2023-27
POWERLINK QUEENSLAND REVENUE PROPOSAL

Supporting Document – PUBLIC

IT01 Supply Chain and Works Management 2023-27

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Contents

EXECUTIVE SUMMARY

This investment case documents the justification for planned investment in renewal of supply chain and works management systems. It is based on the planning undertaken to date, the estimated costs (development, implementation, ongoing operations and maintenance), the anticipated business value to be gained and the associated risks.

It is proposed to invest in Powerlink's supply chain and works management solutions renewal through the 2023-27 regulatory period (referred to herein as 2023-27). The proposed investment is required to address the following drivers:

- **Requirement for renewal of aging IT systems capability for sustainability, supportability and security**

  The systems supporting Powerlink's supply chain and works management business functions are approaching end-of-life. This renewal investment is therefore needed to provide efficient, sustainable and secure systems capability to support critical supply chain and works management business processes. This renewal is consistent with established IT asset lifecycle management principles outlined in Section 4.1 of the IT Plan 2023-27.

- **Opportunity to reduce risk through the retirement of unsupported legacy systems**

  Powerlink's supply chain and works management systems are critical to the continuity of Powerlink's core business operations and energy services delivery. The business faces increasing risk if it continues to operate aged systems with limited support.

- **Opportunity to leverage the upgrade / renewal of supply chain and works management capability to enable business productivity improvement**

  Through renewal and consolidation of the aging supply chain and works management systems, Powerlink can review business processes and manual inefficiencies to enable business productivity improvement in network capital program delivery and maintenance activities. Rationalisation of legacy systems will not only provide an opportunity to reduce IT operational costs and application portfolio simplification but also allow for full integration of processes, data and systems to enable whole-of-business analytics and reporting capability. This will also support Powerlink's move towards Value Driven Maintenance (VDM).

The risk benefits gained from investment in the recommended option will reduce likelihood of financial, cybersecurity and business operations risks. System downtime will result in ineffective supply chain and works management processes and therefore increase likelihood of financial impact in the 2028-32 regulatory period if this proposed investment is not undertaken.

The following three options are considered:

- **Option 1: Base Case (counterfactual) – Retain existing systems and defer replacement**
- **Option 2: Optimised replacement of Supply Chain and Works Management systems (Recommended)**
- **Option 3: Like-for-like replacement of Supply Chain and Works Management systems**

The initiative value assessment results reflect a strong alignment, on or near 75% across all four assessment parameters.

It is recommended that Option 2 be implemented as the least cost solution to meet the identified need. Total forecast non-network (IT) expenditure for the recommended option is [redacted] capex and [redacted] opex (FY21/22 real terms) with an NPV benefit of $0.997 million relative to the base case counterfactual.

1. INVESTMENT NEED

1.1. Problem / Opportunity

The ERP program segment comprises IT systems and capability supporting core business functions including:

- Asset Management
- Works Program and Project Management
- Field Delivery Management
- Inspections and Field Data Capture
- Finance and Accounting
- Expense Management
- Human Resource (HR) and Payroll
- Learning Management
- Health, Safety Management & Environment (HSE)
- Procurement and Contract Management
- Logistics and Warehouse Management; and
- Laboratory

These business functions are enabled through the SAP suite of enterprise systems, along with several niche vendor and in-house applications. Together, these solutions support Powerlink's core back office, asset management, supply chain/logistics and works management.

Prior to the start of the 2023-27 regulatory period, Powerlink will have transitioned much of the existing SAP business functionality from the legacy ECC6 platform to the current S/4 HANA generation software, together with SAP SuccessFactors and Concur. This includes transition of the company's core Finance, HR and Asset Management functionality, as well as Contracts Management.

The investment proposed in this investment case will complete the transition from the existing SAP ECC6 platform across to SAP S/4 HANA for supply chain and logistics management functions (including warehouse management). In addition, Powerlink will renew our Program Management and Project Management capability for sustainability and integration with the S/4 HANA platform.

The current systems and tools supporting Powerlink's supply chain, works management and related business processes have generally been in place in excess of 10 years and will reach end-of-life over the coming regulatory period (see Table 1). The current SAP solution, which is central to the current supply chain and works management system landscape, has been in use for more than 20 years and has been highly customised. This investment case supports the need to renew this capability to ensure ongoing efficiency, sustainability and security of these systems and processes.

Systems	Supported Business Functions
SAP IM, SAP PS, Amplify, Microsoft Project Server	Portfolio, Program and Project Management
SAP AII, SAP WM, SAP MM, Ariba, SAP ITSMobile, ServiceNow	Supply Chain and Warehouse Management

Table 1: Supply Chain and Works Management Systems

Powerlink's Portfolio, Program and Project Planning process is currently performed using SAP IM, SAP PS, SAP PM and a range of tools and applications giving rise to a number of integration issues and significant application support and licence overhead.

Supply Chain and Warehouse Management utilises SAP Auto-ID Infrastructure (AII) (a product from SAP SE that integrates RFID reader and scanner devices as well as barcode devices) and ITSMobile (an Internet Transaction Server for Mobile devices that access SAP system using mobile browser based technology).

While the existing supply chain and works management capability supports the delivery of these core functions generally, the array of disparate and aged applications place Powerlink at significant risk of business operation interruption due to system failure, escalating costs for application support and licencing and lack of opportunity to capitalise on capabilities available in more modern technology.

The following investment drivers have defined Powerlink's investment need for the period 2023-27:

- **Requirement for renewal of aging IT systems capability for sustainability, supportability and security**

  The systems supporting Powerlink's Supply Chain and Works Management business functions are approaching end-of-life. This renewal investment is therefore needed to provide efficient, sustainable and secure systems capability to support critical Supply Chain and Works Management business processes. This renewal is consistent with established IT asset lifecycle management principles.

- **Opportunity to reduce risk through the retirement of unsupported legacy systems**

  Powerlink's supply chain and works management systems are critical to the continuity of Powerlink's core business operations and energy services delivery. The business faces significant risk if it continues to operate aged systems with limited support. Outages in any of the disparate, numerous systems currently supporting this core business functions have high potential to impact both the business and customers.

- **Opportunity to leverage the upgrade / renewal of supply chain and works management capability to enable business productivity improvement**

  Through renewal and consolidation of the aging supply chain and works management systems, Powerlink can review business processes and manual inefficiencies to enable business productivity improvement in network capital program delivery. Rationalisation of legacy systems will not only allow for application portfolio simplification but allow for full integration of processes, data and systems to enable a whole-of-business analytics and reporting capability.

