Non-Network ICT Non-Recurrent: Enterprise Data Warehouse Replacement & Consolidation

2025-2030 Regulatory Proposal

Supporting document [5.12.11]

January 2024

SA Power Networks

Empowering South Australia

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Glossary

Acronym / term	Definition
BI	Business Intelligence
BO	SAP Business Objects
BW	SAP Business Warehouse
Capex	Capital expenditure
EDP	Enterprise data platform
ERP	Enterprise Resource Platform
ICT	Information and communication technology
NPV	Net present value
Opex	Operating expenditure
RCP	Regulatory control period
SaaS	Software as a Service

1. About this document

1.1 Purpose

This document provides a business case to justify forecast non-recurrent Information and communication technology (**ICT**) expenditure for the 2025–30 Regulatory Control Period (**RCP**) for the replacement and consolidation of SA Power Network's data warehouse software application, ensuring that our data management capability is cost-effectively maintained and secured with the current acceptable levels of risk.

1.2 Expenditure category

- Non-network ICT capital expenditure (**capex**): Non-Recurrent – major replacements or upgrades
- Non-network ICT operating expenditure (**opex**): Base Year Adjustment – Software as a Service (**SaaS**) Related

1.3 Related documents

Table 1: Related documents

Title	Author	Version / date
5.12.1 - IT Investment Plan 2025-30	SA Power Networks	Jan 2024
5.12.8 - Data, Analytics & Intelligent Systems Refresh Business Case	SA Power Networks	Jan 2024
Digital and Data Strategy	SA Power Networks	Jan 2024
IT Asset Management Plan	SA Power Networks	Jan 2024

2. Executive summary

In recent years, we have seen a massive increase in the variety and volumes of data collected and available for analysis. As well as supporting external reporting requirements, this data provides an opportunity to inform decision making, enhance customer experience and achieve our strategic goals. To achieve these outcomes, however, it is necessary to manage the data effectively.

SA Power Networks data management capabilities were previously fully provided through SAP Business Warehouse (**BW**), implemented in 2005. This has been supported by a natively integrated visualisation layer provided by SAP Business Objects (**BO**) that delivers SAP reporting. With mainstream support ending in the 2025–30 RCP for both SAP BW (2027) and SAP BO (2029), and extended support for these products finishing in 2030 and 2031 respectively, this functionality must be replaced to ensure continued availability of the critical reporting that it currently provides.

In recent years, with the significant uplift in requirements for data to make better decisions related to asset management and the energy transition, BW and BO have proved to be incapable of meeting our needs, being unable to handle the diversity and complexity of the growing data portfolio. SA Power Networks therefore established a Microsoft Azure-based enterprise data platform (**EDP**) with this capability.

The operation of two different data warehouse applications is inefficient, resulting in significant additional process complexity, operating costs and risk. This business case recommends the decommissioning of BW and BO during the 2025–30 RCP, consolidating its reporting capability to the EDP where prudent and efficient to do so. The total expenditure for this preferred option is **$19.1 million**. The **2025–30 RCP forecast is $14.2 million of non-recurrent capex and a non-recurrent opex (base year adjustment) of $1.8 million during 2025-30**[1]**.** The project also requires recurrent opex of $1.3 million during 2025–30, which will be funded through business efficiencies. The net present value (**NPV**) over the 10-year period is $2.0 million and the overall residual risk rating is Medium.

Other options considered were:

- **Do not upgrade or replace BW and BO (Base case):** Under this option, SA Power Networks would continue to maintain and operate BW/BO as the primary data warehouse application until at least 2035. After these products reach end of life, SA Power Networks will take up extended support for the period that it is offered by SAP and will then self-support[2]. SA Power Networks will not move data or reporting capability away from SAP BW/BO. The residual risk for this option is High.
- **Replace end-of-life SAP BW and SAP BO:** This option involves migrating SAP BW/BO to the successor SAP products – SAP BW/4HANA and SAP Analytics Cloud – to act as a source for all reporting that requires SAP data only. The EDP would continue to be used for integrating large datasets where reports incorporate both SAP and non-SAP data. Maintaining multiple platforms would result in additional costs, inefficiencies, and risk of continuing to operate different systems. The total expenditure for this option is $14.0 million. The NPV is -$3.5 million and the overall residual risk is Medium.
- **Consolidate into single EDP, but delay to 2030–35:** This option is similar to the preferred option but with delivery delayed until the following (2030–35) RCP. The cessation of extended support for SAP BW/BO means higher costs and risk associated with an unsupported application. It also hampers the growth in maturity of our reporting and analytics capability and increases security exposure and risks associated with a delayed migration – for example, higher volumes of data requiring migration and retaining two skillsets for a longer time. The total expenditure for this option is $17.8 million. The NPV is -$4.7 million and the residual risk is High.

[1] Unless otherwise specified, all financial figures in this business case are in real June 2022 dollars.
[2] Note that these costs are included as benefits within the other costed options. The cost and the NPV of this option is therefore zero.

The preferred option aligns to IT Asset Management Plan requirements to upgrade or replace our IT assets as they reach end of life. It also mitigates the risks of an unsupported data warehouse application, including the potential for loss of data resulting from a cyber security breach. In addition, it will:

- position SA Power Networks to continue to derive value from our data;
- simplify our landscape through having only one platform for data warehouse and big data, reducing data management complexity with a single source of truth and increasing consistency and efficiency;
- reduce long-term costs by removing the need to support multiple systems, and the high cost of continued investment in a legacy data warehouse;
- enable improved data governance and security;
- simplify the data governance process as the data will be housed in one place, enabling the business to more readily assess change impact and make faster decisions on data definition;
- provide simpler control over security and access, with our data housed in one place;
- maintain compliance with regulatory and legislative reporting and data retention requirements; and
- act as a key enabler for other strategic work, such as the accelerated smart meter rollout program.

