Our recommended option performed the upgrade over three RCPs and had a total forecast capital expenditure of $▮▮▮▮▮▮▮▮▮▮▮▮▮▮ fell within the 2020-2025 period. This was recommended as it was:

- the least cost option to keep SAP supportable, enabling SA Power Networks to continue to deliver critical services to customers;
- requires less change management for the organisation compared with a new implementation of SAP which in addition to a new version of SAP would also introduce new organisational-to-technical business processes; and
- the least risk of impacting customers, business as usual activities, and less delivery risk, particularly with respect to other dependent projects to be delivered during the 2020-25 RCP; and
- providing ▮▮▮▮▮▮ in benefits over 15 years[2].

The recommended option split the SAP Upgrade Program into four stages to ensure full support for the *critical* capabilities by 2025:

1. Pre-Conversion Projects: Largely technical projects to implement the new S/4 software and preparing the SAP data and systems for the migration. These projects have limited organisational change management requirements.
2. Technical Conversion: The step by step migration of data, functions and people from the core ERP and Assets Management systems to the new S/4 version over a two and a half year period.
3. Post Conversion Projects – Mandatory Projects: Migrating data, functions and people from other smaller SAP related systems that need to be upgraded by 2025 to maintain full SAP support.
4. Post Conversion Projects – Non-Mandatory Projects: Projects which are necessary to complete the upgrade but that can be delayed until after 2025, hence minimizing our capital requirement in the 2020-25 RCP.

2.2 Stakeholder Feedback

Stakeholder feedback on the original business case was primarily on the increasing usage of SAP amongst Australian utilities, and therefore the perceived increasing power of a single multinational to dictate costs, rather than on the SA Power Networks SAP Upgrade specifically.[3]

SACOSS queried if SA Power Networks was leveraging the CKI [4]multinational agreements to get the cheapest maintenance possible. We note that this is indeed the case[5].

Energy Consumers Australia examined the business case and concluded the expenditure "seems justified" but left it up to the AER to assess in more detailed[6].

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[2] This business case pertains to maintaining current levels of service through replacement of a system. While some efficiency benefits are identified, all options assessed have negative NPVs.

[3] While SAP is prevalent amongst the utilities it is not the only supplier winning utility business. SA Power Networks always seeks quotes from alternative vendors when implementing new capability to ensure we have the best long term costs to customers for that capability.

[4] SA Power Networks is part of the CKI Group of companies which includes several Australia utilities. We leverage our combined purchasing power where possible to achieve greater savings for customers.

[5] SACOSS Submission on SA Power Networks Regulatory Proposal 2020-25 - 16 May 2019

[6] ECA Submission on SA Power Networks Regulatory Proposal 2020-25 16 May 2019

2.3 AER Evaluation

The AER evaluation of the SAP Upgrade Program consisted of an onsite presentation in June 2019, in concert with their independent consultant Energy Market Consulting Associates (EMCa) plus follow up questions in Information Requests. The focus of the questions was not on whether the upgrade should occur or on the detailed costings but rather on:

- The timing of the upgrade;
- The consideration of alternative support options;
- Portfolio dependencies; and
- Lessons learnt from other entities

SA Power Networks provided detailed responses to all the questions.

2.4 AER Draft Determination

In the Draft Determination[7] the AER did not include the costs of the SAP Upgrade Program in our forecast expenditure allowances for the 2020-25 RCP. The AER critique focused on three key factors:

1. SA Power Networks had not sufficiently considered third party support options to extend the life of the current version beyond 2025. Specifically, that:

   - *SA Power Networks has not established that upgrading is lower cost than third party support, or that third party support is not feasible to maintain service standards.[8]*

   - *Third party providers offer to maintain support for older versions of SAP (e.g. security patching, response to taxation changes) at reduced fees and beyond SAP's 2025 deadline). [9]*

   - *Other organisations use third party support and SAPN hasn't discussed how its operations differ sufficiently such that risks of third-party support rule it out as a reasonable alternative. [10]*

   - *EMCa identified that third party service providers can provide system patches (e.g. for bug fixes and legal or regulatory changes).[11]*

2. SA Power Networks had not sufficiently considered if SAP would extend the life of the current version beyond 2025. [12]

3. That there are significant business change risks associated with the SAP Upgrade and based on comments from EMCa, the AER concluded there was an inherent deliverability risk for the IT Portfolio, which would be removed by not allowing the SAP Upgrade. The EMCa comments related specifically to the perceived large scale of the IT Portfolio, the perceived 'back to back' nature of the individual projects in the Program which did not allow for slippage and the perceived need for an additional 20-30% of "time contingency" (ie. warranty change management period) for each project.[13]

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[7] SA Power Networks Distribution Determination 2020 to 2025 Attachment 5: Capital Expenditure October 2019
[8] Ibid p.72
[9] Ibid p.71
[10] Ibid p.71
[11] Ibid p.71
[12] Ibid p.71
[13] Ibid p.68

In additional correspondence with the AER the following was also indicated as possible scenarios to assess

1. *Model a scenario (costs, risks costs, benefits) of a **3ʳᵈ party support option** for the existing version of SAP;*

2. *(1) may include the cost of eventually **transitioning back to SAP** support at some future point;*

3. *(1) may include the cost of eventually **transitioning to an alternative service provider**;[14]*

4. *analysis to allow for the possibility that **SAP will continue to provide support** beyond its stated deadline for SAPN's current version; and*

5. *inclusion of **efficiency benefits from upgrading** compared to third party support (due to improved functionality).*

6. *Alternatively, provide details of reasons specific to SAPN to rule out 3ʳᵈ party support as an option because it will not reasonably maintain service standards. This needs to explain why SAPN's circumstances are **different to other DNSPs and government agencies** who have chosen 3ʳᵈ party support.*

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[14] Replacing SAP with a competitive core system like Oracle or Microsoft, or implementing a new "best of breed" set of applications was determined to be "not prudent" in the original business case hence we do not consider transitioning to an alternative service provide in this analysis. We do however consider the different options for upgrading or re-implementing SAP.

3.   Revised Proposal

3.1 Summary Approach

SA Power Networks will need to upgrade SAP at some time, our objective is to establish the most optimal time to perform the SAP upgrade, and specifically whether upgrading in the 2020-25 period is a lower cost option than using third-party support to defer the upgrade until later.