1.2. Investment Objectives

This investment in portfolio and project planning, supply chain and warehouse management renewal will deliver on the following objectives:

- Ensure the ongoing supportability and sustainability of the core systems enabling continuity of Powerlink's business operations and energy services delivery, based on industry recognised asset lifecycle guidelines

- Support process efficiencies and information accuracy / integrity through:
  - Removal of manual interfaces and hand-offs (system consolidation and/or integration);
  - Leveraging the upgrade / renewal of the supply chain / logistics, and program and project Management capability to enable business productivity improvement in network capital program delivery
  - Rationalising legacy systems, with incorporation of data and functionality into the core IT solutions to achieve application portfolio simplification
  - Fully integrating processes, data and systems to enable capabilities related to predictive analysis, data modelling and associated functions.
  - Enabling a whole-of-business analytics and reporting capability which provides an opportunity for more real time information in support of evidence-based data-driven decision making giving business users more confidence in data based on trust and timeliness.
- Reduce risk through the retirement of any unsupported legacy systems

1.3. Alignment with IT Application Management Guidelines

Powerlink's applications are maintained for supportability, sustainability and security consistent with application asset lifecycle management (ALM) principles aligned with the "PACE" model developed by global research and advisory firm Gartner.

Under the Gartner PACE model, applications are classified as either Systems of Record, Systems of Differentiation or Systems of Innovation with considerations of:

- The nature of business processes supported by the application;
- The pace of change in both the business areas and technology domain;
- The strategic focus for the business area;
- The nature of stakeholder ownership; and
- Risk and funding models.

Consistent with these various considerations, the PACE model identifies typical expected application service lives and the corresponding prudent planning horizons. The guidelines provide forecast upgrade and renewal timeframes based on these classifications to maintain effective, sustainable and supportable business solutions across an asset's lifecycle.

Figure 1 depicts the Gartner PACE model's expected application service lives and planning horizons for each application category, as well as Powerlink's corresponding asset lifecycle management guideline applicable to each category.

Classification	Systems of Record	Systems of Differentiation	Systems of Innovation
Lifetime *How long it usually stays in layer*	5 to 10 years or longer	2 to 5 years	3 to 12 months
Planning Horizon *How long you describe the plan in application strategy*	More than 7 years	1 to 2 years	As long as 6 months
Powerlink Asset Lifecycle Management Planning Guidelines	Structured minor releases Upgrade each 3 to 5 years Replace at 10 to 15 years	Upgrade each 2 to 3 years Replace at 6 to 8 years	Typically not upgraded unless provided as evergreen or cloud

Figure 1: Gartner PACE model and Powerlink ALM planning guidelines

An assessment of the systems within scope of the proposed investment are listed below with the relevant PACE model classification.

System / Repository	Implemented (Year)	Last Major Upgrade (Year)	Classification
SAP IM	1990s	2006	System of Record
SAP PS	1990s	2006	System of Record
SAP PM	1990s	2006	System of Record
SAP WM	1990s	2006	System of Record
SAP MM	1990s	2006	System of Record
Microsoft Project Server	2000s	2018	System of Record
SAP AII	2017	2017	System of Differentiation
SAP ITSMobile	2017	2017	System of Differentiation

Table 2: Existing systems in scope for the segment

1.4. Compliance Requirements

ERP systems play an important role in enabling Powerlink to meet its statutory, regulatory and legal obligations as a transmission network service provider (TNSP). The table below details the obligations supported through the proposed investment.

Obligation	Description of Requirement
Workplace Health & Safety Compliance	Powerlink's supply chain and works management systems along with other key systems including our GIS solutions are used to manage a range of tasks associated with switching activities in the field. This can have health and safety consequences for field services personnel, other emergency services personnel, and the general public, particularly during severe weather events. System failures can impact WH&S compliance and result in adverse impacts relating to: • OH&S (Death or Permanent Disability) • Financial / Regulatory (Related Fines, Workcover, Court Action, Compensation Costs) • Reputation (Adverse media coverage) • Organisational (Industrial action in the event workers are injured or killed) This investment will ensure that Powerlink maintains compliance with Workplace Health and Safety requirements.
Market Obligations	Failures in any of the core supply chain and works management systems could contribute to Powerlink not meeting their National Electricity Rules obligations and commitments to customer, especially for new connections, and be liable for significant non-compliance penalties.
Network Reliability	The operation and reliability of the Powerlink network is heavily dependent on its supply chain and work management systems and any network reliability issue can, in turn, result in company liability for damages. Powerlink's management of emergency response field crews is also heavily dependent on its supply chain and work management systems.
Regulatory Reporting	Ability to generate accurate regulatory and reliability reporting, which is heavily dependent on supply chain and work management systems, could be compromised by system failures or limited support mechanism for aged systems.
Planned Asset Maintenance	Powerlink's ability to effectively manage network assets long-term, is dependent on the data which is maintained within its supply chain and work management systems and used as inputs for identifying, planning and scheduling inspections and maintenance work. The inability to prioritise, plan and schedule planned work correctly could have an adverse impact on ongoing costs.

Table 3: Compliance Requirements

1.5. Investment Overview

Powerlink's supply chain and works management systems and processes are core to the operations of multiple key business areas and functions. The proposed investment in renewal of supply chain and works management capability is essential for ongoing efficient and sustainable business operations.

1.5.1. Current State (2020)

Portfolio and Project Planning

Powerlink's portfolio and project planning functions are supported by core components of the organisation's SAP system (SAP IM, SAP PS and SAP PM), Microsoft Project Server and a number of other niche tools. Solutions and business processes have been developed and optimised over the last 20 years. While a well-defined process, it is comprised of a significant number of manual steps and exporting and importing of data slowing the overall planning process. The reliance on continual data migration between the solutions means it is inefficient to align all component solutions when changes in schedules occur. This leads to a lack of trust in data currency and timeliness.

Given the manual processes and data migration, the current solutions and processes are not providing the responsiveness required in a contemporary environment.

Supply Chain and Warehouse Management

The provision of materials, equipment and logistical support activities and by Powerlink's Warehouse and Logistics team are primarily supported by Powerlink's ERP SAP system (specifically SAP WM and MM components).

Through 2018-2019, investment in the business processes and the system configuration for warehouse management was undertaken providing significant improvements in stock management and logistics. Further improvements are planned for stock serialisation and improved coordination with project teams.

1.5.2. Target State (end of proposed investment)

Powerlink's ongoing program of works to progressively migrate business functions from the SAP ECC6 platform to the current SAP S/4 Hana platform provides opportunities to rationalise functionality currently delivered through other platforms such as Microsoft Project Server and ServiceNow. Portfolio Management will be reviewed with a view to using new capabilities provided by S/4 Hana such as Enterprise Portfolio and Program Management. Supply chain functions currently delivered through ServiceNow will be reviewed and potentially delivered through SAP Ariba which forms part of Powerlink's roadmap under the S/4 Hana platform migration.