Table 2: Options assessment summary ($m real June 2022).[3]

	Total program costs			2025–2030 costs			Program or 10-year estimates		Residual risk rating[4]
Option	**Capex**	**Opex**	**Total**	**Capex**	**Opex**	**Total**	**Benefits**	**NPV[5]**	
Base case – Do not upgrade or replace BW/BO[6]	-	-	-	-	-	-	-	-	**High**
Option 1 – Replace end-of-life SAP BW/BO in 2025–30	11.9	2.1	14.0	11.9	1.2	13.1	12.9	-3.4	**Medium**
Option 2 – Consolidate into the EDP in 2025–30 (Preferred)	14.2	4.8	19.1	14.2	3.2	17.4	24.5	2.1	**Medium**
Option 3 – Consolidate into the EDP in 2030–35	16.1	1.7	17.8	0.1	-	0.1	12.6	-4.7	**High**

[3] Note: Totals presented in tables throughout this document may not exactly match the sums of individual figures due to rounding.
[4] The overall risk level for each option after the proposed option implemented. Refer to Appendix C – risk assessment for details.
[5] NPV of the proposal over 10-year cash flow period from 1 July 2025 to 30 June 2035, based on discount rate of 4.05%.
[6] The costs and NPV of Option 0 (base case) have been set to zero as the costs associated with this option have been included as benefits of other options as appropriate.

3. Background

3.1 Scope[7]

The scope of this business case is to replace the end-of-life data warehouse and reporting capability (SAP BW and SAP BO) with comparable functionality. This includes replacing services that SAP BW provides, and redeveloping reports, dashboards and data integrations with other SA Power Networks services.

The current data warehouse capability is accessed and used by virtually all SA Power Networks staff to monitor and make decisions regarding our network, customer services and staff management. There are approximately 800 reports/queries being utilised – linked to dozens of underlying data models that federate and expose data for reporting and analytics purposes. The data is then accessed from multiple reporting platforms, including SAP BO and Power BI. There are several integrations to both import and export data from BW to other systems, with the majority of the data currently sourced from the SAP ERP (Enterprise Resource Platform).

However, this is rapidly changing as the data and reporting landscape is rapidly increasing in complexity, as are the sophistication and quantity of data access and data consumption needs of internal and external data consumers. These changes are rapidly outstripping the capability and capacity of the current solution.

Key report areas supported by the current solution include:

- Customer issue monitoring
- Customer connection and disconnection information
- Finance reporting
- Occupational Health and Safety
- Human Resources and Payroll
- Network projects
- Work planning and scheduling
- Network asset management

3.2 Our performance to date

SAP BW was implemented as our data warehouse solution in 2005. This application was originally intended to integrate both SAP ERP and non-SAP data sources to enable efficient access and reporting of all SA Power Networks data. In recent years, the requirements of the energy transition, as well as improved network asset management practices, have driven a large increase in data originating from sources other than SAP. SAP BW was found to not have the capability to manage the variety of these new data sources, nor the volumes of data required. As a result, we established an EDP that addresses SAP BW's gaps in capability. The result is that SA Power Networks is now operating two data warehouse applications with overlapping capabilities, each with its own infrastructure, maintenance and security and support costs. There is therefore potential for cost efficiencies through combining the capabilities of these systems into a single application.

[7] This business case assumes that the relevant recurrent expenditure for the systems in 5.12.8 - Data, Analytics & Intelligent Systems Refresh - Business case is already in place. This business case details the net impacts, if any, on those recurrent costs.

3.3 Drivers for change

Mainstream support will end for both SAP BW (2027) and SAP BO (2029), with extended support for these products finishing in 2030 and 2031 respectively. An unsupported and unpatched data warehouse application risks a cyber security breach and potential data theft. We must mitigate this risk while ensuring that we cost-effectively maintain the critical reporting capability that SAP BW/BO currently provides.

SAP BW does not easily lend itself to the ingestion, modelling and dissemination of non-SAP data from across the organisation. Additionally, given the considerable time that SAP BW has been in service, a significant proportion of the legacy data models do not conform with modern standards of data governance and management. This has resulted in a lack of business trust in the BW data and therefore the need to rebuild the data models as part of any platform upgrade.

Having implemented the new EDP, SA Power Networks has found it to be an effective long-term solution. It is also simpler to determine the governance and business rules in the existing data – fundamental to meeting our data privacy and cyber compliance requirements. In addition, it is more cost-effective to link to our standard organisational reporting toolset (Power BI) and scale much more readily as data volumes increase.

In addition, during the current RCP, SA Power Networks migrated our Enterprise Resource Planning (**ERP**) solution from SAP ECC to SAP S/4HANA. This new platform provides increased analytical capabilities (Embedded Analytics) and delivers a number of operational reporting requirements directly from SAP S/4HANA rather than a data warehouse. Essentially, we now have the opportunity to rationalise, consolidate and simplify our long-term reporting and analytics solutions by migrating operational reporting directly into SAP Embedded Analytics, while moving the data warehouse capability to the new EDP.

3.4 Industry practice

Almost all electric utilities are facing the same challenges as SA Power Networks in regard to the increasing volume and diversity of data available to them and the necessity to manage and use that data to deliver their operational and strategic goals. In response to this situation, many utilities – indeed, many organisations across different sectors of the economy – are consolidating to a single cloud-based EDP as a core component of their data management strategies. Ausgrid, for example, recently proposed a $30 million investment to expand its centralised data platform, noting substantial customer operational efficiencies, and the need to meet regulatory requirements.[8]

[8] Ausgrid - Att. 5.9.f - Data & analytics program - 31 Jan 2023 - Public.pdf (aer.gov.au).

4. The identified need

The identified need is to maintain our existing services and levels of risk and minimise our long-term costs through the end-of-life replacement of the functionality from our BW/BO product in the most efficient way.

Our data warehouses consolidate and integrate data from many different sources (internal and external). They support and enable decisions across a broad range of areas, ranging from short-term operational network decisions to long-term strategic modelling for asset replacement strategies. They also provide information for critical compliance obligations. The energy transition is driving a more complex environment and grid, which requires more integrated, timely and complex decision-making. Consequently, these systems are becoming more fundamental. Continued operation of this capability is therefore essential to facilitate the effective, efficient and long-term management and operation of electricity services.

As demand for quality data is increasing, so too are the related cyber security and privacy obligations. We need to maintain secure and reliable systems that both protect our data and make it available to the required people – both internal decision makers and external stakeholders.