We focused on several key questions:

1.   Will SAP extend support post 2025?

2.   Does third-party support represent a prudent and feasible option for SA Power Networks to maintain our critical service standards?

3.   Does third-party support present a strategic fit for SA Power Networks? Or how are we different from other entities using third-party support?

4.   Does a third-party support option present a more cost efficient and manageable risk option than the recommended option in the original business case? In particular, delaying key components of the SAP upgrade until after 2025 will require use of third-party support for some period until the upgrade is complete.

5.   Show how we are managing the deliverability risks and issues for the SAP Upgrade Program.

In answering these questions, we engaged in an extensive research study including:

• a market review of third-party support providers;

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• interviews with comparator businesses that are also evaluating options around the SAP Upgrade and their consideration of third-party support, upgrade paths and long-term costs; and

• detailed discussions with SAP regarding consideration for extending ECC6 support beyond 2025 and the consequences of cancelling SAP support on long term costs.

3.2 The Need: SAP support arrangements are changing

SA Power Networks has had several discussions with SAP to ascertain the likelihood of SAP extending support for ECC6 post 2025. SAP have confirmed they remain committed to the timelines and approach detailed for ECC6 in October 2014 and have not planned to extend support beyond 2025.[15]

Historically major versions of SAP software have had 8 years of support, including 5 years of mainstream support and 3 years of extended maintenance. During the extended maintenance period the maintenances costs increased yearly until support ceased. These timelines have been adhered to with almost 100% of SAP customers on the new edition by the time support finished.

With EEC6 SAP have adopted a very different approach. EEC6 was under full development and support until 2015 (9 years). Since 2015 development is gradually ceasing but support will be

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retained until 2025 (10 years). This will allow SAP customers to gradually move the S/4 version while maximising life of investment and minimising risk and avoid the need for an additional extended support phase.

Post 2025 only limited 'best efforts' emergency fixing and problem resolution services will be available from SAP for ECC6[16]. No security updates, legal or tax updates will be provided. Hence SA Power Network would need to look for alternative additional support arrangements to provide additional security capability and updates for this if the S/4 Program was not at the required stage.

3.3 Third Party SAP Support Investigation

[REDACTED]

3.3.1   SA Power Networks' SAP Environment

[REDACTED]

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[16] This is referred to as 'Customer-Specific Maintenance'. The same level of maintenance has to be paid but the available services are much more restricted. https://wiki.scn.sap.com/wiki/display/SL/Maintenance+Strategy#MaintenanceStrategy-Customer-specificmaintenance

[17] This same finding emerged during interviews with other Australian entities who have considered or are using third party support providers.

[18] Australian Government, Critical Infrastructure Resilience Strategy: Policy Statement, 2015: see https://www.tisn.gov.au/Documents/CriticalInfrastructureResilienceStrategyPolicyStatement.PDF

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3.3.2   Other Entities use of Third-Party SAP Support

We engaged in interviews and some site visits with 8 entities who are

- currently using third-party support [REDACTED]

- had used third-party support and departed [REDACTED]
  [REDACTED]

- had considered third-party support [REDACTED]

In addition, we reviewed research available through Gartner (the leading IT research and analysis company worldwide) and discussed our key assumptions with Gartner to assist in our evaluation and decision making.[21]

We focused on critical service providers who were or had used third-party support on key SAP systems. However, some entities only used Oracle but we still included them for their experience.

[REDACTED]

[REDACTED]

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[21] Gartner, 2019: *What CIOs Need to Know Before Adopting Third-Party Support for Oracle and SAP ERP*; Gartner 2015: *What to Consider Before Cancelling Your ERP Vendor's Maintenance Agreement and Switching to Third-Party Support*; Gartner 2016: *What Rimini Street and Spinnaker Support Are Doing to Support Oracle and SAP ERP Products.*

Based on these interviews and analysis, we developed a list of key dimensions where SAP third-party support providers deliver value to their customers. We then considered how SA Power Networks circumstances fit on these dimensions (Table 1).

Table 1 – How SA Power Networks differs from other entities who are using Third Party Support

Dimension	Third Party Support is more likely to be used when the entity is..	SA Power Networks
Strategic Value of SAP	Committed to winding down the use of SAP and moving to an alternative product, or currently unsure about the long-term commitment to SAP	Substantial use and prior investment of SAP. Clear strategic long-term commitment to optimising our investment in SAP
Cost Focus	Focused on minimising short term costs with less consideration for long term costs	Clear focus on minimising long term costs to our customers
Age of ECC6 implementation	Seeking to unlock more value from ECC6 because they have upgraded to ECC6 relatively recently (last 4-5 years)	Upgraded to ECC6 in 2006 (13 years ago and 19 years by 2025).
Existing S/4 Investment	Do not own the SAP S/4 licences (hence will need to incur additional upfront cost before upgrading)	Already own S/4 licences and hence need to maximise investment in those licenses also
Already using S/4	Have not commenced the move to S/4	Already have significant business functions using S/4 (e.g. CRM & Billing)
Size of SAP footprint	Limited SAP footprint – SAP covers a number of defined functions, hence relatively low impact if there are any issues.[22]	Extensive SAP footprint across all customer, electricity distribution network and business functions, hence very high impact if there are issues.
Levels of mobile and internet transactions	No or limited exposure to internet or mobile transactions, hence needs **lower** levels of cyber security management	Many customer and business internet and mobile functions necessitating **very high** levels of security management[23]
Stability of business environment	Relatively stable business environment necessitating **few** ongoing changes.	Rapidly evolving business and electricity distribution network environment necessitating **regular** ongoing changes.
Industry cyber risk level	Industry is not considered a high cyber risk environment with increasing cyber security standards.	Electricity Industry is a high cyber risk environment and cyber standards are continually increasing.
Existing SAP maintenance costs	SAP ongoing maintenance costs are standard retail rates	SAP ongoing maintenance costs are already ▇▇ less than standard
Levels of integration	Limited integration with other systems	Extensive integration with other systems to optimise business process costs
Levels of use of closed code components[24]	No or limited use of SAP closed code components	Extensive use of SAP closed code components to optimise business process costs (ie. third-party support providers cannot resolve issues on these)
Levels of use of SAP Cloud capabilities	No or limited use of SAP Cloud capabilities and cloud connectors	Extensive use of SAP Cloud capabilities and connectors to increase business and IT cost efficiency (ie. third-party support providers cannot resolve issues for cloud capabilities and also need to develop their own cloud connectors)

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[22] For example only some administrative modules such as Finance and HR

[23] For example the statewide electricians portal, online customer requests, all staff timesheets and payroll, all asset inspector capabilities, all external contractor capabilities.