Through this asset lifecycle renewal investment, Powerlink will seek to optimise, rationalise and renew its supply chain and works management systems with contemporary capability for long term efficiency, sustainability and supportability.

This renewed capability will be integrated with the refreshed EMS and GIS solutions to support end-to-end process efficiencies.

2. INVESTMENT OPTIONS

The following options have been considered to address the investment needs identified in section 1.

Option	Description
Option 1: Base Case (Counterfactual) Retain existing systems and defer replacement	No significant investments in Powerlink's supply chain and works management systems will be undertaken in the 2023-27 regulatory period, with renewal deferral until the next period (2028-32).
Option 2: (Recommended) Optimised replacement of Supply Chain and Works Management systems	The existing supply chain and works management systems will be rationalised and renewed consistent with Powerlink's application asset lifecycle management guidelines for ongoing sustainability, supportability and security. Through the rationalisation, the opportunity will be taken to incorporate data and functionality into the core IT solutions to achieve reduced IT operational costs and application portfolio simplification and enable a whole-of-business analytics and reporting capability. Through the review of business process and removal of manual interfaces and hand-offs, the renewal will also enable process efficiencies and business productivity improvement in network capital program delivery and maintenance.
Option 3: Like-for-like replacement of supply chain and works management systems	The existing supply chain and works management systems will be progressively replaced with equivalent contemporary capability for ongoing sustainability, supportability and security with limited rationalisation of system capability.

Table 4: Investment Options

Each of these options is evaluated in the sections which follow.

2.1. OPTION 1: Base Case (Counterfactual) Retain existing systems and defer replacement

The base case (counterfactual) is an assessment of the forecast expenditure and implications if the proposed option(s) do not proceed.

Under this option, renewal of systems capability would be deferred until the 2028-32 regulatory period.

During the 2023-27 regulatory period Powerlink would continue with the core ERP and Asset Management systems on S/4 HANA and SAP modules used for supply chain and works management functions (SAP IM, PS and PM, AII and ITSmobile) remaining on ECC6.

Project Server and the other in-scope, disparate systems would also remain in use.

Investment in the proposed supply chain and works management systems during the coming period would be limited to adhoc reactive maintenance, as the aged versions of existing systems generally preclude the possibility of undertaking back to back upgrades to bring the systems up to date. Such an endeavour would be largely equivalent to undertaking a system renewal.

2.1.1. Base Case Assumptions

The base case has been estimated based on the following assumptions.

Construction Cost and Scope Assumptions

- Annual investment over the coming regulatory period will be limited to supporting adhoc reactive responses to the “in scope” systems.
- Vendor support for functional changes to these systems will be minimal. Consequently, no capital expenditure has been forecast over the 2023-27 period and business process workarounds would be required in the event of functional capability gaps.
- Lifecycle maintenance of existing hardware, operating system and database management systems will occur as part of other funded initiatives.
- While a replacement investment will not be undertaken in the 2023-27 period, it would be required in the 2027-32 period. At that point, the costs of the renewal are based on the assumptions detailed in Option 2, escalated by 15% in recognition of the increased complexity of the deferred systems replacement as the existing application versions fall further out-of-date.

Operating Cost Assumptions

- Ongoing IT operating costs are forecast to remain unchanged.

Other Assumptions (Non-Financial)

- Business operations can be maintained on the current suite of systems subject to likely performance degradation and the risks identified in Table 6. Achievement of Powerlink’s forecast productivity improvements may not be possible.

2.1.2. Base Case Benefits

The following benefits may be achieved with selection of this base case option. Financial benefits are identified as "per annum" ongoing savings where relevant, and will begin accruing six months following implementation of the option.

Benefit Description	Financial Value ($M Real 2021/22 p.a.)
• Minimises businesses change disruption through continuation of existing work practices.	N/A (Non-Financial)

Table 5: Option 1 - Base Case Benefits

2.1.3. Risk Mitigation

Table 6 (below) summarises the inherent risks which would be experienced by the end of the coming regulatory period (2027) if the base case (counterfactual) option is selected.

The equivalent risk analyses provided with the recommended option (Option 2) and the alternative option (Option 3) have been conducted with respect to their effectiveness in mitigating the below base case risks. This assessment has been undertaken in alignment with the Powerlink risk management framework.

Risk Description	Inherent risk 2027	Risk Level
R1 – Business operational impact **Inability to undertake critical, emergency maintenance or on-going, scheduled maintenance due to system failure or data corruption, coupled with ineffective, inefficient business workarounds and limited ability to progress updates/upgrades to aged systems to rectify system or data issues.** **Risk categories – (Legal & Compliance, Projects, Safety)**	While the systems are generally stable, by 2027 there is potential for failure as the systems age. (**Likely**) Further, an extended outage would have potential customer, program of work and business as usual operational impacts. (**Moderate**) The negotiation of extended support arrangements will assist in rectification and return to service in the event of system outages, this is reactive in nature and provides limited proactive mitigation.	**Significant**
R2 - Business operational impact **Ineffective supply chain and works management processes, disparate systems and manual interventions result in inefficient management of assets with greater potential for critical asset failures.** **Risk categories – (Legal & Compliance, Projects, Safety)**	While time and counter-based maintenance strategies aim to ensure asset health, the absence of condition-based does not allow maintenance personnel to act on conditions before they cause a breakdown or equipment degradation and do not allow for better informed decisions when replacing assets. (**Likely**) In a rapidly-changing environment this lack of intelligent asset health driven asset and works management has increasing potential for customer, business and operational impacts. (**Moderate**)	**Significant**
R3 - Financial impact **The current version of the SAP software comes to the end-of-life in 2027. Delaying investment until the next regulatory period will likely mean an increase in cost through extended support arrangements at the start of the next period. Planned savings of $750K ($250K for 3 years) under Option 2 will not be realised.**	While extended or third-party support arrangements may be negotiated to commence in 2028 (**Likely**) these may involve prohibitively expensive costs. There will not be an opportunity to realise savings planned under Option 2 through rationalisation (**Moderate**)	**Significant**

Risk Description	Inherent risk 2027	Risk Level
Risk categories – Financial		
R4 – Cybersecurity **With the inability to progress systems updates/upgrades, including access control/security updates, and the growing sophistication of cybersecurity attacks, there is increasing potential for:** • **undetected data corruption or manipulation** • **disclosure of asset and other sensitive information.** **Risk categories – Projects, Safety, Legal & Compliance, Stakeholder**	The energy sector is considered a high threat area for cyber-attacks. Up-to-date systems are considered a base level defence against a range of these threats. An aging system profile increases the threat opportunity. (**Possible**) A successful cyber-attack resulting in a system outage, data corruption and undetected data manipulation or information disclosure may lead to disruption of normal business operations, project delays, safety issues and external stakeholder concerns. (**Moderate**) There are no further mitigations within the current solution beyond manual measures	**Significant**

Table 6: Option 1 - Base Case Risk Mitigation

Figure 4 below summarises the risk position of adopting the base case (assessment of each risk tabled above).

