

Information Management Uplift

Regulatory Business Case (RBC) 2024-29

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1. Summary

This business case has been prepared to support the 2024-29 Regulatory Proposal. The business case demonstrates that Power and Water has undertaken appropriate analysis of the need and identified a full suite of credible options that will resolve the need, to ensure that Power and Water continues to meet the National Electricity Objectives and manage the network prudently and efficiently.

The proposed expenditure identified in this business case will undergo further assessment and scrutiny through Power and Water's normal governance processes prior to implementation and delivery.

This business case addresses the current low level of maturity of Power and Water's information management practices.

1.1 Business need

Power and Water's level of maturity in managing information is relatively low. Power and Water's aim over the remainder of the current regulatory period and the next regulatory period is to significantly lift its information management maturity level.

The objective of improved enterprise information management is to enable better-informed decision making at all levels of the organisation, including the appropriate application of risk management, based on available, findable and trustworthy information - to be an 'information enabled organisation'.

Power and Water is currently developing a strategic and systematic approach to manage its information. Such an approach is required to support business performance and enable improvements.

This business case is built around an approved 10 year strategic plan (2020 – 2030). Several actions and projects are currently underway and being implemented with completion scheduled prior to the 2024-29 regulatory period. Other programs will continue over the 2019-24 and 2024-29 determination periods. This business case outlines the strategy of Information Management which is in line with PWC ICT Strategy 2021 – 2024 instead of finalising the solutions as the process of adoption will be gradual and steady as a part of PWC's technological evolution.

1.2 Options analysis

The options considered to resolve this need are shown in Table 1.

Table 1: Option summary

Option No.	Option name	Description	Recommended
1	Remain at Level 1/Level 2 information management maturity	Sharing of information usually takes place between teams. The level of adherence to the information management system is low.	No
2	Achieve Level 3 Information Management maturity	Information management system is accepted and adopted	No

3	Achieve Level 4 Information Management maturity	Continue to mature and Implement Information Management systems including custodian-based master data capabilities and accountabilities model to ensure data is leveraged as an asset	Yes
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1.3 Recommendation

Option 3 – Achieve Data Governance Maturity Model Level 4 information management maturity Figure 1 – Gartner Data Governance Maturity Model, is the recommended option at an estimated cost of [REDACTED] (real 2021/22).

Staged development is proposed in which Power and Water progresses to Level 3 by June 2024 and Level 4 by June 2029. The work packages to deliver the Information Management uplift are designed to be:

- Prudent and practical, having been carefully considered and informed by industry trends, peer consultation across the industry, and assessments of Power and Water’s current data and information.
- Not in excess of the amount required to efficiently meet our obligations and support strategic, tactical and operational activities.

This approach will ensure that Power and Water leverages and extends ICT tool sets and governance to enable the business to optimise effort through explicit information accountabilities, visibility of information quality, and automation to support current and trustworthy views of Power and Water’s information landscape.

The do-nothing option was rejected as this approach would result in continued and growing manual effort to unsuccessfully leverage information as an asset.

The estimated and forecast expenditure by regulatory period is outlined in Table 2.

Table 2: Estimated and forecast capital and operational expenditure – by regulatory period (\$m, real 2021/22)

Item	Current regulatory period FY20 - FY24	Next regulatory period FY25 – FY29	Total
Capex	[REDACTED]	[REDACTED]	[REDACTED]
Opex	0.00	0.00	0.00
Total	[REDACTED]	[REDACTED]	[REDACTED]

The estimated and forecast expenditure by regulatory period that has been allocated to Standard Control Services as per the CAM is outlined in Table 3.

Table 3: Estimated and forecast capital and operational expenditure – allocated to SCS (\$m, real 2021/22)

Item	Current regulatory period FY20 - FY24	Next regulatory period FY25 – FY29	Total
Capex	[REDACTED]	[REDACTED]	[REDACTED]

Opex	0.00	0.00	0.00
Total	■	■	■

The estimated and forecast expenditure by regulatory period that has been allocated to recurrent and non-recurrent categories is outlined in Table 4.