[24] Some SAP code modules are editable and therefore open to change by technical entities other than just SAP. This allows companies to customize SAP to their own circumstances, and also for other entities to provide fixes or patches if there are issues. Other SAP code is "closed" and not editable or customisable and only SAP themselves can make changes or provide a fix or patch if there is an issue. Given our expansive use of SAP we use a number of modules which are "closed" code e.g. PI/PO which provides all integration with other systems. Third-parties cannot resolve issues on closed code modules.

Overall SA Power Networks' circumstances are quite different to those entities who have chosen to use the third-party supplier.

- Our SAP maintenance costs are already lower than most of the other entities due to our ability to leverage the buying power of the CKI Group;

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- We have already commenced the transition to S/4 (eg CRM and Billing) and have invested in S/4 licenses, and we want to maximise that investment;

- Our use of SAP is much more expansive and integrated;

- We would be much more restricted in responding to customer, business and network changes on an ongoing basis because we use more SAP capabilities (eg. restricted code components and Cloud connectors) that are not accessible or supportable by third-party providers.

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3.3.3   Summary of Third-Party Support

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3.3.4 How could SA Power Networks use Third-Party Support

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3.4 Options Considered for Delaying the the SAP Upgrade

We have retained the quantified options from the original SAP Upgrade Business Case.

- Option 1: New S/4 implementation
- Option 2: Upgrade the current SAP System to S/4 over 2 RCPs
- Option 3 (Recommended): Upgrade the current SAP System to S/4 over 3 RCPs.

Table 2 – Options High Level Description

Option No.	SAP Upgrade Option Name	Description
3a	Original Proposal Recommended Option Augmented	• *Option 3 (Recommended) Upgrade the current SAP System to S/4 over 3 periods* from the original proposal. • Implements the S/4 upgrade over 7 years with the largest component (the technical conversion) occurring in 2022-23. • All activities, timelines, costs and risks are retained as per Option 3 in the original proposal. • Augments by adding the yearly SAP maintenance cost • Baseline option for this analysis
4	Commence the upgrade in 2020-25 but defer the main components until 2025-2030.	• Implements the S/4 upgrade over 7 years with the technical conversion deferred to 2025-26 leveraging third-party support. • Activities, costs and dependencies are as per *Option 3 (Recommended): Upgrade the current SAP System to S/4 over 3 periods* from the original proposal.
5	Defer the whole upgrade to start in 2025-30	• Implements the S/4 upgrade over 5 years with the upgrade start deferred to 2027-28 leveraging third-party support. • Activities, costs and dependencies are a per *Option 2: Upgrade the current SAP System to S/4 over 2 periods* from the original proposal - the compressed timeframe is due to the late start expecting to necessitate an earlier finish. (As systems age other variables drive the compressed timeframes of the upgrade process.)
6	Defer the whole change to start in 2025-30 and do a reimplementation or replacement rather than just an upgrade	• Implements a completely new S/4 platform over a 5-year period with the start deferred to 2027-28 leveraging third-party support. • All activities, timelines, costs and risks are retained as per *Option 1: New SAP S/4 Implementation* in the original proposal

The options considered in this addendum are summarised in Table 2 and leverage the detailed projects, dependencies, costings and benefits from Options 1, 2 and 3. These new options delay the start dates and leverage third-party support to do so. As a result, increasingly more activities and costs are moved out of the 2020-25 RCP and into the 2025-30 RCP or later.

Our objective was to assess if there is a more prudent and efficient option than our recommended option (Option 3) considering all costs and risk.

As with the original business case, to ensure a thorough long-term analysis, costs and benefits for all options are modelled over a **15-year** period.

Table 3 summarises the key components and indicative timelines for the SAP Upgrade options considered including the expected requirements for SAP Maintenance and third-party support.

Table 3 – Key components and indicative timelines for the SAP Upgrade options considered

Option No.	Option Name	Key Component	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2030-34
					2020-25 RCP					**2025-30 RCP**				**2030-35 RCP**			
3a	Original Proposal Preferred Option Augmented	SAP Maintenance	▓ green ───														
		Third Party Support															
		SAP Upgrade Project	▓ blue ────────────────────														
4	Commence the upgrade in 2020-25 but defer the main part until 2025-2030	SAP Maintenance	▓ green ───														
		Third Party Support							▓ orange ───────────								
		SAP Upgrade Project				▓ blue ────────────────────────											
5	Defer the whole upgrade to start in 2025-30	SAP Maintenance	▓ green ────────────────						(gap)	▓ green ───────────────────							
		Third Party Support							▓ orange ────────────────────────								
		SAP Upgrade Project								▓ blue ────────────────────							
6	Defer the whole upgrade to start in 2025-30 and do a larger reimplementation or replacement	SAP Maintenance	▓ green ────────────────						(gap)	▓ green ───────────────────							
		Third Party Support							▓ orange ────────────────────────								
		SAP Reimplementation Project								▓ navy ────────────────────							

3.4.1 Options Cost and Risk Summary

Table 4 – Summary of Option Costs and Risk ($'000 Dec $2017)

Option No.	SAP Upgrade Option Name	Net 15 Year Cost	15 Year Net Present Value	NPV Difference to Baseline Option 3a	15 Year Benefits	2020-25 RCP Upgrade Program Cost	Overall Risk Rating	Delivery Risk
3a	Original Proposal Recommended Option Augmented	▬	▬	▬	▬	▬	▬	▬
4	Commence the upgrade in 2020-25 but defer the main activities until 2025-2030.	▬	▬	▬	▬	▬	▬	▬
5	Defer the whole upgrade to start in 2025-30	▬	▬	▬	▬	▮	▬	▬
6	Defer the whole upgrade to start in 2025-30 and do a larger reimplementation or replacement	▬	▬	▬	▬	▮	▬	▬

Table 4 summarises the costs, benefits and resultant risks of the options.

Overall Option 3a, the Original Proposal Preferred Augmented, is in the long-term interests of customers, as it is the least cost option (a 15-year NPV of ▬) with a level of risk that is lower than the alternatives.