5. Comparison of options

5.1 The options considered

Table 3: Summary of options considered

Option	Description
Base case – Do not upgrade or replace BW/BO	Do not move data or reporting capability away from SAP BW/BO and continue to maintain and operate these tools as the primary data warehouse application for SAP data until at least 2035. After SAP BW/BO reaches end of life, purchase extended support for the period that it is offered by SAP and then self-support.
Option 1 – Replace end-of-life SAP BW in 2025–30	Move SAP-specific operational reporting currently provided by SAP BW/BO to S/4HANA Embedded Analytics, within our ERP. Move all other data warehousing and reporting functionality currently provided by SAP BW to SAP BW/4HANA (the successor SAP product). Continue to deliver big data use cases via the EDP. Decommission SAP BW/BO during the 2025–30 RCP.
Option 2 – Consolidate into the EDP in 2025–30 (Preferred)	Move SAP-specific operational reporting currently provided by SAP BW/BO to S/4HANA Embedded Analytics, within our ERP. Move all other data warehousing and reporting functionality currently provided by SAP BW/BO to the EDP. Decommission SAP BW/BO during the 2025–30 RCP.
Option 3 – Consolidate into the EDP in 2030–35	Pursue Option 2 but defer implementation, maintaining SAP BW/BO beyond the end of their regular supported lives. After these products reach end of life, purchase extended support for the period offered by SAP and then self-support. Decommission SAP BW/BO during the 2030–35 RCP.

5.2 Options investigated but deemed non-credible

A number of options were deemed non-credible including:

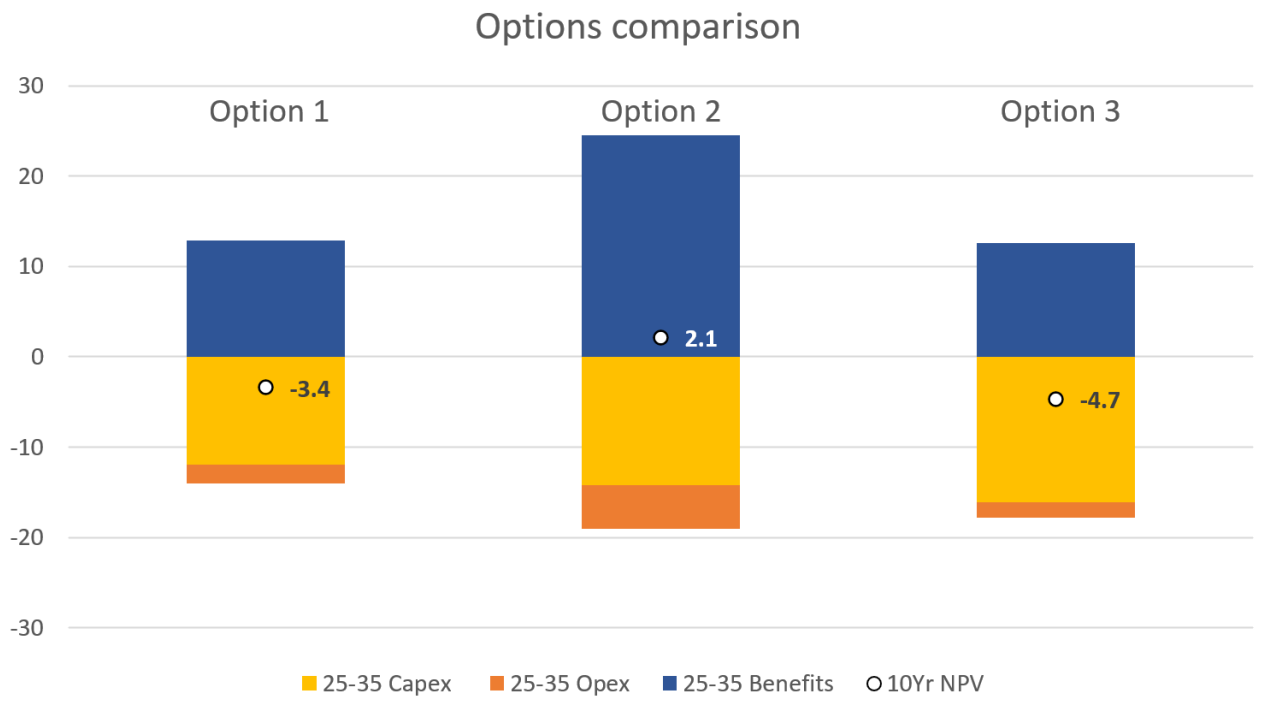
- Moving to a solution other than the EDP. This was discounted because of the selection process involved with selecting EDP and the loss of the investment that has been made in the product to date.

5.3 Analysis summary and recommended option

5.3.1 Options assessment results

Table 4: Costs, benefits and risks of alternative options relative to the Base case over the 10-year period, $m, $ Jun 2022 real. The Option 0 (Base case) costs have been included as benefits in relevant options

Option	10-year program/project costs			2025–30 program/project costs			10-year benefits[9]	10-year NPV[10]	Overall risk rating[11]	Ranking
	Capex	Opex	Total	Capex	Opex	Total				
Option 0 – Do not upgrade or replace BW/BO[12]	-	-	-	-	-	-	-	-	High	4
Option 1 – Replace end-of-life SAP BW/BO in 2025–30	11.9	2.1	14.0	11.9	1.2	13.2	12.9	-3.4	Medium	2
Option 2 – Consolidate into the EDP in 2025–30 (Preferred)	14.2	4.8	19.1	14.2	3.2	17.4	24.5	2.1	Medium	1
Option 3 – Consolidate into the EDP in 2030–35	16.1	1.7	17.8	0.1	-	0.1	12.6	-4.7	High	3



[9] Represents the total capital and operating benefits, including any quantified risk reduction/management benefits, over the 5-year cash flow period from 1 July 2025 to 30 June 2030 expected across the organisation as a result of implementing the proposed option.
[10] NPV of the proposal over 10-year cash flow period from 1 July 2025 to 30 June 2035, based on discount rate of 4.05%.
[11] The overall risk level for each option after the proposed option implemented. Refer to Appendix C – risk assessment for details.
[12] The costs and NPV of option 0 (base case) have been set to zero as the costs associated with this option have been included as benefits of other options as appropriate.

5.3.2 Recommended option

This business case recommends the decommissioning of SAP BW/BO during the 2025–30 regulatory period. This includes migrating operational reporting to within our ERP, S/4 HANA (Embedded Analytics) and consolidating the remaining BW/BO reporting capability onto the EDP.

With support of the SAP BW product ending in 2027, SA Power Networks must imminently replace the reporting capability that the system currently provides. This maintains our existing services and mitigates the risk of cyber security breaches and the potential for data to be lost or stolen due to unsupported systems.

This imperative provides us with a cost-effective opportunity to consolidate our data and reporting capabilities into a single EDP, and deliver the following long-term benefits:

- Position SA Power Networks to continue to derive value from our data
- Simplify our landscape, reducing data management complexity with a single source of truth
- Reduce long-term costs by removing the need to support multiple systems, as well as the high cost of continued investment in a legacy data warehouse
- Complement overall data governance efforts through having built-in functionality managing access, security and data quality and consistency
- Enable continued compliance with regulatory and legislative reporting and data-retention requirements

Appendix A provides details of the cost and benefit models for each option. Appendix B details the opex base-year adjustment for the preferred option. Appendix C provides the detailed risk analysis for each option.