Table 4: Estimated and forecast capital expenditure – recurrent and non-recurrent

Item	Current regulatory period	Next regulatory period
	FY20 - FY24	FY25 – FY29
Recurrent	50%	50%
Non-recurrent	50%	50%

2. Identified need

This section provides the background and context to this business case, identifies the issues that are posing increasing risks to Power and Water and its customers, describes the current mitigation program and its delivery status, and provides a risk assessment of the inherent risk if no investment is undertaken.

2.1 Issues with information management in Power and Water

Power and Water is on a data and information management maturity improvement journey. The introduction of the Architecture function in ICT has resulted in the structured collation of the current state of information against an industry standard data model, and a baseline showing where this information is captured, transferred, and utilised across Power and Water's organisational units and applications. The subsequent analysis of data-related processes has identified potential data quality and governance improvements for managing Power and Water information. Whilst over the last two years information management has improved by procuring a logical data model, enhancing the data warehouse, and improving RIN reporting, the following challenges still remain:

- Scattered ownership of data (multiple data custodians) - approximately 40 FTEs manage data throughout the organisation, leading to cluttered, repeated, and outdated information which creates more work and elevates the risk of poor data
- Lack of a consistent and agreed data management processes
- Low and reducing trustworthiness and reliability of information
- Insufficient data validation at the data capture stage
- Manual reporting
- Manual and often duplicated workflows and processes
- Various systems used to report and manage information, and multiple sources of information
- Transition to cloud and impacts to reporting adding to the complexity and cost of information
- Internal and external audits recommending data management improvements. A key to the success of any distribution network service provider (DNSP) is quality information and effective information management. To be fully successful, the implementation of the Operating Model Program¹ is dependent on mature information management because of the fundamental role of information in managing impacts and dependencies across operational and project domains, including:
 - System upgrades
 - Business process engineering
 - Works management and field operations

Finally, through the evolution of the electricity market in the Northern Territory, increasing information requirements in turn require improvement in information management to support: Regulatory Information Notices (RIN)

- Real time network management requires visibility of the LV network (network parameters)

The management of enterprise data is dynamic and is based on six main themes:

- Establishment of Data Management Strategy and Governance

¹ Refer to the Operating Model Program business case, which incorporates a number of initiatives to improve core services

- Establish Enterprise Data architecture
- Manage Data Operations
- Manage Data Quality
- Manage Data integration, Data Warehousing and Business Intelligence
- Manage documents and records.

Power and Water must now leverage off the new ICT systems, products and processes, and continue to improve on data governance and management, and embed the use and utility of the enterprise logical data model to continuously improve data and information governance and management. Three maturity models have been used to assess in more detail where Power and Water is currently positioned and potential aspirational goals to be achieved by the next RCP.

Data governance maturity model

Based on the current state assessment above, Power and Water’s data governance maturity is no better than Level 2 using the Gartner model shown in the figure below. Level 4 (‘Managed’) is the level achieved by most of Power and Water’s peers, driven by operational and compliance imperatives. For Power and Water to achieve Level 4 involves not just improving existing datasets and processes and upskilling data custodians, but also consciously combating the data decay factors of disparate systems, lack of data quality standards, and constant change that collectively diminish enterprise data governance effectiveness over time.