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- An increase of $1.2 million in recurrent capital which was removed from the IT Applications Business Case on the basis that the SAP upgrade would be undertaken in the 2020-25 period.[25]

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3.4.2   **General Assumptions**

The general assumptions are:

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2. SAP maintenance is mandatory during the SAP Upgrade Program in order to:

   a. Download the current versions at different stages during the upgrade process, especially at project commencement and before final release;

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   b.   Obtain access to the library of SAP tools and processes that are necessary to undertake the upgrade and make it as cost efficient as possible;

   c.   Obtain access to the support engineers suitably skilled in the S/4 product to support the upgrade and for expedient problem resolution.

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4.   An SAP Upgrade will need to be started some-time between 2020 and 2030.

5.   Post 2025 the third-party support will be required to support the existing ECC6 environment as SAP will no longer provide the required levels of support.

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7.   The longer we wait to do the upgrade the more compressed the upgrade Program will be as our experience shows that other considerations such as large business changes, hardware or operating system changes tend to push increasingly urgent timelines as applications become legacy not just aged.

3.4.3   Option 3a: Original Proposal Preferred Option Augmented: Upgrade the current SAP system to SAP S/4 over three RCPs

This option is the baseline for all other options discussed in this addendum.

This option involves an upgrade of the current SA Power Networks' SAP system to S/4, enabling a more prudent approach to change management, by maximising reuse of existing SAP environment and data. A further advantage to this option is that the upgrade activity is spread over 3 RCPs which further reduces the delivery risks.

Full justification, project details, rationale, risks and benefits are detailed in the original business case. Table 5 (below) summarises these costs and benefits.

Including the ongoing SAP maintenance, the total 15-year costs of this option ████████████████████
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Advantages

The advantages are that this option

- Is the lowest long term cost.

- Most effectively manages the risks associated with an unsupported SAP environment.

- Has the lowest deliverability risk because the changes are implemented systematically over a longer time (7 years).

Disadvantages

- This option presents the highest costs in the 2020-25 RCP.

Risks

Table 6 summarises the risk assessment from the original business case[26] . The delivery risk is rated as Medium and the overall risk as Medium.

Compared to the other options in the Addendum the risks in this option are significantly lower because:

- This is the only option that provides full support to the SAP environment immediately post 2025.

- There is only one supplier involved in the upgrade program and not two that we would have to interact with.

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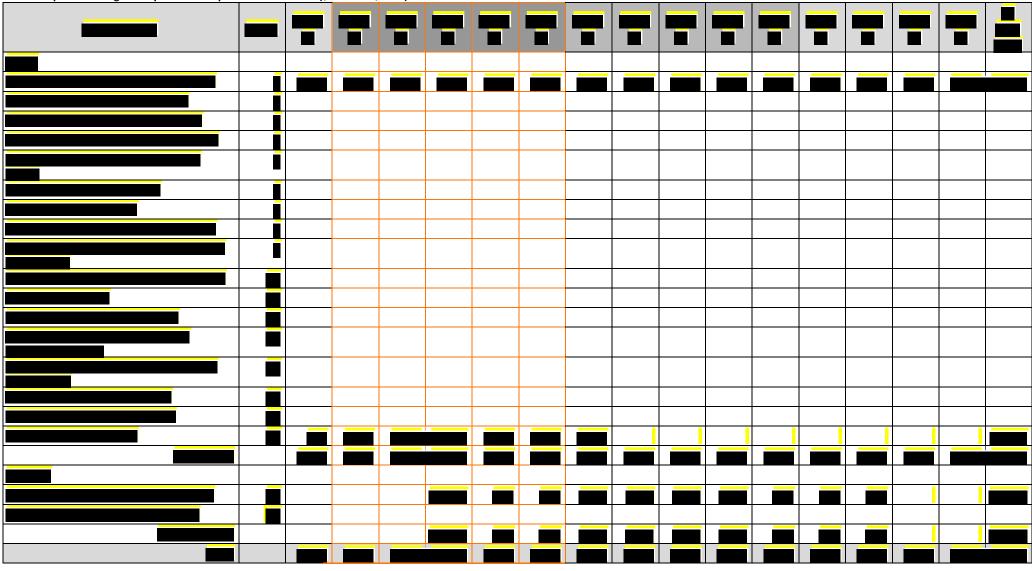██ .

Benefits

The financial benefits are the existing Program benefits ███████████

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[26] Table 10 in the Original SAP Upgrade Business Case

Table 5- Option 3a Program Expenditure Capital Cost Estimates ($'000 Dec $2017)

(Details of the notes and assumptions are provided in Appendix A and the Cost Models in Appendix B)

Table 6 – Summary Option 3a Risk Analysis

Risk ID	Risk Description	Likelihood	Consequences	Risk Rating
1	Network Reliability	Unlikely	Major	Medium
2	Market Obligations	Unlikely	Moderate	Low
3	Health and Safety	Rare	Catastrophic	Medium
4	Legal Compliance	Unlikely	Moderate	Low
5	Regulatory and Reliability Reporting	Rare	Moderate	Low
6	Planned Assets Maintenance	Rare	Major	Low
7	Security – shift to Do Nothing profile	Unlikely	Major	Medium
8	Delivery Risk	Unlikely	Major	Medium

Risk Summary	
The overall risk rating for Option 3a is:	Medium

3.4.4 Option 4: Commence the upgrade in 2020-25 but defer the main activities until 2025-2030

Like Option 3a this option involves an in-place technical upgrade of the current SA Power Networks' SAP system to S/4 over 7 years but uses third-party support to delay the start until 2023-24. This option uses the same, projects, costs and benefits for the SAP Upgrade Program as for Option 3a but moves them out based on the new start date.

Table 7 summarises the costs and benefits for Option 4. The total 15-year costs of this option ██████ ██

Key Program differences from the baseline Option 3a:

1. The start of the upgrade is delayed 5 years until 2023-24.

2. The majority of the program (81%) is shifted from the 2020-25 RCP into the 2025-30. This includes the largest single component - the technical ████████████████

3. Third-party support is commenced in 2025 once existing SAP Support ceases.

4. SAP support is retained for the new version of the software (S/4) – for which we already own the licenses.

5. The upgrade will be completed in 2029-30.

Key Cost Changes

- The third-party support ██████████ per annum while it is needed. Once SAP ceases support in 2025 then the additional third-party support is required. It will be cancelled once the upgrade is completed and the old ECC6 software decommissioned.