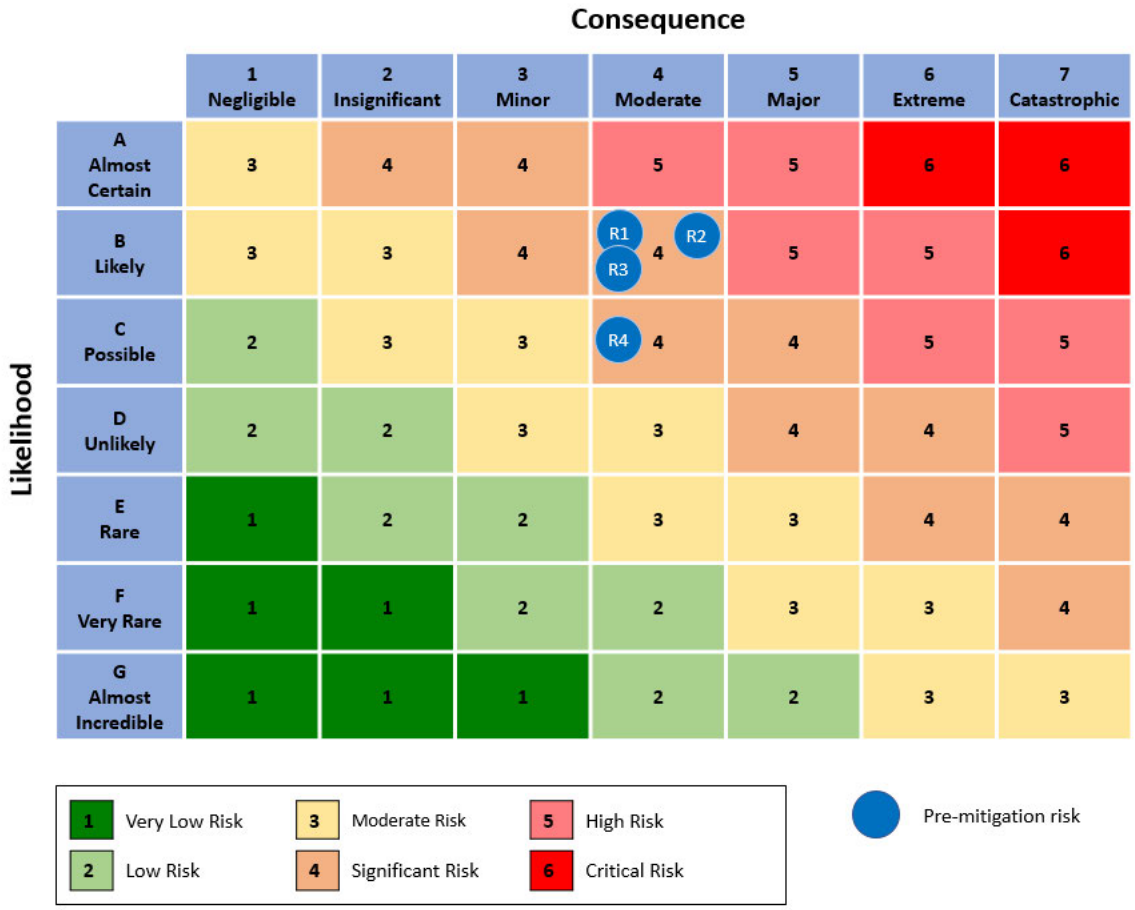

Figure 2: Base Case Risk Assessment

2.2. OPTION 2: Optimised replacement of supply chain and works management systems (recommended)

The existing supply chain and works management systems will be renewed consistent with Powerlink's application asset lifecycle management guidelines for ongoing sustainability, supportability and security.

Through the renewal, the opportunity will be taken to incorporate data and functionality into the core IT solutions to achieve reduced IT operational costs and application portfolio simplification and enable a whole-of-business analytics and reporting capability.

Specifically, this option provides for the:

- Transition of supply chain, logistics and warehouse management functionality from ECC6 (on HANA); and portfolio and project management functionality from current versions of Project Server, to S/4 HANA.

This will support Powerlink's move towards Value Driven Maintenance (VDM). The renewal will also be leveraged by the review of business processes and removal of manual interfaces and hand-offs to enable process efficiencies and business productivity improvement.

2.2.1. Option 2 Assumptions

This recommended option has been estimated based on the following assumptions.

Construction Cost and Scope Assumptions

The project costs are based on a build-up of forecast resourcing, vendor & specialist services, as well as software licensing costs as detailed in the table below.

[redacted]

Table 7: Option 2 Cost Build-Up ($real 2021/22)

- This preliminary estimate has been formulated using a combination of standard unit rates for Powerlink internal and external resourcing across the proposed timeline, leveraging current and previous projects for vendor software estimates.
- The project is planned to run across a 24 month timeframe, inclusive of 9 month combined procurement and design phases. The delivery phase is forecast at 12 months, concluding with 3 months of hypercare.
- The final business case development process will be used to refine the scope, costs and impacts for this investment. As indicated above, a procurement activity will likely be undertaken to inform costs and solution options.

Operating Cost Assumptions

- The forecast annual opex saving of $250k p.a. commencing FY2024/25 are a result of a combination of annual savings attributed to software rationalisation and operational support.

Other Assumptions (Non-Financial)

- Commercially available solutions will be available to meet Powerlink's supply chain and works management scope.
- While this investment is replacing existing capability, the implementation of more contemporary capability will require change management. This is key to deriving business process improvement efficiencies.

2.2.2. Option Benefits

The following benefits may be achieved with selection of this recommended option. Financial benefits are identified as "per annum" ongoing savings where relevant and will begin accruing following implementation of the option.