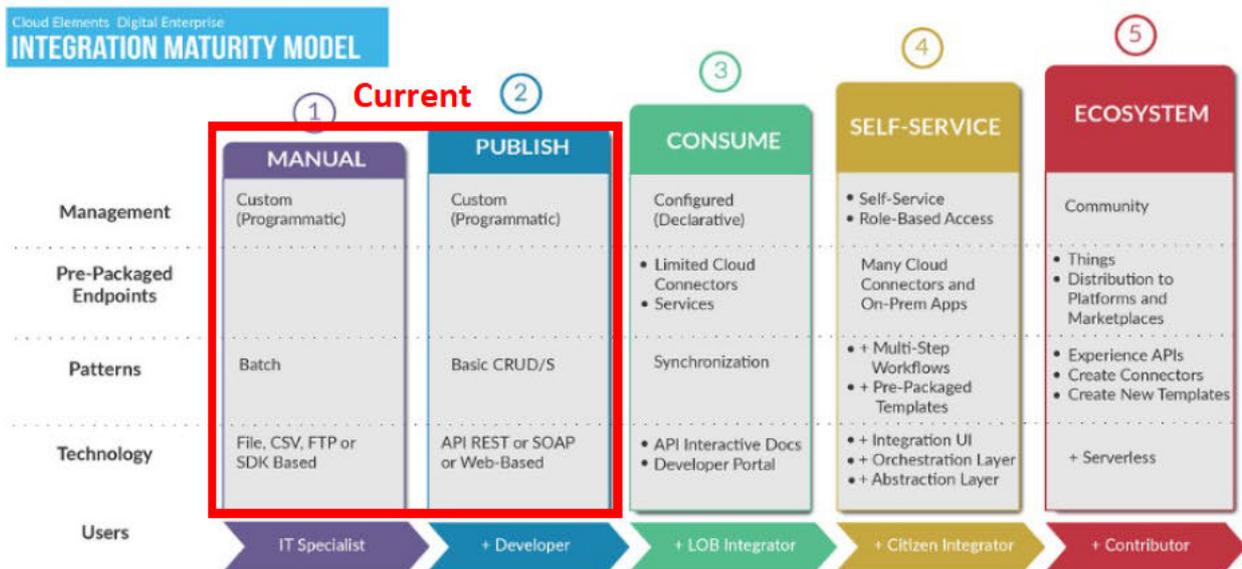
Figure 2 – Data Governance Maturity Model showing Power and Water’s current state

Source: <https://www.hitechnectar.com/blogs/data-governance-maturity-models-explained/>

Information Integration maturity model

Integration is the systems aspect that facilitates data transfer and usage between systems. Referring to the figure below, Power and Water’s current integration maturity level is within Level 1/Level 2 (‘Manual’ and ‘Publish’). Improving to Level 4 (Self-service) would enable role-based access for an improved user-experience and minimises unmanaged data silos that cause business and data issues.

Figure 3 - Integration Maturity model showing Power and Water’s current state



Source: <https://dzone.com/articles/the-integration-maturity-model>

Business Intelligence maturity model

Power and Water’s current state of business intelligence/analytics capability is between Level 1 (Basic) and Level 2 (Tactical) – refer to the figure below.

Figure 4 - Analytics / Business Intelligence Maturity

 **BIMM – Business Intelligence Maturity Model**

		Phase 1 Basic	Phase 2 Tactical	Phase 3 Focused	Phase 4 Strategic	Phase 5 Transformational
Business Intelligence and Data Analytics Commitment		Little or no intention to make use of corporate data for analytics	Organization has intention to manage and share its corporate data but not sure how	Organization has put in place a basic framework to support BI and analytics	BI and analytics is well established and insights are adapted	BI and analytics is deeply entrenched and continually improve
		Current				
People 	Data Ownership	Individual data creators	IT centralizes data	Some data decentralizes back into departments	Federated ownership	Integrated ownership
	Insights from Data	Little to none	Minimal by individual	Departments	Inter-departmental	Organizational
	Reliance on Data	Data is not trusted	Data seen as asset	Business executive becomes BI champion	Common strategy across all business disciplines	Top-down
Process 	Data Governance	None in place	Governance sponsor appointed	Basic data and BI governance evolve	Governance policies are defined and enforced	Integral part of change
	Data Strategy	None in place	Capturing data only	Along lines of business	Managed by Steering Committee	Managed by BI Centre of Excellence
	Key Performance Indicators	None in place	Created but poorly understood	Departmental numbers tracked	Aligned with corporate goals	Drives corporate monitoring
Technology 	Data Management	Reactive and informal	Data created and managed by users	Defined and documented	Data management roles are in place	Data managed as strategic asset
	Report Accessibility	By creators	By teams	By departments	By all corporate staff	By external partners
	Reporting Systems	Static reports	Dashboards created by individuals	Dashboards for each business area	Cross-departmental dashboards	Enterprise data warehouse