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Advantages

The advantages of this option are:

- The SAP environment is slightly better supported than having no or limited customer specific support immediately post 2025.

- The SAP Upgrade Program expenditure in the 2020-25 period is reduced.

- The perceived issues with IT deliverability in 2020-25 are also reduced.

Disadvantages

The disadvantages of this option are:

- The key risks to the SAP environment are only partially resolved using third-party support.

- SA Power Networks is unable to maximise our existing investment in our S/4.

- Reduces our ability to respond to a changing business environment.

Risks

Table 8 summarises the risk changes relative to Option 3a. The overall risk and delivery risk are higher than for Option 3a due to:

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- Higher delivery risks given the increased complexity of another supplier to be managed.

Benefits

- The Program benefits of this option are marginally less due to the later start on the Upgrade Program ███████████████████████

- The reduced volumes of standard SAP updates and upgrade contribute ████████████████ in benefits over the period.

Table 7- Option 4 Program Expenditure Capital Cost Estimates ($'000 Dec $2017)

(Details of the notes and assumptions are provided in Appendix A and the Cost Models in Appendix B)

Table 8 – Summary Option 4 Risk Analysis

Risk ID	Risk Description	Changes Due to Delaying the Upgrading using Third-party support	Likelihood	Consequences	Risk Rating
1	Network Reliability	We expect that the time to resolve issues will increase, particularly given the extent to which we use closed code components and integration cloud connectors which cannot be accessed or edited by the third-party supplier. The likelihood of this having an impact on network operations increases. We also expect that this likelihood will increase over time as the application ages and the issues become more complex.	Possible	Major	High
2	Market Obligations	██████████████████████████ ████████████████████ ██████████████████ ████████████████ ██████████████████ ████████████ ██████████████████ ██████████████████ ████████████████ ██████	Likely	Moderate	High
3	Health and Safety	No significant changes.	Rare	Catastrophic	Medium
4	Legal Compliance	No significant changes	Unlikely	Moderate	Low
5	Regulatory and Reliability Reporting	No significant changes	Rare	Moderate	Low
6	Planned Assets Maintenance	No significant changes	Rare	Major	Low

Risk ID	Risk Description	Changes Due to Delaying the Upgrading using Third-party support	Likelihood	Consequences	Risk Rating
7	Security	████████████████████ ████████████████████	Possible	Major	High
8	Delivery Risk	Third party support increases the risk of delivery during the upgrade process by: • Under third party support custom changes and fixes will be applied which then need to be rolled back before final conversion. This not only increases the cost of the change but increase the likelihood of an issue arising which disrupts the program timeline. • Introduces another party to the whole upgrade process who then must be managed, communicated with, and may have a conflict with the other parties in the process. This increases program complexity and therefore the likelihood of an issue arising.	Possible	Major	High

Risk Summary	
The overall risk rating for Option 4 is:	High

3.4.5   Option 5: Defer the whole upgrade to start in 2025-30

Similar to Option 3a this option involves in-place technical upgrade of the current SA Power Networks' SAP system to S/4 over 6 years but uses third-party support to delay the start. This option uses the same, projects, costs and benefits for the SAP Upgrade Program as for Option 2 but moves them out based on the new start date.

Table 9 summarises the costs and benefits for Option 5. The total 15-year costs of this option ████████ ██

Key Program differences from the baseline Option 3a:

1. The start of the upgrade is delayed 9 years until 2027-28.

2. The majority of the program is shifted from the 2020-25 RCP into the 2030-35. This includes the largest single component - the technical conversion ███████████

3. Third-party support is commenced in 2025 once existing SAP support ceases.

4. SAP support is cancelled completely for 2 years.

5. SAP support is reinstated in 2027-28 as part of the upgrade process but is expected to incur associated costs including a reinstatement fee, a support back charge and a cost for bringing the SAP back to standard version to enable the upgrade.

6. The upgrade will be completed in 2032-33.

Key Cost Changes

-   The third-party support ████████████████ per annum while it is needed.

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-   Increase costs for third-party building of workarounds and fixes for SAP functions they do not have access to e.g. closed code and Cloud connectors.

Advantages

The advantages of this option are:

- SAP is supported post 2025.

- The SAP Upgrade Program expenditure in the 2020-25 period is reduced.

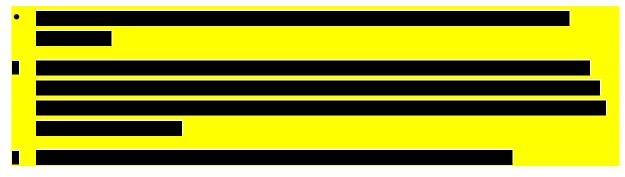- The perceived issues with IT deliverability in 2020-25 are also reduced.

Disadvantages

The disadvantages of this option are:

- The key risks to the SAP environment are only partially resolved using third-party support.

- Delays SAPN being able to maximise our existing investment in our S/4

- Reduces our ability to respond to a changing business environment

Risks

Table 10 summarises the risk changes relative to Option 3a. The overall risk and delivery risk are higher than for Option 3a.

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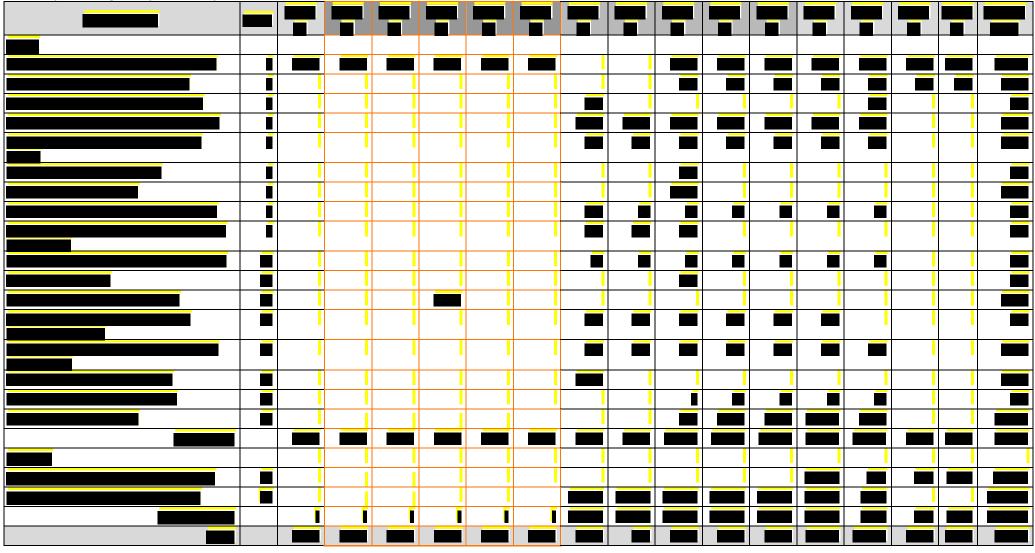████████████████

- ██

- Higher delivery risks given the increased complexity of another supplier to be managed and the need to rollback changes during the upgrade process.

