



Zetron Replacement

Business Case

19 November 2024



Part of Energy Queensland

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DOCUMENT VERSION

| Version Number | Change Detail | Date | Updated by |
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| 1.0 | Approved Version | 15/11/2024 | General Manager Grid Technology |

RELATED DOCUMENTS

| Document Date | Document Name | Document Type |
|---------------|---|----------------------|
| 24/10/2022 | Digital Asset Management Guidelines | Guideline |
| 17/01/2023 | AER2025 Project – Shared Assumptions | Assumptions document |
| - /02/2020 | AER capital expenditure outline for electricity distribution determinations | Guidance note |

1 SUMMARY

| Title | Zetron Replacement |
|--|---|
| DNSP | Ergon |
| Expenditure category | <input checked="" type="checkbox"/> Replacement <input checked="" type="checkbox"/> Augmentation <input type="checkbox"/> Connections <input type="checkbox"/> Tools and Equipment <input type="checkbox"/> ICT <input type="checkbox"/> Property <input type="checkbox"/> Fleet |
| Identified need (select all applicable) | <input type="checkbox"/> Legislation <input checked="" type="checkbox"/> Regulatory compliance <input checked="" type="checkbox"/> Reliability <input type="checkbox"/> CECV <input checked="" type="checkbox"/> Safety <input type="checkbox"/> Environment <input type="checkbox"/> Financial <input type="checkbox"/> Other <p>Ergon Energy provides energy distribution services to 93% of Queensland and operates two Control Room facilities in Townsville and Rockhampton. In contrast, Energex manages a single Control Room facility, though it oversees multiple sites in the Southeast corner.</p> <p>The presence of multiple Control facilities aligns with Energy Queensland’s overall diversity and risk strategy, which also includes spreading Data Centre capabilities across the state.</p> <p>Operational Technology has established a long-term strategy to review core systems every seven years. Zetron serves as the primary communication system for Energy Queensland, facilitating communication between various Control Teams statewide. This platform is essential for ensuring seamless communication among the control room, field workers, and government agencies, particularly during major events when reliable network control and restoration of critical services are needed.</p> <p>The upcoming review cycle is expected to incorporate new and emerging communication technologies as part of its updates. Consequently, the continuous improvement program has been streamlined to focus exclusively on critical functionalities that ensure:</p> <ul style="list-style-type: none"> • Meeting obligations to external parties, particularly Emergency Services (QES and QPS) and Transmission providers (Powerlink) • Supporting the state governments <i>Queensland Energy and Jobs Plan</i> (QEJP) directives, which aim to increase renewable energy sources and providers. This influx of new providers is likely to result in increased traffic for the Control Teams. • Small but important security and technology updates are being made to ensure the product remains supported, dependable, and secure, in accordance with Energy Queensland’s cautious risk management approach in operational technology (OT). |
| Summary of recommended option | <p><i>Option 1 Zetron asset replacement and continuous improvement</i> is the recommended option as it presents the best NPV and includes the replacement of the core communications platform mitigating the risk of business disruptions associated with asset failures or through emerging cyber security vulnerabilities being exploited. This ensures the platform remains secure, reliable, and efficient.</p> <p>It also involves a modest investment that allows for essential security and technology updates, ensuring compliance with SOCI requirements and AESCSF standards.</p> |

| | Year | Previous period | 2025-26 | 2026-27 | 2027-28 | 2028-29 | 2029-30 | 2025-30 |
|---------------------|---|-----------------|---------|---------|---------|---------|---------|--------------------|
| Capital Expenditure | \$m, direct 2025-30 | 5.58M | 0.12M | 0.13M | 0.12M | 4.26M | 0.13M | 4.76M ¹ |
| Benefits | <ul style="list-style-type: none"> • \$909k of avoided costs associated with additional support and maintenance costs, and reduced Value of Customer Reliability (VCR) savings • Avoidance of significant business disruptions in the delivery of planned and unplanned work on the network due to the failure or performance issues caused by aging communications platform and supporting technology stack • Avoided cyber security risks associated with exposure and possible exploitation of vulnerabilities associated with aging software and hardware • Avoidance of data loss associated with failing infrastructure | | | | | | | |
| Consumer engagement | At this point in time, no customer engagement has been performed on this specific network ICT business case. | | | | | | | |

¹ Totals may not fully align due to rounding adjustments

2 PURPOSE AND SCOPE

The purpose and scope of this business case is to assess feasible investment options for managing the prudent and efficient asset lifecycle of Ergon's control room communications platform (currently Zetron) so that it remains secure, reliable, and efficient. This includes the annual delivery of continuous improvement activities which manages the integrations and configuration of the communications platform with newly adopted communication technologies and changing business needs in enabling seamless communications.