Benefit Description	Financial Value ($M Real 2021/22 p.a.)
B1. Systems sustainability Powerlink's core **supply chain and works management** functions and processes will be underpinned by efficient, reliable and supportable systems.	N/A (Non-Financial)
B2. Process improvement efficiencies The implementation of contemporary capability is anticipated to support process improvement efficiencies through: • removal of manual process steps and interventions; • alignment of business processes; • ensuring consistent **supply chain and works management** standards and business rules; and • improved integration with EMS and GIS.	Contributes to Powerlink's productivity improvement
B3. Capability improvement efficiencies **The implementation of a contemporary capability is anticipated to deliver efficiencies in core supply chain and works management capabilities such as:** • Stock handling and holding times • Warehouse operation efficiencies • Work crew utilisation efficiencies / more efficient truck rolls • Reduction in jobs left incomplete through lack of required inventory • Works program planning efficiencies • Works program delivery optimisation	Contributes to Powerlink's productivity improvement
B4. Operational Risk Reduction – **Through improved decision-making due to better analytics and insights** Powerlink's operational and corporate risk will be reduced, i.e. field work will be scheduled and managed with less rework.	Contributes to Powerlink's productivity improvement

Table 8: Option 2 Benefits

2.2.3. Risk Mitigation

Listed below is a summary of how this option addresses risks identified through the base case. The opening risk position represents the risk level at the end of the coming 2023-27 period should the base case have been selected.

Risk Description	Inherent Risk 2027	Nature of Mitigation	Mitigation through this option
R1 – Business operational impact **Inability to undertake critical, emergency maintenance or on-going, scheduled maintenance due to system failure or data corruption, coupled with ineffective, inefficient business workarounds and limited ability to progress updates/upgrades to aged systems to rectify system or data issues.** **Risk categories – (Legal & Compliance, Projects, Safety)**	**Significant**	Consolidation and replacement of optimised Supply Chain and Works Management systems with modern, contemporary capability significantly reduces the likelihood of systems failure. L kelihood – **Very Rare** Consequence – **Moderate**	**Low**
R2 - Business operational impact **Ineffective supply chain and works management processes, disparate systems and manual interventions result in inefficient management of assets with greater potential for critical asset failures.** **Risk categories – Legal & Compliance, Projects, Safety**	**High-Risk**	Consolidation and replacement of Supply Chain and Works Management systems with modern capability will provide Powerlink with Intelligent Asset Management capabilities. L kelihood – **Very Rare** Consequence – **Moderate**	**Low**
R3 - Financial impact **The current version of the SAP software comes to the end-of-life in 2027. Delaying investment until the next regulatory period will likely mean an increase in cost through extended support arrangements at the start of the next period. Planned savings of $750K ($250K for 3 years) under Option 2 will not be realised.** **Risk categories – Financial**	**Significant**	Consolidation and replacement of Supply Chain and Works Management systems with modern capability provides removes potential for increasingly expensive extended or third-party support costs and provides ability to negotiate reasonable and appropriate support arrangements. L kelihood – **Very Rare** Consequence – **Moderate**	**Low**
R4 – Cybersecurity **With the inability to progress systems updates/upgrades, including access control/security updates, and the growing sophistication of cybersecurity attacks, there is increasing potential for:** • **undetected data corruption or manipulation** • **disclosure of asset and other sensitive information.** **Risk categories** – Projects, Safety, Legal & Compliance, Stakeholder	**Significant**	Consolidation and replacement of Supply Chain and Works Management systems with optimised, modern capability and application of cyclic updates reduces threat vulnerability. L kelihood – **Very Rare** Consequence – **Moderate**	**Low**

Table 9: Option 2 Risk Mitigation

Figure 5 below summarises the risk position of adopting option 2 (pre- and post-mitigation assessment of each risk tabled above).

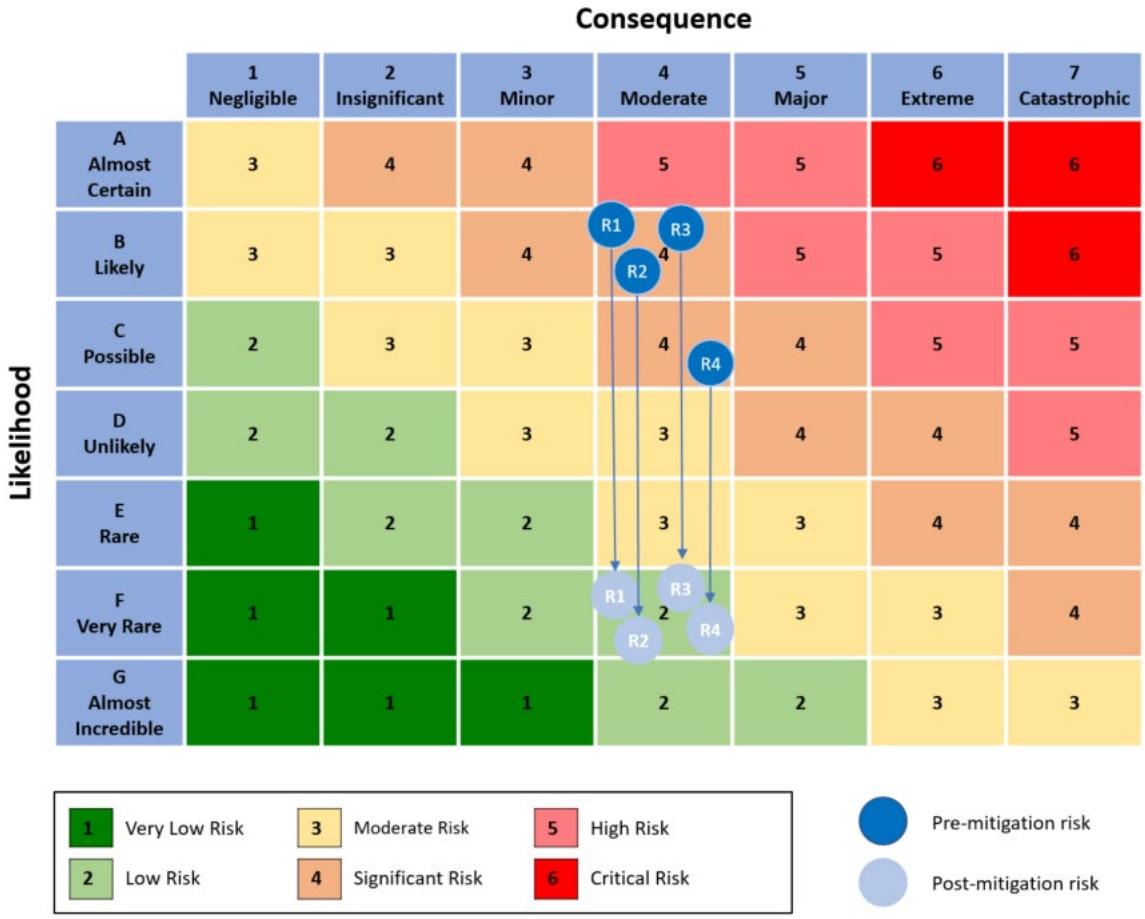

Figure 3: Option 2 - Risk Assessment

2.3. OPTION 3 Like-for-like replacement of supply chain and work management systems

This option will progressively replace each of the identified end-of-life systems with contemporary equivalents consistent with Powerlink's application asset lifecycle management guidelines for ongoing sustainability, supportability and security.