5.4 Option 0: Do Not Upgrade or Replace SAP BW/BO

5.4.1 Description

Under Option 0, SA Power Networks would not move data or reporting capability away from SAP BW/BO and would continue to maintain and operate SAP BW/BO as its primary data warehouse application for SAP data until at least 2035. Other use cases would continue to be delivered via the EDP.

After SAP BW/BO reaches end of life, we would purchase extended support for the three years that it is offered by SAP and then self-support post-December 2030.

5.4.2 Costs

The cost elements associated with this option are shown in Table 5. This includes all opex items related to SAP BW/BO maintenance, in addition to future costs related to the SAP extended support package between 2025 and 2030, and the high costs associated with maintaining SAP BW/BO from the cessation of extended support in December 2030. These costs are included as benefits within each other option as appropriate, where they are saved or avoided under that option.

Table 5: Option 0 – Cost elements

Cost type	Description	Period	Cost per annum ($m)
BW and BO licensing	Extended support costs: Additional licensing costs during the extended support between 2027 and 2030.	Pre 2030	0.02
BW patching support pack	Software maintenance to solve functionality and security issues.	Pre 2030	0.17
BO patching	Data maintenance costs to keep BW.	Pre 2030	0.09
BW version and functional upgrade	Version upgrades costs.	Pre 2030	0.25
Support ownership	As there is no BW/BO support from the vendor post-2030, we will have ownership of this legacy asset, resulting in additional costs for keeping operating functionalities and data. Legacy systems create technical debt, requiring extra work to effectively make them maintainable.	Post 2030	0.90
Integration projects with other systems	Additional internal and external professionals with specialist SAP BW/BO skillsets to support the delivery of business improvement projects that impact or require integration with SAP BW/BO.	Pre and post 2030	0.50
Manual data validation	Additional time spent by internal and external professionals searching and updating data in duplicated systems, reducing productivity and increasing costs.	Pre and post 2030	0.40

5.4.3 Risks

Table 6 provides a summary of the risk assessment conducted for the Base case option. The full risk assessment is provided in Appendix C.

Table 6: Risk assessment summary

Risk consequence category	Current risk level[6]
Performance and growth – Financial impact	High
Technology and data – Disruption of access to, or use of, systems	High
Technology and data – Unauthorised access or disclosure of information	High
Technology and data – Unauthorised access, modifications or control of systems	High
Governance – Non-compliance with regulatory obligations	Medium
Overall risk level	High

The key risk associated with not addressing our end-of-life data warehouse system is the increase in cyber security risks as a result of the lack of vendor security patching. Potential outcomes are:

- a loss of confidential customer and network data, resulting in the publication or sale of that information on the dark web; and
- a breach of these systems by hackers, with personnel locked out of systems ransom demanded.

This results in a High residual risk rating for the Base case option as at the end of the 2025–30 RCP.

There are also business risks associated with data duplication, including a lack of trust, a lack of a single source of truth, and difficulty sourcing specialised resources, which will remain unmitigated. As systems go out of support, the number of people with knowledge of the system reduces and those that are available become significantly more expensive. Once a system is out of formal support, then both the risk of finding support and costs of that support increase substantially.

5.4.4 Quantified benefits

There are no quantified benefits associated with the base case option of business as usual.

5.4.5 Unquantified benefits

The primary benefit associated with Option 0 is avoidance of upfront capital cost. It also avoids the project risk that exists under other options associated with moving data and reporting capabilities to other environments.

5.5 Option 1: Replace end-of-life SAP BW/BO in 2025–30

5.5.1 Description

Option 1 involves decommissioning SAP BW and SAP BO and migrating the majority of data and reporting functionality to the SAP successor products SAP BW/4HANA and SAP Analytics Cloud. While the SAP BO extended support end date (2029) is later than SAP BO (2027), BO is tightly coupled with BW. Therefore, these systems must be replaced in parallel.

While the majority of data and reporting functionality will be migrated to the SAP successor products, our new ERP platform, SAP S/4HANA, affords us the opportunity to cost-efficiently deliver some of our operational reporting requirements directly. This capability was not available within our previous ERP platform, SAP ECC. A portion of the reporting would therefore be migrated directly into tool (SAP S/4 Embedded Analytics) under this option.

Similar to SAP BW, SAP BW/4HANA does not have the capability to manage the volume and variety of new data sources that the business requires. As a result, the EDP needs to be retained to deliver the benefits of combining SAP and non-SAP datasets for business analysis. This option includes some data and reporting capability being moved to the EDP.

As shown in Figure 1, the future-state environment is complex, with about 40% of data reporting capability in the EDP, 40% in BW/4HANA, and the remaining 20% (SAP operational reporting) within our ERP, S/4 HANA Embedded Analytics.

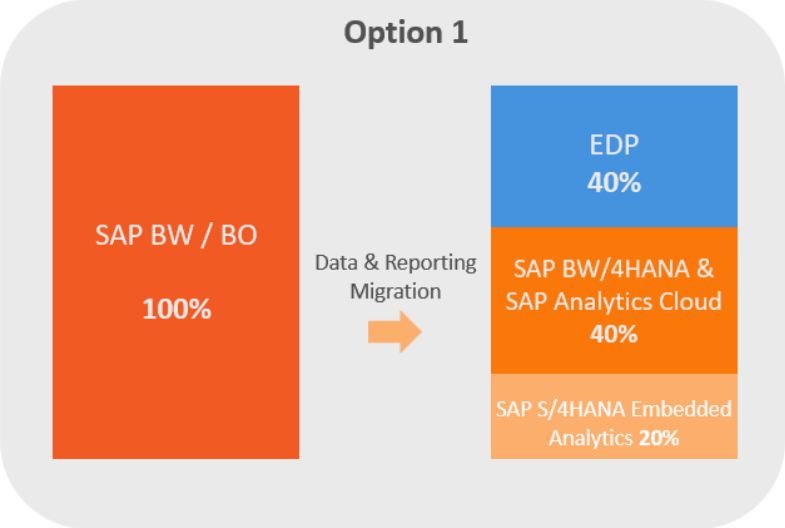


Figure 1 – Option 1 future state

5.5.2 Costs

The 2025–30 RCP forecast for this option is $13.1 million of capex and opex. The cost of the option includes:

- Migration of SAP BW to BW/4HANA: $6.4 million (including migration of SAP BO reports to SAP Analytics Cloud)
- Migration to our ERP, SAP S/4HANA (Embedded Analytics): $1.1 million
- Migration SAP BW to EDP: $5.6 million (includes migration of SAP BO reports to Power BI dashboards)

Table 7 provides estimates of capital and operating costs for the 10 years starting in July 2025 for Option 1. The detailed cost model is listed in Appendix A.