The investment that underpins this business case is driven by the following objectives:

- Maintain prudent and efficient asset management of Ergon's communications platform
- Provide efficient, reliable, and scalable communications services to Ergon's control rooms
- Support and integrate new and emerging communication technologies
- Modernise communication systems to mitigate increasing cyber security risk
- Ensure critical infrastructure is supported by up-to-date communication systems
- Improved integration with government and emergency services during events.

3 BACKGROUND

3.1 Asset Population / Site Summary / Capability

Zetron has been in place as Ergon's core communications platform for the network control team since 2013 when it replaced the end of life communications platform. Zetron is critical for enabling communications to and from the control room and informing network control activities within the network so that they are safely executed. This provides a platform from which the control team can communicate with field services, transmission companies (e.g. Powerlink) and other emergency services such as QPS particularly during major events, to ensure power is restored for the community in a safe and efficient manner.

Ergon uses this platform in conjunction with Energex enabling seamless communications and economies in scale for licencing, support and continuous improvement costs between the two entities. Since the initial implementation in 2021, there have been regular upgrades to Zetron in the remainder of the current regulatory period. There are planned upgrades for the next regulatory period. The delivery of these minor upgrades are conducted by the technology support team who support the Zetron platform. Details of the existing assets associated with the platform and the vendor support end dates are provided below.

Table 1 Overview of Zetron technology stack asset lifecycles

| Asset | Version | Vendor Support end date | Planned renewal |
|-----------------|--------------------|-------------------------|--|
| Zetron platform | ASB61 | Not confirmed | FY25 (minor), FY27 (major) |
| LiquidVoice | 8.01 | Not confirmed | As above |
| Windows OS | Windows 2016 | 12//01/27 (extended) | FY27 |
| SQL database | SQL Server 2016 | 14/07/26 (extended) | Awaiting Zetron confirmation of compatibility of new version |
| Linux OS | CentOS 7.9 | 30/06/24 (extended) | Awaiting Zetron confirmation of compatibility of new version |
| Dell servers | Dell Generation 14 | 30/06/26 ² | FY27 |

3.2 Asset Management Overview

Whilst the Zetron communications platform is within the Operational Technology Environment (OTE), due to the nature of the overall technology stack, the lifecycle management of this asset is managed in alignment with Energy Queensland's Digital Asset Management Guidelines. This

² Extended support to be negotiated until end of server asset life in FY27

considers the lifecycle of each of the technology stack layers including application, operating system, database, and physical server layers.

4 IDENTIFIED NEED

4.1 Problem and/or Opportunity

Asset lifecycle management of critical communication system

Zetron as the central communications platform used by Ergon's control team is foundational in supporting the reliable and safe control of the network, and therefore is required to be kept up to date and secure at all times.

This requires both regular minor upgrades and a major upgrade each regulatory period in line with the asset's useful life and support availability as detailed in Table 1 Overview of Zetron technology stack asset lifecycles. Inability to prudently manage the asset lifecycle of this platform and its supporting technology stack assets puts critical business services at risk. A recent outage detailed below demonstrated that this does not only impact the rescheduling of planned and unplanned work, but also has a direct impact on restoration of power for Ergon's customers.

If these assets are stretched beyond their useful asset life or beyond vendor support availability, it increases the risk of business disruptions due to asset performance, asset failure or potential data loss, and can expose Ergon to future cyber security vulnerabilities that are unable to be patched on unsupported platforms and technologies.

Business disruptions to both the control room and the network delivery services associated with a Zetron outage can have significant and costly consequences to Ergon's ability to deliver work.

Case study:

In October 2022 Ergon experienced a 5 hour outage of the Zetron platform due to a major Telstra outage outside of Ergon's control. This meant the network control operators were unable to easily communicate with workers in the field to safely control the network, and therefore had to delay the day's planned and unplanned work. This needed to be rescheduled costing the business approximately \$3M. This directly impacted Ergon customers who either were notified about planned outages on those days (only for them not to occur), as well as those customers who were awaiting restoration of their power from unplanned outages.

Communication and collaboration during major events

Zetron is the key platform for Ergon to communicate with QES, QPS and Powerlink during major and severe weather events. An outage of the platform would directly impact Ergon's ability to efficiently communicate with these parties in restoring critical services to the community in a safe manner.