Source: <https://unilytics.com/business-intelligence-maturity-model>

2.2 Risk assessment

The figure below shows the current risk rating, inherent rating in 2029 (if no proactive action is taken), and the residual risk ratings. The basis for the rankings is summarised below.

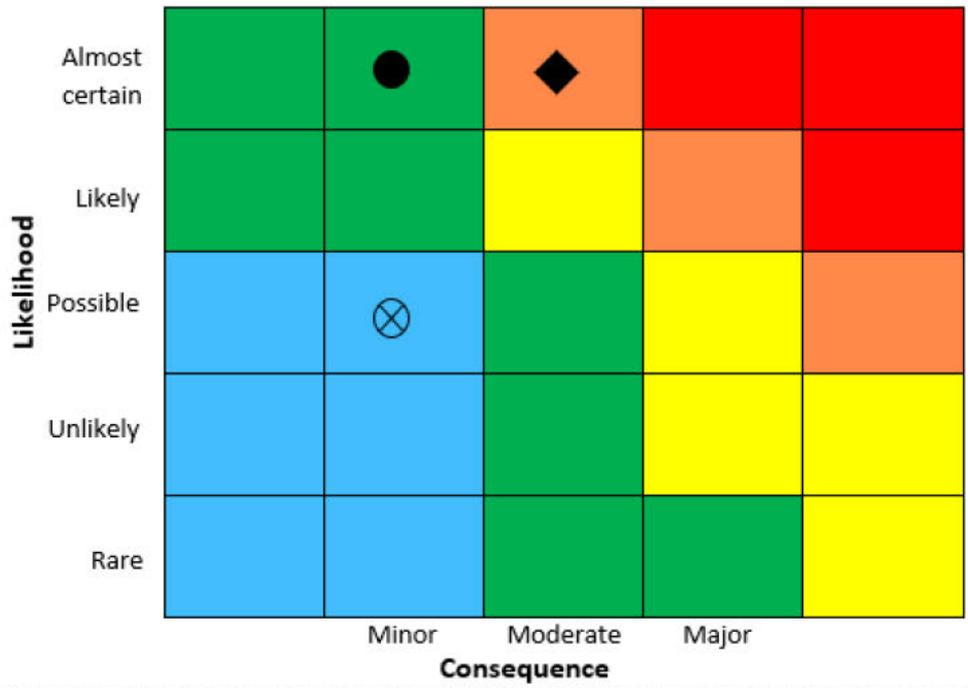
- **Current Rating is ‘Medium’:** it is ‘almost certain’ that the low level of information management maturity will continue to contribute to (i) non-compliance with reporting requirements, (ii) poor decision-making, and (iii) inefficiency caused by data errors, lack of cross-business integration, and manual and basic levels of business analytics; to date there has been some acceptance by external stakeholders that the need for improvement is acknowledged by Power and Water and there is an expectation of considerable improvement in all facets of information management (noting that data quality is subject to complementary but separate improvement initiatives and so the current consequences from inaccurate reporting etc is only ‘Minor’
- **Inherent rating is ‘High’:** this rating is based on no further action by Power and Water to improve its information maturity over the balance of the current RCP and the next RCP. It is ‘almost certain’ that the low level of information management maturity will contribute to (i) non-compliance with reporting requirements, (ii) poor decision-making, and (iii) inefficiency caused by data errors, lack of cross-

business integration, and manual and basic levels of business analytics. However, (i) the 'tolerance' of external stakeholders for poor reporting quality will diminish rapidly, and (ii) the complexity of business operations will increase (due for example market changes, such as integrating more DER) will mean that the impact will be 'Moderate'. Doing nothing will essentially mean that Power and Water wilfully ignores the current state.