Specifically, this option provides for the:

- Transition of supply chain, logistics and warehouse management functionality from ECC6 (on HANA) to S/4 HANA in one, single project; and
- Upgrade of Portfolio and Project Management functionality from current version of Project Server to the new, most recent version within a second, separate project.

While the implementation of contemporary systems typically provides the opportunity to enable process improvements, the opportunity in this option is reduced due to the combination of overlapping system footprints and niche, highly specialised systems and the lost opportunity for improved whole-of-business analytics and reporting capability possible through the consolidation of core functionality into a centralised system.

2.3.1. Option 3 Assumptions

This option has been estimated on the basis of the following assumptions.

Construction Cost and Scope Assumptions

- The project costs are based on the Option 2 build-up of forecast resourcing, vendor & specialist services, as well as software licensing costs (page 13), but adjusted to reflect the additional effort associated with implementing separate technologies as individual projects, as follows:
    - An increase in planning and design reflects the additional effort incurred through the complexity of planning and implementation of replacement systems.
- This preliminary estimate has been formulated using a combination of standard unit rates for Powerlink internal and external resourcing across the proposed timeline, leveraging current and previous projects for vendor software estimates. The final business case development process will be used to refine the final scope, costs and impacts for this investment. One or more procurement activities will likely be undertaken to further inform costs and solution options.

Operating Cost Assumptions

- Ongoing IT operating costs are forecast to remain unchanged.

Other Assumptions (Non-Financial)

- Commercially available solutions will be able to meet Powerlink's supply chain and works management scope.
- While this investment is replacing existing capability, the implementation of more contemporary capability will require business change management. It is possible that business areas are impacted multiple times through the progressive delivery of multiple projects.

2.3.2. Option Benefits

The following benefits may be achieved with selection of this option. Financial benefits are identified as per annum ongoing savings where relevant and will begin accruing following implementation of the option.

While the potential range of benefits matches those of Option 2, it is unlikely they can be achieved at the same level due to continued breadth of systems underpinning the business processes.

Benefit Description	Financial Value ($M Real 2021/22 p.a.)
B1. Systems sustainability Powerlink's core supply chain and works management functions and processes will be underpinned by efficient, reliable and supportable systems.	N/A (Non-Financial)
B2. Process improvement efficiencies The implementation of contemporary capability is anticipated to support process **improvement efficiencies through:** • **Removal of manual interventions and hand-offs (potentially not all);** • **More intuitive, user-friendly interfaces; and** • **Improved analytics and reporting capabilities allowing for better decision making.**	Contributes to Powerlink's productivity improvement (less than with Option 2)

Table 10: Option 3 Benefits

2.3.3. Risk Mitigation

Listed below is a summary of how this option addresses risks identified through the base case. The opening risk position represents the risk level at the end of the coming 2023-27 period should the base case have been selected.

Risk Description	Inherent Risk 2027	Nature of Mitigation	Mitigation through this option
R1 – Business operational impact **Inability to undertake critical, emergency maintenance or on-going, scheduled maintenance due to system failure or data corruption, coupled with ineffective, inefficient business workarounds and limited ability to progress updates/upgrades to aged systems to rectify system or data issues.** **Risk categories – (Legal & Compliance, Projects, Safety)**	**Significant**	L ke-for-like replacement of supply chain and work management systems with modern capability significantly reduces the likelihood of systems failure. L kelihood – **Very Rare** Consequence – **Moderate**	**Low**
R2 - Business operational impact **Ineffective supply chain and works management processes, disparate systems and manual interventions result in inefficient management of assets with greater potential for critical asset failures.** **Risk categories –** Legal & Compliance, Projects, Safety	**High-Risk**	L ke-for-like replacement of supply chain and work management systems with modern capability is unlikely to provide Powerlink with the Intelligent Asset Management capabilities that an optimised solution would, however some level of more modern condition-based maintenance prompting may be poss ble. L kelihood – **Unlikely**	**Moderate**

Risk Description	Inherent Risk 2027	Nature of Mitigation	Mitigation through this option
		Consequence – **Moderate**	
R3 - Financial impact **The current version of the SAP software comes to the end-of-life in 2027. Delaying investment until the next regulatory period will likely mean an increase in cost through extended support arrangements at the start of the next period. Planned savings of $750K ($250K for 3 years) under Option 2 will not be realised.** **Risk categories – Financial**	**Significant**	L ke-for-like replacement of supply chain and work management systems with modern capability removes potential for increasingly expensive extended or third-party support costs and provides ability to negotiate reasonable and appropriate support arrangements however there will be no opportunity for negotiation benefits relating to economies of scale. L kelihood – **Rare** Consequence – **Moderate**	**Moderate**
R4 – Cybersecurity With the inability to progress systems updates/upgrades, including access control/security updates, and the growing sophistication of cybersecurity attacks, there is increasing potential for: • **undetected data corruption or manipulation** • **disclosure of asset and other sensitive information.** **Risk categories** – Projects, Safety, Legal & Compliance, Stakeholder	**Significant**	L ke-for-like replacement of supply chain and work management systems with modern capability and application of cyclic updates reduces threat vulnerability. However, the range of systems continues to provide broader attack possibilities. L kelihood – **Rare** Consequence – **Moderate**	**Moderate**

Table 11: Option 3 Risk Mitigation

Figure 4 summarises the risk position of adopting option 2 (pre- and post-mitigation assessment of each risk tabled above).