As communication technologies evolve across the ecosystem, it is important that the communications platform is able to easily adapt and integrate with these new technologies to enable seamless communications between all parties. This will require continued investment to modernise and integrate the platform with these technologies to ensure that Ergon continues to provide optimal service to the community, and when collaborating with other critical service providers.

Changing business landscape

In support of the Queensland Energy and Jobs Plan the number of field staff is expected to increase by 9% by 2026. This will result in an increase in additional calls to the control team and a need for the communications platform to easily scale to accommodate the additional volumes.

Furthermore, as controlling of the network becomes more complex with increased distributed energy resources (DER) and integration with other technologies, this adds to the complexity and digitalisation of services within the control room. Therefore, it is important that critical platforms such as the communications platform appropriately enhance the end user experience so that the control room operators can continue to efficiently do their jobs and feel engaged with the platforms they use on a daily basis.

4.2 Compliance

Ergon is required to meet regulatory and compliance obligations in relation to operational technologies as set out below.

Table 2: Ergon’s Regulatory and Compliance Obligations related to Operational Technology

| Obligation | Description of Requirement |
|--|---|
| Security of Critical Infrastructure Act 2018 | <p>The Security of Critical Infrastructure Act 2018 (SOCIA) applies in managing national security risks relating to critical infrastructure. Zetron is considered by Ergon to be a critical system. The Security Legislation Amendment (Critical Infrastructure) Bill 2021 introduces new requirements:</p> <ul style="list-style-type: none"> • additional positive security obligations for critical infrastructure assets, including a risk management program, to be delivered through sector-specific requirements, and mandatory cyber incident reporting; • enhanced cyber security obligations for those assets most important to the nation, described as assets of national significance; and • government assistance to relevant entities for critical infrastructure sector assets in response to significant cyber-attacks that impact on Australia’s critical infrastructure assets. |
| Privacy Act 1988, Information Privacy Act 2014 | <p>As specified in the Privacy Act 1988, Ergon is required to maintain strong controls and security on the accessibility of employee and customer data as well as ensuring appropriate availability of data. Keeping Ergon’s critical systems up to date, supported and secured is a key enabler of maintaining these controls.</p> |
| National Electricity Law (NEL) and National Electricity Rules (NER) | <p>The NEL requires Ergon to promote efficient investment in, and efficient operation and use of electricity services for the long-term interests of consumers of electricity with respect to price, quality, safety, reliability, and security of supply of electricity as per the National Electricity Objective.</p> <p>The operating and capital expenditure objectives set out in the NER require Ergon to maintain both the quality, reliability, and security of supply of standard control services and the reliability and security of the distribution network.</p> |
| The Australian Energy Cyber Security Framework (AESCSF) | <p>Ergon must ensure its OT infrastructure is up to date, supported and secure to meet the AESCSF maturity targets. There is potential that this will become a licensing requirement in the future and therefore the assets must be maintained to enable licenses to be up to date.</p> |

4.3 Discussions with customers

No customer engagement has been performed on this specific network business case at this point in time, and therefore this section will be updated as engagement occurs.

5 OPTIONS ANALYSIS

5.1 Options identification process

Feasible options were identified through a number of workshops with subject matter experts. The current and future needs of the business and stakeholders were identified, as well as asset renewal requirements for the current platform and the risks it would present if not renewed or replaced. The three options established are as follows:

- Counterfactual (Base Case)
- Option 1 (recommended) – Zetron asset replacement and continuous improvement
- Option 2 – Zetron asset replacement only

5.2 Counterfactual analysis (Base case)

5.2.1 Summary

The counterfactual considers the continued use of the current Zetron platform and supporting technology stack beyond its useful asset life from FY27 onwards. This means that only extended maintenance and support (where available) and remedial/restoration of services will be funded through operating costs, with no capital investment in minor and major upgrade and/or replacement of Zetron.

The absence of capital investment in the 2025-30 regulatory control period would mean that over time the current version of the Zetron platform would no longer be fit-for-purpose and may become incompatible with new and emerging communications technologies used by Ergon and third parties such as QPS.

Whilst this option has low upfront expenditure and minimal business change, these are outweighed by the growing risks that impact the efficient delivery of services within the control room and the network, as well as increased long term costs that would have a direct impact on Ergon and its customers. Long term issues resultant from this option include:

- Potential disruptions to critical business operations in the control room and in the field from degrading performance and/or failure of the Zetron system and its supporting technology stack.
- Increased cyber security risks associated with vulnerabilities on aging/legacy ICT assets that become more difficult to efficiently secure over time.
- Additional costs associated with disruptions and restoration of the communications platform.
- Reduced customer confidence through potential delays in planned outages and restoration of power following unplanned outages.