- **Residual rating** is 'Low': the proposed project (in concert with other projects²) will improve information management across the three dimensions of data governance, integration, and business analytics to reduce the likelihood of material consequences occurring to 'possible'.

² Such as the Operating Model Project, Customer Connectivity Projects, and the OT Capability Uplift Project

Figure 5 - Risk matrix for information management in Power and Water



Legend: ● Current rating ◆ Inherent rating (do nothing) ⊗ Residual rating (project completion)



2.3 Summary

The current level of information management is not fit for purpose. The issues identified are considered to present a very high risk, if not addressed.

The objective of improved enterprise information management is to enable better-informed decision making at all levels of the organisation, including the appropriate application of risk management, based on available, findable and trustworthy information - to be an 'information enabled organisation'.

3. Options analysis

This section describes the options that were analysed to address the increasing risk to identify the recommended option. The options were analysed based on ability to address the identified needs, prudence and efficiency, commercial and technical feasibility, deliverability, benefits and an optimal balance between long term enterprise risk and short-term performance.

3.1 Comparison of options

Credible options are identified as options that address the identified need, are technically feasible and can be implemented within the required timeframe. The following options have been identified:

- Option 1 – Remain at Level 2 IM maturity.
- Option 2 – Achieve Level 3 IM maturity.
- Option 3 - Achieve Level 4 IM maturity.

A comparison of the three identified credible options and the issues they address in the identified need is depicted in Table 5.

These options are described and assessed in detail in the sections below.

Table 5 Summary of options analysis outcomes

Assessment metrics	Option 1	Option 2	Option 3
NPV (\$m, real FY22)	0.00	■	■
Capex (\$m, real FY22)	0.00	■	■
Meets customer expectations	◐	◑	●
Aligns with Asset Objectives	◐	◑	●
Technical Viability	◑	◑	●
Deliverability	◐	●	●
Preferred	×	×	✓
Ranking	3	2	1

- Fully addresses the issue
- ◑ Adequately addresses the issue
- ◐ Partially addresses the issue
- Does not address the issue

3.1.1 Option 1 - Do nothing

This option is based on not commencing this project, thereby not improving the current level of information maturity. This would mean Power and Water would continue to rely on manual and siloed data management.

This option is not recommended as it does not leverage existing systems and to discontinue the improvements outlined in the strategic plan will lead to increased risk of poor data with increased labour resources to manually capture, amalgamate, assess and interpret data which increases the potential for errors as the data cannot be protected by an audit function. It also does not allow Power and Water leverage information as an Asset which is a strategic objective.

This option is not recommended.

3.1.2 Option 2 – Achieve Level 3 Information Management Maturity

This option is based on implementing Information Management Systems to achieve the equivalent of Level 3 maturity as assessed against the three maturity models in Figures 1-3 is achieved by the end of the current RCP. The estimated cost of this option is [REDACTED] (real 2021/22).

This option includes acquisition of a tool in 2023, with implementation of quality assurance, guidelines and procedures from 2024 – 2029.

Implementation of a master data management solution will also enable data custodians (business users themselves) to monitor, assess and improve data quality and security. This solution will also enable the master data governance and assurance³ practices which will further enable data custodians, stewards and users to plan and execute data quality improvements and usage across the organisation.

This option is not recommended, as it does not provide the additional benefits of option 3.

3.1.3 Option 3 – Achieve Level 4 Information Management maturity

This option is based on continuing to mature and implement Information Management Systems assuming the equivalent of Level 3 maturity is achieved in the current RCP, to achieve Maturity level 4 in the next RCP. The estimated cost of this option is [REDACTED] real 2021/22).