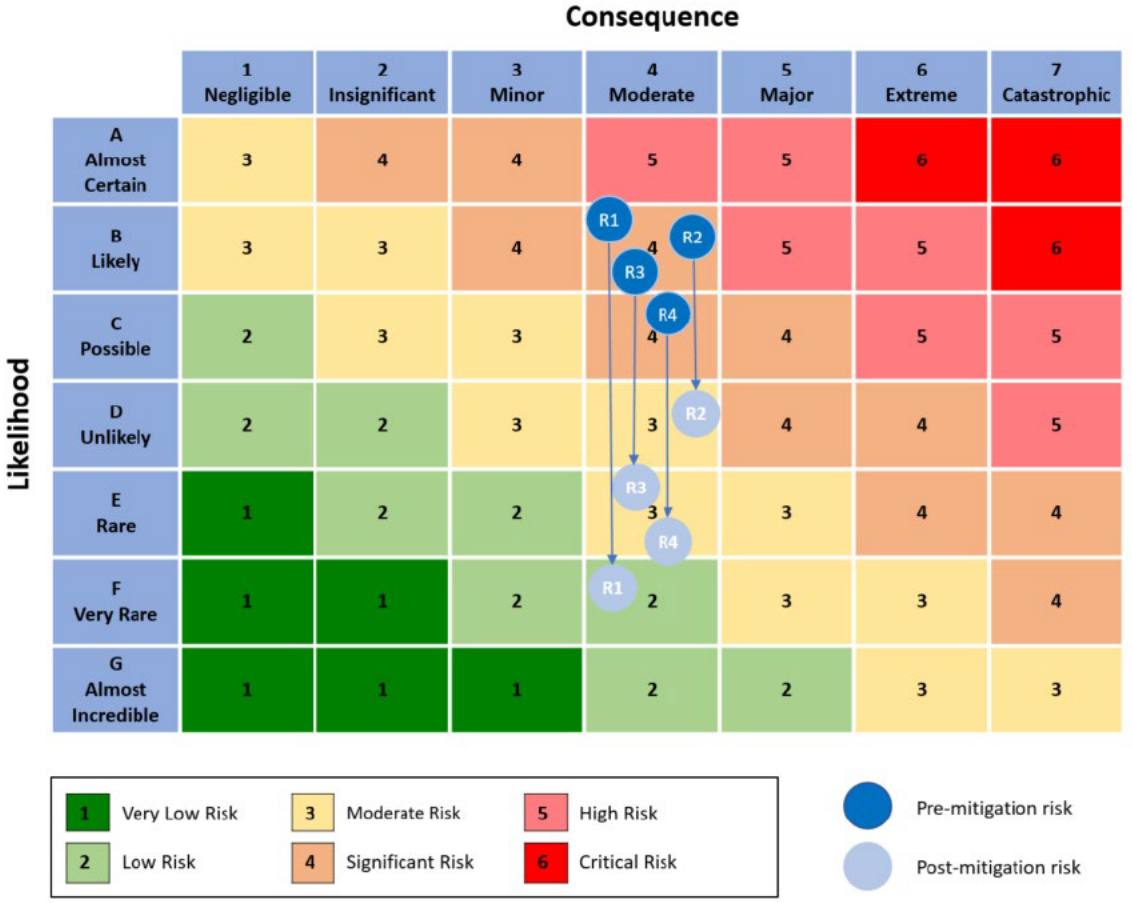

Figure 4: Option 3 - Risk Assessment

2.4. Option Financial Comparison

Table 12 (below) provides a summary comparison of the identified options.

Option	Title	NPV	Counterfactual Difference	Result
Option 1	Base Case (Counterfactual) Retain existing systems and defer replacement	(3,902,848)	-	
Option 2	Optimised replacement of supply chain and works management systems	(2,905,210)	**997,638**	**Least Cost**
Option 3	Like-for-like replacement of supply chain and works management systems	(4,002,373)	**(99,524)**	

Table 12: Option NPV Financial Comparison

Consistent with the above analysis, Option 2 "Optimised replacement of supply chain and works management systems" is recommended.

2.5. Cashflow Summary

Table 13 (below) provides a summary of forecast cashflow over the 10 year analysis period for the recommended option (i.e. Option 2).

[redacted]

Table 13: Cashflow Summary (Recommended Option)

3. RECOMMENDATION

3.1. Recommended Solution

It is recommended to endorse "**Option 2 Optimised replacement of supply chain and works management systems**". This option represents the prudent replacement of core systems capability, ensuring ongoing sustainability and support for broader business productivity improvement in network capital program delivery. Renewal of legacy systems will not only contribute to application portfolio simplification but allow for full integration of processes, data and systems to enable a whole-of-business analytics and reporting capability.

Delivery of the recommended option will begin in FY22/23.

Total forecast non-network (IT) expenditure for the recommended option within the 2023-27 regulatory period is [redacted] capex and [redacted] opex (FY21/22 real terms) with an NPV benefit of $0.997 million relative to the base case counterfactual.

3.2. High Level Timeline

Figure 7 (below) depicts the planned timeframe for implementation of the recommended option.

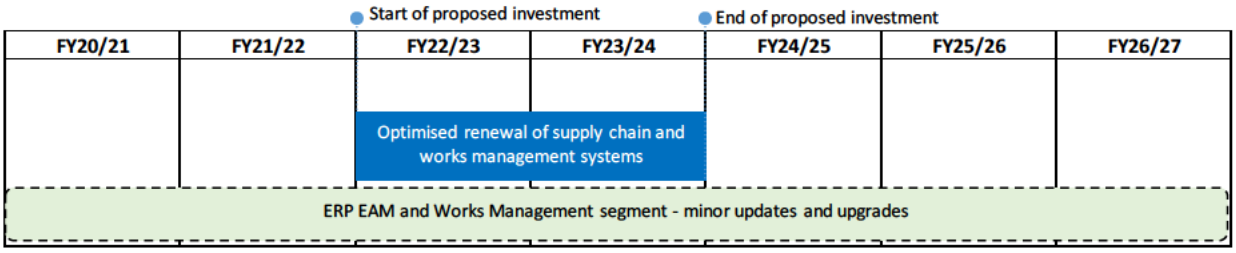

Figure 5: High Level Investment Timeline

3.3. Initiative Value Assessment

Figure 8 (below) summarises the planned initiative value across parameters of:

- **A:** Strategic Alignment and Value
- **B:** Ease of Business Change
- **C:** Architecture Alignment
- **D:** Ease of Delivery and Operation

As indicated in the figure, the planned investment is at, or near, the 75th percentile in assessment against all four parameters.