Table 7: Option 1 – Total cost by cost type ($m real Jun 2022)

Cost type	2025 H1	2025–26	2026–27	2027–28	2028–29	2029–30	Total 2025-30	2030–31	2031–32	2032–33	2033–34	2034–35	Total 2025–35
Capex	-	2.2	7.2	2.5	-	-	**11.9**	-	-	-	-	-	**11.9**
Opex	-	0.2	0.4	0.3	0.2	0.1	**1.2**	0.2	0.1	0.2	0.1	0.2	**2.1**
Total	**-**	**2.4**	**7.6**	**2.8**	**0.2**	**0.1**	**13.1**	**0.2**	**0.1**	**0.2**	**0.1**	**0.2**	**14.0**

5.5.3 Risks

Table 8 provides a summary of the risk assessment conducted for Option 1. The full risk assessment is provided in Appendix C.

Table 8: Option 1 – Risk assessment summary

Risk consequence category	Current risk level[13] (Option 0)	Residual risk level[14] (Option 1)
Performance and growth – Financial impact	High	Medium
Technology and data – Disruption of access to, or use of, systems	High	Medium
Technology and data – Unauthorised access or disclosure of information	High	Medium
Technology and data – Unauthorised access, modifications or control of systems	High	Medium
Governance – Non-compliance with regulatory obligations	Medium	Medium
Overall risk level	High	Medium

Under this option, the key risk associated with running an unpatched data warehouse application is mitigated, reducing the likelihood of data theft resulting from a cyber attack. As a result, the overall residual risk reduces to Medium. The Medium level of residual risk associated with the complexities of managing data using multiple data warehouses, and the associated duplication of data, lack of trust and lack of single source of truth, remains.

5.5.4 Quantified benefits

Table 9 provides estimates of quantified benefits for the 10 years starting in July 2025 for Option 1.

Table 9: Option 1 – Benefits by expenditure type ($m real Jun 2022)

Cost type	2025–26	2026–27	2027–28	2028–29	2029–30	Total 2025–30	2030–31	2031–32	2032–33	2033–34	2034–35	Total 2025–35
Capex	-	-	-	-	-	-	3.7	0.9	3.7	0.9	3.7	**12.8**
Opex	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	**3.7**	**0.9**	**3.7**	**0.9**	**3.7**	**12.8**

[13] The level of risk post current controls (ie after considering what we currently do to mitigate the risk).
[14] The future level of risk once treatments proposed in this option have been implemented.

The primary quantifiable benefits of implementing SAP BW/4HANA and EDP is avoiding the costs of SA Power Networks self-supporting SAP post 2030. It also avoids any potential costs associated with cyber security risk resulting from maintaining an unpatched and unsupported system. These benefits are profiled in Table 10.

Table 10: Option 1 – Benefits breakdown ($m real Jun 2022)

Benefit type	Benefit description	2025–26	2026–27	2027–28	2028–29	2029–30	2030–31	2031–32	2032–33	2033–34	2034–35
Cost avoidance	Support ownership	-	-	-	-	-	0.9	0.9	0.9	0.9	0.9
Risk avoidance	Cyber risk	-	-	-	-	-	2.7	-	2.7	-	2.7
Total		**-**	**-**	**-**	**-**	**-**	**3.7**	**0.9**	**3.7**	**0.9**	**3.7**

5.5.5 Unquantified benefits

Option 1 aligns to IT Asset Management Plan requirements to upgrade or replace our IT assets as they reach end of life. It replaces the reporting capability currently provided by SAP BW/BO, including enabling continued compliance with regulatory and legislative reporting and data-retention requirements.

5.6 Option 2: Consolidate into the Enterprise Data Platform in 2025–30 (Preferred)

5.6.1 Description

As with Option 1, SA Power Networks will decommission SAP BW and SAP BO in the 2025–30 period under Option 2. However, this option would entail delivering all data warehouse requirements (SAP and non-SAP) through our existing Azure EDP. As with Option 1, some of our operational reporting requirements would be prudently migrated to within our ERP, SAP S/4 Embedded Analytics. This future state is shown in Figure 2:

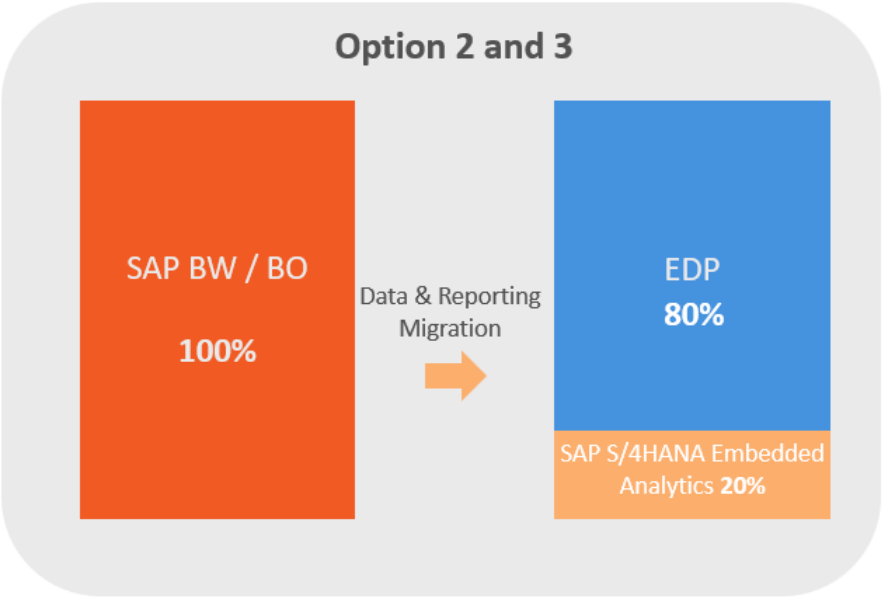


Figure 2 – Option 2 and 3 future state

5.6.2 Costs

The 2025–30 RCP forecast for this option is $17.4 million of opex and capex[15]. This estimate includes expenditure for:

- Migration of SAP BW/BO to EDP: $16.3 million (includes migration of SAP Business Objects to Power BI dashboards)
- Migration to our ERP, S/4HANA (Embedded Analytics): $1.1 million

Table 11 provides Option 2 estimates of capital and operating costs for the 10 years starting in July 2025. The detailed cost model is listed in Appendix A**.**

Table 11: Option 2 – Costs by cost type ($m real Jun 2022)

Cost Type	2025 H1	2025–26	2026–27	2027–28	2028–29	2029–30	Total 2025–30	2030–31	2031–32	2032–33	2033–34	2034–35	Total 2025–35
Capex	-	-	1.6	7.5	3.2	1.9	**14.2**	-	-	-	-	-	**14.2**
Opex	-	-	0.3	0.3	0.8	1.7	**3.2**	0.3	0.3	0.3	0.3	0.3	**4.8**
Total	**-**	**-**	**1.9**	**7.9**	**4.1**	**3.6**	**17.4**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**19.1**

5.6.3 Risks

Table 12 provides a summary of the risk assessment conducted for Option 2. The full risk assessment is provided in Appendix C.

Table 12: Risk assessment summary

Risk consequence category	Current risk level[16] (Option 0)	Residual risk level[17] (Option 2)
Performance and growth – Financial impact	High	Medium
Technology and data – Disruption of access to, or use of, systems	High	Medium
Technology and data – Unauthorised access or disclosure of information	High	Medium
Technology and data – Unauthorised access, modifications or control of systems	High	Medium
Governance – Non-compliance with Regulatory Obligations	Medium	Low Low
Overall risk level	High	Medium

Under this option, the key risk associated with running an unpatched data warehouse application is mitigated, reducing the likelihood of data theft from a cyber attack. As a result, the overall residual risk reduces to Medium. In addition, the option mitigates residual risks associated with the complexities of managing data using multiple data warehouses, and the associated duplication of data, lack of trust and lack of single source of truth.

[15] Including $1.3 million of recurrent opex funded through business efficiencies.
[16] The level of risk post current controls (ie after considering what we currently do to mitigate the risk).
[17] The future level of risk once treatments proposed in this option have been implemented.

5.6.4 Quantified benefits

Table 13 provides estimates of quantified benefits for the 10 years starting in July 2025 for Option 2.

Table 13: Option 2 – Benefits by expenditure type ($m real Jun 2022)

Cost type	2025–26	2026–27	2027–28	2028–29	2029–30	Total 2025–30	2030–31	2031–32	2032–33	2033–34	2034–35	Total 2025–35
Capex	-	-	1.4	1.4	1.4	**4.3**	5.1	2.4	5.1	2.4	5.1	**24.5**
Opex	-	-	-	-	-	**-**	-	-	-	-	-	**-**
Total	-	-	1.4	1.4	1.4	**4.3**	5.1	2.4	5.1	2.4	5.1	**24.5**

Maintaining two platforms with overlapping capabilities results in a duplication of operating costs. Migrating functionality away from SAP BW/BO to EDP will therefore result in immediate and sustained cost optimisation. Option 2 will avoid all operational costs listed in Option 0 related to SAP BW/BO maintenance, in addition to the high costs associated with maintaining SAP BW/BO. It also avoids any potential costs associated with cyber security risk resulting from maintaining an unpatched and unsupported system. These benefits are shown in Table 14.

Table 14: Option 2 – Benefits breakdown ($m real Jun 2022)

Benefit type	Benefit description	2025–26	2026–27	2027–28	2028–29	2029–30	2030–31	2031–32	2032–33	2033–34	2034–35
Cost avoidance	BW patching support pack	-	-	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Business Objects patching	-	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	BW version and functional upgrade	-	-	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Integration projects with other systems	-	-	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Manual data validation	-	-	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Cost savings	Support ownership	-	-	-	-	-	0.9	0.9	0.9	0.9	0.9
Risk avoidance	Cyber risk	-	-	-	-	-	2.7	-	2.7	-	2.7
Total		**-**	**-**	**1.4**	**1.4**	**1.4**	**5.1**	**2.3**	**5.1**	**2.3**	**5.1**

5.6.5 Unquantified benefits

Option 2 delivers substantial unquantified benefits. Similar to Option 1, it replaces the reporting capability currently provided by SAP BW/BO, including enabling continued compliance with regulatory and legislative reporting and data-retention requirements.

In addition, data warehouse consolidation would result in the following benefits:

- Provide one platform for data warehouse and big data, reducing data management complexity with a single source of truth and increasing consistency
- Simplify the data governance process as the data will be housed in one place, enabling the business to more readily assess change impacts and make faster decisions on data definition
- Simplify control over security and access, with our data housed in one place
- Maintain compliance with regulatory and legislative reporting and data-retention requirements
- Position SA Power Networks to continue to develop our data management capability and derive value from future use case development
- Increase our capacity to adapt to industry and innovation trends with a more flexible data platform and a consequent increase in the quality of service provided to our customers

5.7 Option 3: Delay moving SAP BW/BO to EDP until next RCP 2030–35

5.7.1 Description

Option 3 involves the same technical solution as Option 2, but delaying this until the next (2030–35) RCP. This would require us to maintain SAP BW/BO beyond its end of life via SAP's extended support mechanism, then self-support for the period beyond December 2030 and until completion of the move.

5.7.2 Costs

The 2025–30 RCP forecast for this option is $0.05 million, with the 10-year cost being $17.8 million of capex and opex. This includes:

- Migration to our ERP, S/4HANA (Embedded Analytics): $1.7 million (includes migration of SAP BO to Power BI dashboards)
- Migration SAP BW/BO to EDP: $16.1 million

Table 15 shows a summary of Option 3 capital and operating cost estimates for the 10 years starting July 2025. The detailed cost models are listed in Appendix A.

Table 15: Option 3 – Total cost by cost type ($m real Jun 2022)

Cost type	2025 H1	2025–26	2026–27	2027–28	2028–29	2029–30	Total 2025–30	2030–31	2031–32	2032–33	2033–34	2034–35	Total 2025–35
Capex	-	-	-	0.0	0.0	0.0	**0.1**	4.0	9.1	2.9	-	-	**16.1**
Opex	-	-	-	-	-	-	**-**	0.3	0.3	0.3	0.3	0.3	**1.7**
Total	**-**	**-**	**-**	**0.0**	**0.0**	**0.0**	**0.1**	**4.3**	**9.5**	**3.2**	**0.3**	**0.3**	**17.8**

5.7.3 Risks

Table 16 provides a summary of the risk assessment conducted for Option 3. The full risk assessment is provided in Appendix C.