Benefits

The benefits of this option are ████████████ comprising:

- Program benefits of $████████

- ████████████████ due to the reduced volumes of standard SAP updates over the period.

Table 9- Option 5 Program Expenditure Capital Cost Estimates ($'000 Dec $2017)

(Details of the notes and assumptions are provided in Appendix A and the Cost Models in Appendix B)

Table 10 – Summary Option 5 Risk Analysis

Risk ID	Risk Description	Changes Due to Delaying the Upgrading using Third-party support	Likelihood	Consequences	Risk Rating
1	Network Reliability	We expect that the time to resolve issues will increase, particularly given the extent to which we use closed code components and integration cloud connectors which cannot be accessed or edited by the third-party supplier. The likelihood of this having an impact on network operations increases. We also expect that this likelihood will increase over time as the application ages and the issues become more complex.	Possible	Major	High
2	Market Obligations	███████████████████████ ████████████████ ██████████████████ ████████████████ ████████████████ ██████████████ ████████████ ████████ ███████	Likely	Moderate	High
3	Health and Safety	No significant changes	Rare	Catastrophic	Medium
4	Legal Compliance	No significant changes	Unlikely	Moderate	Low
5	Regulatory and Reliability Reporting	No significant changes	Rare	Moderate	Low
6	Planned Assets Maintenance	No significant changes	Rare	Major	Low

Risk ID	Risk Description	Changes Due to Delaying the Upgrading using Third-party support	Likelihood	Consequences	Risk Rating
7	Security	███████████████ ████████████████ ███████████████ ███████████████ ████████████████ ███████████████ █████████████████ ████████████████ ██████████████ █████████████████ ███████████████ ██████████████████ ██████████████████ █████████████████ █████████████████ ██████████████ ██████████████ █████████████████ ██████████ ██████████████████ █████████████████ ██████████████████ ██████████████████ ████████████	Possible	Major	High
8	Delivery Risk	Third party support increases the risk of delivery during the upgrade process by: • Under third party support custom changes and fixes will be applied which then need to be rolled back before final conversion. This not only increases the cost of the change but increase the likelihood of an issue arising which disrupts the program timeline. • Introduces another party to the whole upgrade process who then must be managed, communicated with, and may have a conflict with the other parties in the process. This increases program complexity and therefore the likelihood of an issue arising.	Possible	Major	High

Risk Summary	
The overall risk rating for Option 5 is:	High

3.4.6   Option 6: Defer the whole upgrade to start in 2025-30 and do a larger reimplementation or replacement

This option involves delaying the start of the SAP Upgrade until 2027-28 then doing a complete reimplementation of the SAP environment. This option uses the projects, costs and benefits presented in Option 1 of the original SAP Upgrade Proposal but moves them out based on the new start date.
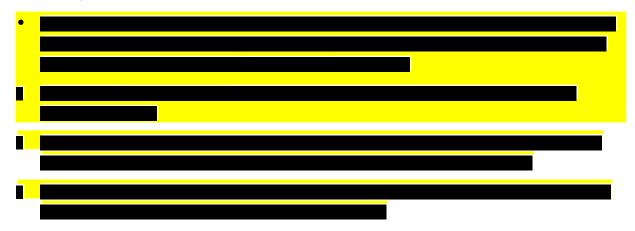
Table 11 summarises the costs and benefits for Option 6. The total 15-year costs of this ███████ ██

Key Program differences from the baseline Option 3a:

1. The start of the upgrade is delayed 9 years until 2027-28.

2. This program is a complete re-implementation of SAP to a fresh version of S/4. This means that all the business processes and data currently in SAP are completely recreated and re-engineered resulting in significant business change. Hence the capital program costs are over twice as much as for Option ██████████████████

3. Third-party support is commenced in 2025 once existing SAP Support ceases.

4. SAP support is cancelled for 2 years.

5. SAP support is reinstated in 2027-28 as part of the upgrade process but is expected to incur associated costs including a reinstatement fee, a support back charge and a cost for bringing the SAP back to standard version to enable the upgrade.

6. The upgrade will be completed in 2031-32. This is a compressed timeframe compared to the Option 1 given the increased risk profile created by the deferral.

7. Third-party support will be cancelled once the upgrade is complete.

8. Due to the delayed start the 15-year SAP Upgrade Program benefits are significantly less than for Option 1.

Key Cost Changes

- The third-party support ██████████████ per annum while it is needed. Once SAP ceases support in 2025 then the additional third-party support is required. It will be cancelled once the upgrade is completed and the old ECC6 software decommissioned.

- ██

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[REDACTED]

Advantages

The advantages of this option are:

- SAP is supported post 2025.

- The SAP Upgrade Program expenditure in the 2020-25 period is reduced.

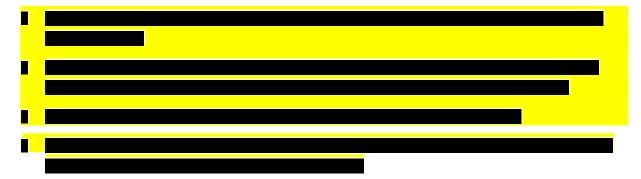- The perceived issues with IT deliverability in 2020-25 are also reduced.

Disadvantages

The disadvantages of this option are:

- This is a substantially more expensive approach than any of the other options.