This option involves incremental capex [REDACTED] compared with Option 2, to continue to improve how Power and Water manages and governs information. This option leverages the existing investments to improve RIN reporting and further modernises the data warehouse function which will be delivered and implemented within FY24. It is proposed to be delivered in two stages, firstly to achieve maturity level 3 (stage 1) and then achieve maturity level 4 (stage 2). This approach will enable Power and Water to leverage existing ICT systems and improvement programs to improve the way it can re-use common datasets, manages data quality and meet organisational data requirements into the future.

This option is consistent with the ICT strategy and provides higher benefit for a small incremental expenditure compared with Option 2. This option is recommended.

³ Data quality assurance is the set of planning, implementation and control activities that define, measure, assess, improve and assure the quality of data for its intended user

3.2 Non-credible options

Our analysis also identified a single option found to be non-credible, as described below and was not taken through to detail analysis for the reasons provided.

3.2.1 Achieve Level 5 maturity

Level 5 maturity was not considered to be justifiable without first establishing Level 4 maturity.

4. Recommendation

Option 3 - Achieve Level 4 information management maturity, is the recommended option at an estimated cost of [REDACTED] real 2021/22).

This approach will enable Power and Water to leverage existing ICT systems and improvement programs to improve the way it can re-use common datasets, manages data quality and meet organisational data requirements into the future. This approach will achieve the following with respect to Power and Water's data management, information integration and business analytics:

- Satisfy compliance obligations within various legislation, including privacy, cyber and ring-fencing.
- Increased economies of scale through migration to cloud based platforms and services.
- Reduce technical debt from legacy systems to a sustainable level.
- Increase alignment between Information Technology and Operational Technology.
- Enable 'decisions at speed' to sustain safe and reliable operations, with minimal customer impacts.

The proposed program is consistent with the National Electricity Rules (NER) Capital Expenditure Objectives as the expenditure is required to maintain the quality, reliability, and security of supply of standard control services and maintain the safety of the transmission and distribution system.

4.1 Strategic alignment

This proposal aligns with Asset Management System Policies, Strategies and Plans that contributes to the "Power and Water Strategic Direction" as indicated in the table below. Power and Water also has a strategic objective leverage information in which is the outcome of this initiative.

	Strategic direction focus area	Strategic direction priority
1	Customer and the community at the centre	Embed our Future Operating Model
2	Living within our means	Cost Prudency

4.2 Dependent projects

At the time of writing this business case, there are no known projects or other network issues that are dependent on this project. However, if this should change, Power and Water will ensure that the sequencing of deliveries is planned so that dependencies are understood and scheduled accordingly.

4.3 Deliverability

No delivery risks have been identified.

4.4 Customer considerations

Based on feedback received from stakeholders, customers and other stakeholders expect Power and Water to act in accordance with good industry practice, which is to ensure that information is accurate and accessible from one 'source of truth'. They also expect Power and Water to invest with the appropriate

strategy, product/technology, and timing to enable wider business operations. This project meets these reasonable expectations.

4.5 Expenditure profile

The tables below show a summary of the expenditure requirements for the current regulatory period and next regulatory period.

Table 6 Estimated annual capital and operational expenditure – current regulatory period (\$'000, real 2021/22)

Item	FY20	FY21	FY22	FY23	FY24	Total
Capex				█	█	█
Opex				-	-	0
Total	n/a	n/a	n/a	█	█	█

Table 7 Forecast annual capital and operational expenditure – next regulatory period (\$'000, real 2021/22)

Item	FY25	FY26	FY27	FY28	FY29	Total
Capex	█	█	-	-	-	█
Opex				-	-	█
Total	█	█	█	█	█	█

The tables below show a summary of the expenditure requirements for the current regulatory period and next regulatory period, allocated to Standard Control Services as per the CAM.