Table 16: Option 3 – Risk assessment summary

Risk consequence category	Current risk level[18] (Option 0)	Residual risk level[19] (Option 3)
Performance and growth – Financial impact	High	High
Technology and data – Disruption of access to, or use of, systems	High	High
Technology and data – Unauthorised access or disclosure of information	High	High
Technology and data – Unauthorised access, modifications or control of systems	High	High
Governance – Non-compliance with regulatory obligations	Medium	Medium
Overall risk level	High	High

[18] The level of risk post current controls (ie after considering what we currently do to mitigate the risk).
[19] The future level of risk once treatments proposed in this option have been implemented.

Delaying the migration to EDP to post-2030 in Option 3 will result in cyber risks not being addressed as security patching will be unavailable, with SA Power Networks needing to self-support SAP BW/BO during this period. As a result, the High residual risk rating is retained. Risks associated with duplication of data, lack of trust, lack of single source of truth and difficulty sourcing specialised resources also remain unmitigated.

5.7.4 Quantified benefits

Table 17 provides estimates of quantified benefits for the 10 years starting in July 2025 for Option 3.

Table 17: Option 3 – Benefits by expenditure type ($m real Jun 2022)

Cost type	2025–26	2026–27	2027–28	2028–29	2029–30	Total 2025–30	2030–31	2031–32	2032–33	2033–34	2034–35	Total 2030–35
Capex	-	-	-	-	-	**-**	-	-	5.1	2.4	5.1	**12.6**
Opex	-	-	-	-	-	**-**	-	-	-	-	-	**-**
Total	-	-	-	-	-	**-**	**-**	**-**	**5.1**	**2.4**	**5.1**	**12.6**

Similar to Option 2, Option 3 will avoid costs related to SAP BW/BO support, maintenance of SAP BW/BO and cyber risk. However, as shown in Table 18, these costs will only be avoided post-system implementation in 2033.

Table 18: Option 3 – Benefits breakdown ($m real Jun 2022)

Benefit type	Benefit description	2025–26	2026–27	2027–28	2028–29	2029–30	2030–31	2031–32	2032–33	2033–34	2034–35
Cost avoidance	BW patching support pack	-	-	-	-	-	-	-	0.2	0.2	0.2
	Business Objects patching	-	-	-	-	-	-	-	0.1	0.1	0.1
	BW version and functional upgrade	-	-	-	-	-	-	-	0.2	0.2	0.2
	Integration projects with other systems	-	-	-	-	-	-	-	0.5	0.5	0.5
	Manual data validation	-	-	-	-	-	-	-	0.4	0.4	0.4
Cost savings	Support ownership	-	-	-	-	-	-	-	0.9	0.9	0.9
Risk avoidance	Cyber risk	-	-	-	-	-	-	-	2.7	-	2.7
Total		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**5.01**	**2.31**	**5.01**

5.7.5 Unquantified benefits

Unquantified benefits under Option 3 are similar to Option 2. However, these benefits will not begin to accrue until the subsequent regulatory period.

6. Deliverability of recommended option

Delivering the recommended option is expected to take approximately two years and will require knowledge of all applications involved in BW/BO and EDP solutions. SA Power Networks has substantial experience working with SAP and will have extensive experience in EDP by 2025. In addition, data and reporting capability functionality migrations of this type are a standard offering of the major consulting firms, with external consultants indicating that multiple firms possess the required capabilities to deliver this option. Therefore, we believe that the recommended option is highly deliverable via a combination of internal knowledge and our external consulting partners.

7. How the recommended option aligns with our engagement

7.1 Alignment to customer expectations

The move to an EDP and the advantages that it provides in terms of accessible, comprehensive, and trusted data will leverage SA Power Networks' cost-effective data-driven decision making and is the solution with the best cost-benefit to ensure we minimise the long-term costs to customers.

7.2 Alignment to views of other stakeholders

Trusted data is a key aspect of SA Power Networks' relationships with other stakeholders, including suppliers, employees, regulators and other market participants. SA Power Networks' ability to provide information that is timely, accurate and relevant in our interactions with these stakeholders will align to their needs. In particular, the benefits to our employees from improved data management capabilities are expected to be significant.

8. Alignment with our vision and strategy

Our Digital & Data Strategy outlines the long-term strategic direction for ICT. The focus of the strategy is on the provision of efficient and reliable core systems, and a range of digitisation that ensures our workforce has appropriate skills for the technology implemented. A high-level view of our Digital & Data Strategy is depicted in Figure 3, below.