- [REDACTED]

- Delays SAPN being able to maximise our existing investment in our S/4

- Reduces our ability to respond to a changing business environment

Risks

Table 12 provides the summary the risk changes to Option 3a. The overall risk and delivery risk are higher than for Option 3a.
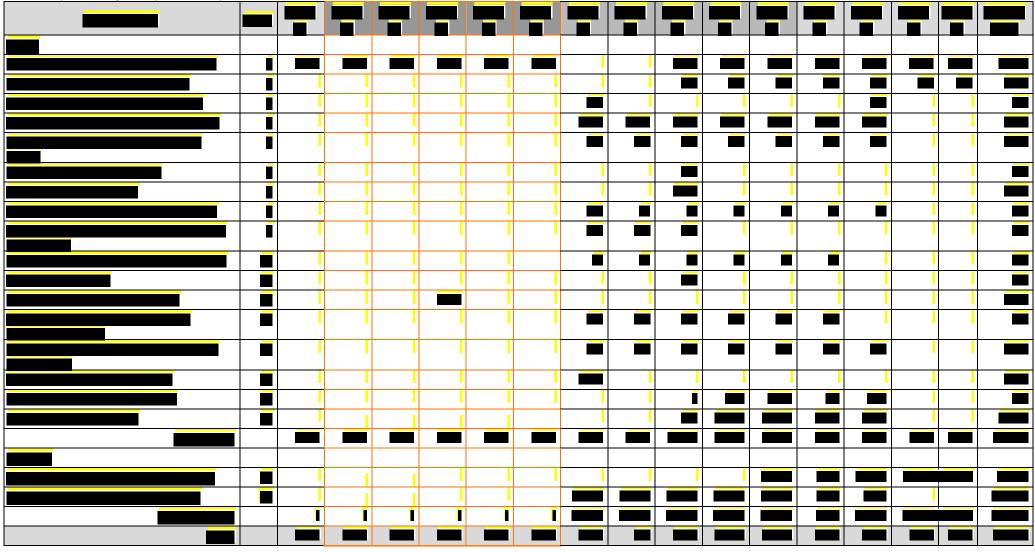
[REDACTED]

Benefits

The benefits of this option are [REDACTED] comprising:

- Program benefits of [REDACTED]

- [REDACTED] in savings due to the reduced volumes of standard SAP updates over the period.

Table 11- Option 6 Program Expenditure Capital Cost Estimates ($'000 Dec $2017)

(Details of the notes and assumptions are provided in Appendix A and the Cost Models in Appendix B)

Table 12 – Summary Option 6 Risk Analysis

Risk ID	Risk Description	Changes Due to Delaying the Upgrading using Third-party support	Likelihood	Consequences	Risk Rating
1	Network Reliability	We expect that the time to resolve issues will increase, particularly given the extent to which we use closed code components and integration cloud connectors which cannot be accessed or edited by the third-party supplier. The likelihood of this having an impact on network operations increases. We also expect that this likelihood will increase over time as the application ages and the issues become more complex.	Possible	Major	High
2	Market Obligations	██████████████████████████ ██████████████████████████ ██████████████████████████ ██████████████████████████ ██████████████████████████ ██████████████████████████ ████████████████	Likely	Moderate	High
3	Health and Safety	No significant changes	Rare	Catastrophic	Medium
4	Legal Compliance	No significant changes	Unlikely	Moderate	Low
5	Regulatory and Reliability Reporting	No significant changes	Rare	Moderate	Low
6	Planned Assets Maintenance	No significant changes	Rare	Major	Low

Risk ID	Risk Description	Changes Due to Delaying the Upgrading using Third-party support	Likelihood	Consequences	Risk Rating
7	Security	████████████████████████████ ████████████████████████ ██████████████████ ██████████████████████ █████████████████████████ ███████████████████████ ████████████████ ████████████████████████ ████████████████████ ██████████████████ █████████████████ █████████████████████████ ████████████████████ ████████████████████████ ███████████████████ ███████████████ ███████████████████ ██████████████████████ ███████████████████ █████████████ ████████████████████ ████████████████████████ ██████████████████████ █████████████ ██████████	Possible	Major	High
8	Delivery Risk	Third party support increases the risk of delivery during the upgrade process by: • Under third party support custom changes and fixes will be applied which then need to be rolled back before final conversion. This not only increases the cost of the change but increase the likelihood of an issue arising which disrupts the program timeline. • Introduces another party to the whole upgrade process who then must be managed, communicated with, and may have a conflict with the other parties in the process. This increases program complexity and therefore the likelihood of an issue arising.	Possible	Major	High

Risk Summary	
The overall risk rating for Option 6 is:	High

3.5 Program Deliverability

The AER concerns regarding deliverability were around

1. The significant business change risks associated with the SAP Upgrade;
2. The EMCa comments related to the perceived 'back to back' nature of the individual projects in the Program which did not allow for slippage; and
3. The perceived need for an additional 20-30% of "time contingency" (i.e.. warranty change management period) for each project.

In responding to the AERs concerns regarding deliverability we have reviewed and considered the following:

- SA Power Networks' track record in delivering SAP Projects.
- The timing, impact and dependencies of the SAP Upgrade as part of the IT 2020-25 Portfolio of activity overall.
- Schedule analysis for project dependencies and impact assessments, allowing enough time between projects should issues arise; and
- SAP Project Landscape Management, enabling SAPN to run multiple SAP activities in parallel.

3.5.1   SAP Project Implementation Experience

SA Power Networks have a track record in the planning and delivering of significant SAP Implementation and Upgrade projects over past RCPs (see Figure 1), notably:

- SAP R/3 full implementation in 1997;
- SAP ECC 6.0 Upgrade in 2006; and
- HANA Database Upgrade in 2015.

These projects were delivered successfully and within the tightly defined timeframes.

Figure 1: History of SAP Upgrade Activities

3.5.2   2020-25 IT Portfolio Impact Analysis

Given the expected impact careful consideration was given to the timing of the key components of the SAP Upgrade program within the overall IT Portfolio. As detailed in the original business case, we undertook a very substantial 6-month analysis and planning process to understand what needed to be done during the SAP Upgrade utilising highly experienced international companies (Cap Gemini & SAP), as well as engaging extensively with other companies who have already upgraded to S/4 to understand the detailed impact of the changes. Specific considerations which we have factored into the portfolio plan include:
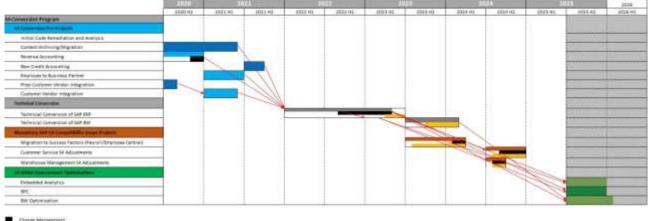
- The SAP Technical Conversion has a largest organisational impact and the decision was made to reduce the volume of other IT portfolio and organisational change activities being undertaken during this period. This is clearly called out in the overall portfolio diagram as the "SAP Change Freeze" and the timings of the projects for the Assets & Work Program, the GIS Consolidation

Program and the reduction in the IT Applications Recurrent expenditure during the period the Technical Conversion is being undertaken.