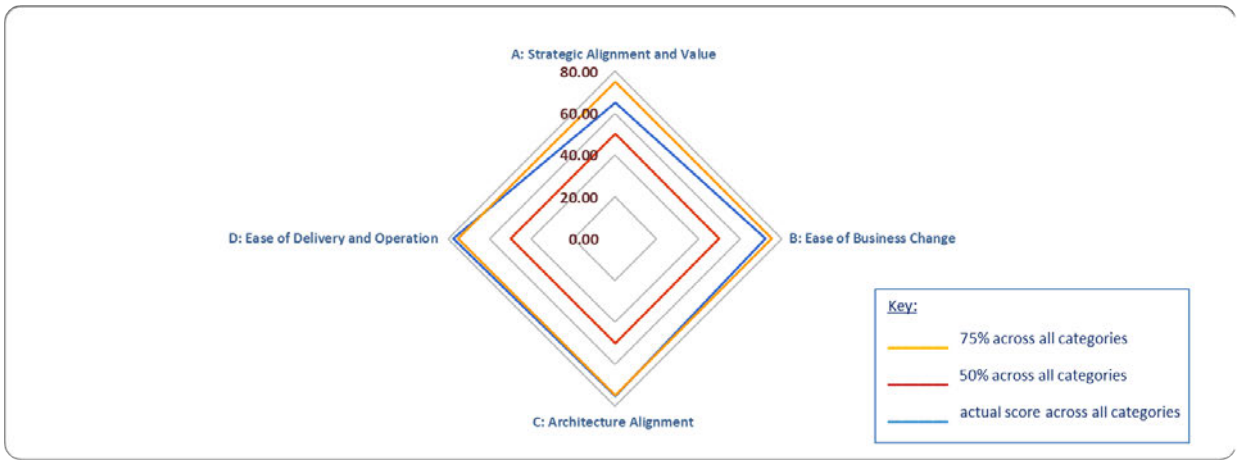

Figure 6: Initiative Value Assessment

4. SUPPORTING DETAIL

4.1. Program Delivery Risks

Table 14 (below) summarises a set of key risks associated with delivery of the program.

Risk #	Risk Category	Description	Inherent Risk Level	Mitigation Plan	Residual Risk Level
01	Key Resources	This initiative is dependent on the knowledge and expertise of Powerlink's supply chain and works management personnel including (but not limited to): 1. Field Delivery management and SMEs; 2. Technology Planning management and SMEs; 3. IT specialists These resources also have business as usual (BAU) responsibilities, including support for program of work (PoW) activities. BAU and PoW rescheduling may impact resources availability.	Moderate	**Accept and Mitigate:** The project will be delivered through a combination of internal and external resourcing, with budgetary capacity to enable backfilling of key roles where required. The project and line-managers also have a responsibility to identify potential constrains and manage potential fatigue. This initiative is renewing Powerlink's enterprise supply chain management and works management systems, which are core to the functions of portfolio and project planning, supply chain and warehouse management and field delivery. It is therefore important to allocate the company's most capable staff wherever practical and apply appropriate resource retention strategies.	Low

Table 14: Supply Chain and Works Management Program Delivery Risks

4.2. Program Constraints

Table 15 (below) summarises a set of key risks associated with delivery of the program.

#	Type	Description
01	Schedule	The program is undertaking application lifecycle replacement of existing capability and planned for completed by June 2024, to ensure efficient, reliable and supportable systems capability underpinning Powerlink's supply chain and works management processes
02	Financial	The financial estimate for this initiative has been based on historic expenditure, standard unit rates, market interactions and the knowledge of internal subject matter experts. Endorsement of this investment case does not constitute approval for expenditure. A more detailed business case will be developed consistent with Powerlink's investment governance processes to confirm the final initiative scope and budget. The business

#	Type	Description
		case will require endorsement by the Powerlink Executive Committee - Digital Technology.
03	Workforce Impact and Change Management	Enterprise supply chain and works management are core functions for the organisation, and as such, the program incorporates close involvement of the BAU teams and business leaders. The program will consult on required work practice changes and employ contemporary training methods and change management techniques to minimise the impact of the workforce.

Table 15: ERP Enterprise Asset Management and Works Management Program Constraints

4.3. Program Assumptions

Specific assumptions for each investment option are provided in section 2. Table 16 (below) summarises additional assumptions which are relevant to all options.

#	Type	Description
01	Resourcing	Powerlink internal resources allocated to the program will remain available to the program as planned. The program will supplement internal resourcing with external service provision, including services provided by solution vendor(s), non-vendor specialist service providers and experienced contract resourcing.
02	Commitment	Program resources (internal and external) have the commitment, drive and capability to deliver agreed work products to agreed plans.
03	Priority	Through the life of the program, Powerlink and our stakeholders will continue to prioritise the need for investment in supply chain and works management systems consistent with the "Investment Need" described in section 1 of this document.
04	Scope	This program seeks to undertake an optimised replacement of Powerlink's supply chain and works management systems in line with prudent application software asset lifecycle management. The scope covers the systems support this capability as outlined in section 1.5.1.

Table 16: Supply Chain and Works Management Program Assumptions

4.4. Program Dependencies

This project is inter-dependent with the projects and activities described in Table 17 below.

#	Type	Description
01	GIS Project	The GIS project will implement a new enterprise geographic information system platform for Powerlink that will replace a number of existing GIS applications. As spatial data and spatial capability are core to asset management, network operations and project and field service delivery this project will deliver enabling capability to the ERP program in general.

#	Type	Description
02	Cyber Security	Information Security is a strategic priority for Powerlink. The Information Security Management Program and IT and OT information security teams will be engaged during the delivery of the ERP Program.
03	NGNO Program	The NGNO Program will both deliver and take delivery of ERP Program outputs. Program inter-dependencies include potential technical and functional alignment in the areas of asset management and network operations.

Table 17: Supply Chain and Works Management Program Dependencies

4.5. Business Area Impacts

Table 18 (below) summarises key business area impacts.

#	Impacted Group	Description
01	Powerlink Executive Leadership Team	• Require awareness of the planned investment goals and to provide ongoing oversight of the program, with direct governance duly delegated to the Program Board. • Provide leadership and serve as role models in the rollout of improved supply chain and works management work practices.
02	IT and OT Workgroups	• Contribute to the planned deployment of supply chain and works management systems and work practices, to optimise coordination with other planned projects and programs as well as planned software and hardware renewals.
03	Delivery and Technical Solutions Workgroups	• Provide resourcing into the program as key SMEs and users of the systems in undertaking asset management functions. • Infrastructure Delivery teams require awareness and training in the new works management and supply chain management systems and processes
04	Operations and Service Delivery Workgroups	• Provide resourcing into the program as key SMEs and users of the systems in undertaking supply chain and works management functions. • Operations and Service Delivery teams will require training in the new systems and processes to enable their use in conjunction with infrastructure maintenance and works scheduling activity.

Table 18: Supply Chain and Works Management Business Area Impacts

Appendix A: Glossary of Terms

The following terms or abbreviations are used within this document.

Term	Definition
ALM	Asset Lifecycle Management
Capex	Capital Expenditure
ERP	Enterprise Resource Planning is a type of software that complex organisations use to manage day-to-day business activities such as accounting, procurement, project management, risk management, compliance, and supply chain operations
GAEC	Governance & Assurance Executive Committee
IT	Information Technology
NPV	Net Present Value
Opex	Operating Expenditure
TNSP	Transmission Network Service Provider
WACC	Weighted Average Cost of Capital