Table 8 Estimated annual capital and operational expenditure – current regulatory period – allocated to SCS (\$'000, real 2021/22)

Item	FY20	FY21	FY22	FY23	FY24	Total
Capex				█	█	█
Opex				-	-	0
Total	n/a	n/a	n/a	█	█	█

Table 9 Forecast annual capital and operational expenditure – next regulatory period – allocated to SCS (\$'000, real 2021/22)

Item	FY25	FY26	FY27	FY28	FY29	Total
Capex	█	█	-	-	-	█
Opex				-	-	0
Total	█	█	0	0	0	█

The tables below show a summary of the expenditure requirements for the current regulatory period and next regulatory period, allocated to recurrent and non-recurrent categories.

Table 10 Estimated annual capital expenditure – current regulatory period – recurrent and non-recurrent

Item	FY20	FY21	FY22	FY23	FY24
Recurrent				50%	50%
Non-recurrent				50%	50%

Table 11 Forecast annual capital expenditure – next regulatory period – recurrent and non-recurrent

Item	FY25	FY26	FY27	FY28	FY29
Recurrent	50%	50%	-	-	-
Non-recurrent	50%	50%		-	-

4.6 High-level scope

The table below summarises the three initiatives that will be implemented in the proposed stages 1 and 2.

Table 12 High level scope – Options 2 and 3

Scope element	Description	Approach and timing
Data Governance practices and Master Data Management toolsets	<p>Power and Water needs to resolve the issue of too many (and non-explicit) data custodians by establishing clear accountabilities, guidelines and procedures for managing data, and investing in data management tools and technologies.</p> <p>Data management toolsets will be purchased</p>	Tool to be purchased in 2023, with implementation and operationalisation of quality assurance, guidelines and procedures from 2024 – 2026.
Modern Business Intelligence (BI) Platform	<p>Uplift the data warehouse capability to a cloud-based solution.</p> <p>Scope includes purchase of Exchange Transfer Load (ETL) tool</p>	Tool to be purchased in 2023, with implementation of quality assurance, guidelines and procedures in 2023 – 2024.
Improved RIN reporting	<p>RIN responses are required by 31st October each year, four weeks after the Statutory Accounts are signed-off.</p> <p>Currently the process to ‘pull’ this information together is manual as the ICT systems do not have the capability to hold this information. This</p>	Improvement to the RIN reporting process are being identified by Power Services as an improvement and or as reporting requirements change from 2022-2024

	data is currently stored in multiple Excel spreadsheets which means the effort to retrieve the required information is time consuming and difficult.	
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The cost estimate was based on the components identified in the table below.

Table 13 Initiatives and annual cost – Options 2 and 3

ICT initiatives	Stage 1				Stage 2			Total
	FY23	FY24	FY25	FY26	FY27	FY28	FY29	
Information governance and management (including Master Data Management)	█	█	█	█				█
Modernised Business Intelligence (BI) Platform	█	█						█
Data and reporting program including RIN	█	█						█
Total	█	█	█	█	█	█	█	█

The estimate was based on the input costs in the table below, reflecting recent experience.

Table 14 Sources of cost information

Resource Type/Role	How Many?	Internal/ External?	Anticipated Start Date		
Project Manager	1	Internal	Sept 22	█	█
Business Analyst	1	Internal	Sept 22	█	█
Principal Enterprise Architect	1	Internal	Sept 22	█	█
Principal Data Architect	1	External	Sept 22	█	█
Principal Integration Architect	1	Internal	Sept 22	█	█
Principal Solution and Security Architect	1	Internal	Sept 22	█	█
Business Intelligence Manager	1	Internal	Sept 22	█	█
Data Analyst	1	External	Sept 22	█	█
Developer	1	External	Sept 22	█	█
Subject Matter Experts (Business / Data custodians)	7	Internal	Oct 22	█	█

Test Manager	1	Internal / External	Nov 2022	████	████
Test Analyst	1	Internal / External	Nov 2022	████	████
Change Manager	1	Internal / External	Feb-2022	████	████

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