- The Pre-Projects can be done early and have relatively contained impacts and dependencies as they are of a technical nature, preparing the systems and data for the upgrade.
- The SAP Technical Conversion will be executed after the main components of CRM & Billing Program is complete to avoid impacting on that program, ███████████████████████ ██ ██ ██ ███████████████████████████████████
- The Technical Conversion is also dependent on the commencement of the move the Cloud Infrastructure. This allows more flexible and cost-efficient management of SAP environments, particularly during the upgrade process. This will commence in 2019 and will be mature by 2022.

Hence our proposal portfolio plan already manages the identified risks and opportunities.

3.5.3   SAP Upgrade Program Schedule Analysis

Figure 2: Internal SAP Upgrade Program Schedule Analysis

EMCa perceived there was insufficient tolerance for slippage given what appeared to be the back-to-back depiction of the SAP Upgrade Program on the IT Investment Plan portfolio diagram[27]. Figure 2 presents a more detailed, specific (regarding dates) and accurate version of this plan and shows.

- Times gaps between projects indicating tolerance for schedule slippage;
- Projects that are dependent on S/4 technical conversion including SAP BW conversion are not significantly impacted should S/4 conversion overrun;
- Post-conversion projects have sufficient time before the end of the RCP for completion.

The Technical Conversion of SAP ERP and SAP BW Conversion finish-start date is intended to coincide, due to maximising the use of the available technical resources to commence the latter project as soon as the preceding project completes.

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[27] SA Power Networks Regulatory Proposal 2020-25: *SAPN-6.32-IT Investment Plan 2020-25, p. 19.*

3.5.4   Individual Project Change Management and Warranty

EMCa criticised the perceived lack of change management and warranty periods in individual projects. This critique was based on an incorrect analysis of the projects and lack of understanding of how SA Power Networks manages projects. The following points are relevant.

1. Change management and warranty is included for those projects for which it is required, and this can be seen in the detailed spreadsheets for each project where it is required.
2. Not all projects require change management and warranty. The majority of the S/4 Conversion Pre-Projects are of a highly technical nature with little need for change management or warranty. Hence it has not been included.
3. Our approach to project delivery is generally Agile. Projects are carved up into very small steps ("sprints") which means that changes are delivered to users early in the project and continually delivered throughout the project. Delivery, change management and warranty are essentially happening simultaneously throughout the project which not only delivers the required outcomes more cost efficiently but considerably reduces the need for separate change management and warranty periods. Hence, we generally do not call out these as separate stages any more.

On Figure 2 we have now specifically called out those projects with a significant change management and warranty components using different colours.

3.6 Customer Consultation

In a workshop on 21st October 2019, we presented the general outline of our approach to responding to the AER's issues, in particular exploring the third-party support options. In general, stakeholders:

- Appeared to accept that the SAP upgrade needed to happen sometime;

- Wanted to ensure that we were seeking the most cost-efficient long-term option for the upgrade; and

- Were concerned about the perceived growing power of SAP amongst the utilities given the gradually expanding use of SAP in Australian utilities.[28]

3.7 Recommendation

In response to the concerns raised by the AER and stakeholders we have undertaken a very thorough research and analysis to further explore the optimal timing for the SAP Upgrade to S/4. We have taken on board the criticism that we have not demonstrated that upgrading was more cost efficient than engaging third-party support or demonstrated that third-party support was not feasible. We have comprehensively assessed the costs and risks of using third party support to delay the upgrade.

Our analysis shows that the recommended option, Option 3 in the original SAP Upgrade Business Case, to perform the SAP Upgrade over 3 RCPs with the majority of the work being undertaken in the 2020-25 RCP, is the lowest cost and lowest risk option of maintaining our services to our customers. ▆▆

On this basis the recommended option is still **Option 3 - Upgrade the current SAP system to SAP S/4 over three periods,** which has a capital cost ▆▆▆▆▆▆▆▆ in the 2020-25 RCP.

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[28] Discussed in the IT Investment Plan 2020-25 Addendum

Table 13: Costs of Recommended Option ($ million Dec $2017)

Option	Total Capital Program Cost[29]	2020-25 RCP Capital Cost[30]	Net 15 Year Cost	15 Year Net Present Value	Overall Risk Rating	Benefits[31]	Ranking
Option 3: Upgrade the current SAP system to SAP S/4 over three periods	▬	▬	▬	▬	▬	▬	1

Option 3 is the recommended option to ensure our core customer, business and assets management system remains secure, operational and support because it:

- delivers the best outcome for customers;
- helps to achieve the expenditure objectives (e.g. managing the demand for network services, complying with applicable regulatory obligations and requirements and maintaining the reliability and safety of the distribution system);
- prudently allows SA Power Networks to maintain its current risk profile rather than see it increase by continuing to rely on a system that is at the end of its application lifecycle;
- has the least likelihood of impacting other projects;
- delivers an efficient and prudent solution that meets the needs of consumers and the business as an upgrade requires less expenditure and is less resource intensive than creating a new SAP implementations; and
- provides ▬▬▬▬ benefits over 15 years from a combination of a temporary decrease in Recurrent Capex for the 2020-25 RCP and opex Cost Avoidance from the increased SAP footprint being offset by mandatory SAP conversion simplifications.

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[29] Represents the total project capital expenditure.
[30] Represents the total capital expenditure within the 2020-2025 RCP.
[31] Represents the total IT maintenance and upgrade benefits over a 15-year cash flow analysis (July 2019-June 2034).

APPENDICES

APPENDICES

A. Appendix A: Notes on Assumptions and Financial Analysis

[32] Refer SAPN-6.2-IT Applications Business Case - January 2019

B. Appendix B: Cost Models

B. Appendix B: Cost Models