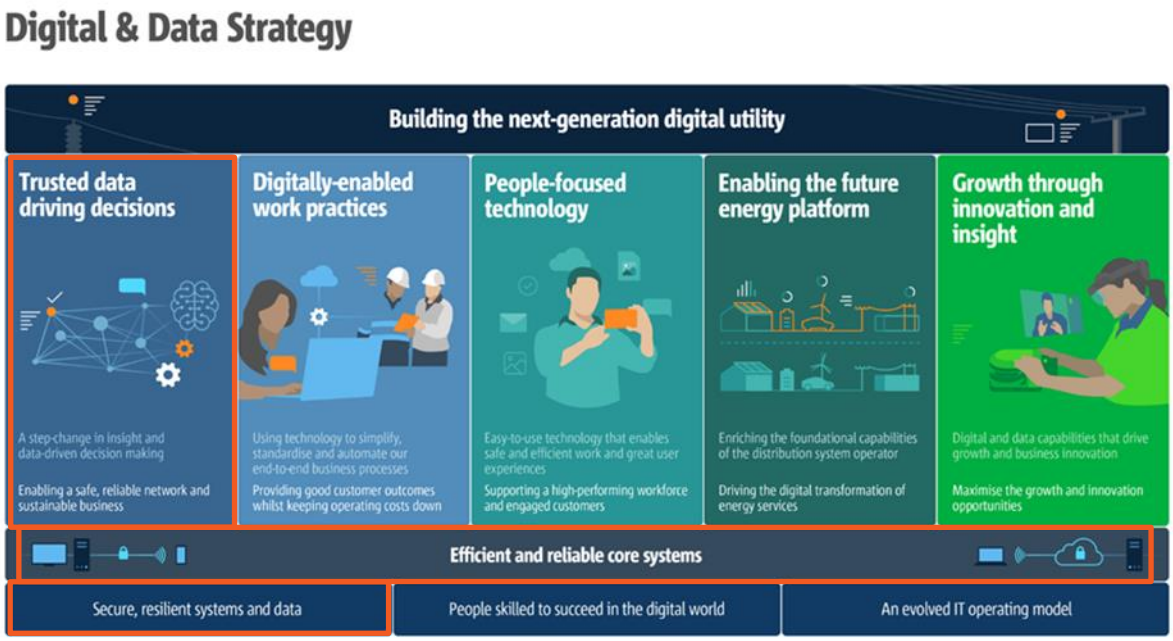


Figure 3 – Digital & Data Strategy

SA Power Networks is rapidly innovating and adapting to the changing utilities model where energy sources are becoming more distributed and the customer is increasingly part of the value chain. The SA Power Networks Digital and Data Strategy communicates that data is a core enabler across the business in achieving desired outcomes in future regulatory horizons.

The importance of the strategic role that data has in the ongoing delivery of network and customer service services is highlighted by the fact that:

1. our key information technology strategy is now called the *Digital & Data* Strategy
2. the role of trusted, governed and cost-effective data in customer services is our primary objective for the Digital & Data Strategy 2021–2025 – 'Trusted data driving decisions' aims to deliver a step-change in data-driven decision making, and this objective underpins all other objectives on the strategy.

The funding requested in this document is to deliver 'Efficient and reliable core systems', enabled by 'Secure, resilient systems and data'.

9. Reasonableness of cost and benefit estimates

SA Power Networks believes the estimates of costs and benefits in this business case are reasonable. The cost to migrate data and functionality under the different options was developed in consultation with two different international consulting firms, and the expected operating costs of each option were developed by one of these firms with experience in this area. Furthermore, many of the operating cost estimates were validated against actual costs currently being incurred, and discussions with vendors.

Top-down validation of these estimates was subsequently undertaken by external consultants and knowledgeable members of the SA Power Networks technology team.

10. Reasonableness of input assumptions

A bottom-up estimation of the (primarily) labour costs was completed for each option. The amount of effort is based on an assessment of the data and reporting capability currently in SAP BW/BO, the relative complexity of modelling that data, and the effort required to migrate this data and capability to the target systems in each case.

The benefits relating to saved support ownership costs reflects the current actual costs associated with performing these activities. The avoided costs under each option represent a conservative estimate of the future effort (and therefore costs) that would not be incurred.

A. Appendix A – Cost models

Option 0 - 2025-30 SA POWER NETWORKS - Do Not Upgrade or Replace SAP BW.xlsm
Option 1 - 2025–30 SA POWER NETWORKS - Replace SAP BW with BW/4HANA in 2020-25.xlsm
Option 2 - 2025–30 SA POWER NETWORKS - Consolidate into the EDP in 2020-25.xlsm
Option 3 - 2025–30 SA POWER NETWORKS - Consolidate into the EDP in 2025–30.xlsm

B. Appendix B – Base-year opex adjustment (preferred option)

Category	Project	2025–26	2026–27	2027–28	2028–29	2029–30	Total 2025 – 30
Base-year adjustment: Accounting treatment change	Power BI Dashboards	0	0	0	0.5	1.3	1.8
	Total base-year opex adjustment	**0**	**0**	**0**	**0.5**	**1.3**	**1.8**

Accounting treatment change

Topic	Detail
Background	Accounting rule clarification in early 2021 confirmed that the costs of configuring and customising application software in a cloud-computing or SaaS arrangement should not be capitalised, with the business no longer having control over the asset. The effect of this is to require this component of work to be expensed, switching from capex to opex due to the software's arrangement.
Request	A base-year opex adjustment of $1.8 million as substitution for a similar value of capex.

C. Appendix C – Risk assessment

ID	Risk scenario	Consequence description	Consequence category	Residual risk (Option 0)			Residual risk (Option 1)			Residual risk (Option 2)			Residual risk (Option 3)		
				Consequence	Likelihood	Risk Level	Consequence	Likelihood	Risk Level	Consequence	Likelihood	Risk Level	Consequence	Likelihood	Risk Level
1	Cybersecurity – Data systems are hacked due to running an unpatched data warehouse application. The vulnerability of cloud systems to security breaches is related to its security configuration, encryption levels, and that regular security patching is being applied regularly. Part of the nature of cloud systems is that the suppliers add features or update configurations on a regular basis and it is up to the user to test that the changes do not create vulnerabilities for them. This is particularly the case for data systems, which are in a rapid state of evolution.	Loss of confidential customer and network data, resulting in the publication or sale of that information on the dark web.	**Performance and growth** – Financial impact.	4	4	High (8)	4	2	Medium (6)	4	2	Medium (6)	4	4	High (8)
		Hackers will seek to leverage a breach in these systems, lock out the systems and demand a ransom for releasing the systems.	**Technology and data** – Disruption of access to, or use of, systems.	4	4	High (8)	4	2	Medium (6)	4	2	Medium (6)	4	4	High (8)
			Technology and data – Unauthorised access or disclosure of information.	4	4	High (8)	4	2	Medium (6)	4	2	Medium (6)	4	4	High (8)
			Technology and data – Unauthorised access, modifications or control of systems.	4	4	High (8)	4	2	Medium (6)	4	2	Medium (6)	4	4	High (8)
2	Performance – inaccurate or inconsistent data and reports lead to incorrect or inefficient investment decisions, or to information reported to external stakeholders being incorrect or unavailable. The enterprise data systems form the core components of the organisational risk cost modelling capability – allowing	Financial impacts: • Cost of assets that are replaced when they shouldn't have been. • Cost of outages created by assets that should have been replaced but weren't.	**Performance and growth** – Financial impact.	2	4	Medium (6)	2	4	Medium (6)	2	2	Low (4)	2	4	Medium (6)

	the integration of data from different sources to target all of the electricity network asset investments based on risk and customer benefit. Without an adequate level of ongoing investment, the underlying data quality and data models, the quality of the investment decisions will reduce, while work prioritisation, planning and scheduling will be impacted, meaning less effective overall network investment.	Additional costs	**Governance** – Non-compliance with regulatory obligations.	2	4	Medium (6)	2	4	Medium (6)	2	2	Low (4)	2	4	Medium (6)
			Overall risk level[20]			High			Medium			Medium			High

[20] For each option, the overall risk level is the highest of the individual risk levels.