5.2.2 Assumptions

The following assumptions apply to the Counterfactual (base case) option:

- A minor upgrade to the Zetron platform will occur at the end of the current 2020-25 regulatory control period.

- Remediation of the supporting technology stack (e.g., servers) would be addressed at point of failure or if degradation of platform performance began to cause significant disruption to day-to-day operations for the control room. It is assumed that parts within the servers may still be available, but at a reduced supply chain and at much higher premiums.
- New communication technologies will continue to emerge across Ergon and its partners (e.g., QES, QPS etc.) requiring these to be integrated with the communications platform for calls from these to be appropriately prioritised to the control room.

5.2.3 Costs

The counterfactual option does not consider any capital expenditure and includes operating expenditure only.

Table 3 Cost overview for Counterfactual (Base Case) Option

| | | Year 1 FY26 | Year 2 FY27 | Year 3 FY28 | Year 4 FY29 | Year 5 FY30 |
|--------------|-------|----------------|----------------|----------------|----------------|----------------|
| Capex | Ergon | - | - | - | - | - |
| Opex | Ergon | \$0.38M | \$0.72M | \$0.77M | \$0.83M | \$0.92M |
| Totex | Ergon | \$0.38M | \$0.72M | \$0.77M | \$0.83M | \$0.92M |
| Benefits | Ergon | - | - | - | - | - |

This includes:

- Subscription for custom security patching of Windows ramping up to \$16k p.a. in FY29
- Additional support for managing and monitoring the 40+ legacy servers of \$322k p.a.
- Extended software and hardware support from Zetron ~\$405k p.a.
- Remediation costs associated with restoring failed servers, ramping up to \$185k p.a. in FY30

5.2.4 Risks

The base case assumes there is no new investment over and above ongoing business as usual (BAU) expenditure on Zetron. This option therefore exposes Ergon to several risks, as summarised in the following table.

Table 4: Ergon’s Delivery Risks for the Counterfactual (Base Case) Option

| # | Risk | Description of Risk |
|----|---|--|
| 1 | Increased risk of system failure or degradation of system performance | Aging Zetron system and underlying technology is past the end of its useful asset life and fails or reduces significantly in performance directly impacting business operations |
| 2 | Increased cyber security risks | Aging Zetron system and underlying technology stack are no longer being supported and able to be patched or secured. This may expose Ergon to new and emerging cyber security vulnerabilities that could be exploited by actors with malicious intent |
| 3 | Communication system not fit for purpose | Increased risk of communications platform unable to integrate with new communication technologies or meet evolving demands and control room needs over time |
| 4 | Increased restoration costs | An increase in frequency of technology related failures will also mean an increase in the restoration costs to restore the communications platform back to normal operations |
| 5 | Increased risk of data loss | There will be an increased risk of data loss as legacy technology may not be able to be fully restored and/or data becomes breached and leaked |
| 6 | Inability to source skills required for legacy technologies | There will be an increase in the costs and complexity of sourcing the right skills required to maintain and support legacy technology |
| 7 | More OT support team time spent on major incidents | Effort will be required to focus on non-value adding activities such as restoration as more incidents occur, meaning less effort concentrated on adding value for both Ergon and the customer |
| 8 | Poor employee/user experience | Reduced employee engagement of control team when interacting with the platform due to aging User Interface (UI) |
| 9 | Major impact on executing planned and unplanned control system work | Outages to the communication platform causes cancellation/rescheduling of planned and unplanned work to the network. This could result in significant consequences including approximately \$622k per annum of VCR costs and the rescheduling of \$3M of planned and unplanned work per day of impact. |
| 10 | Inability to efficiently respond to changing business needs | Inability to efficiently respond to changing business needs (Queensland Energy and Jobs Plan, new technology, etc.) |
| 11 | Increased integration and implementation costs | Increased risk of escalating project costs to integrate with new and evolving communication technologies |

5.3 Option 1 Zetron asset replacement and continuous improvement (recommended)

5.3.1 Summary

This option focuses on proactive replacement of the core communications platform – Zetron - and its underlying technology stack for Ergon’s control room so that it remains secure, reliable, and efficient. It also provides ongoing annual investment in the delivery of continuous improvement

activities to help integrate the platform with new communication technologies and accommodate changing business needs for seamless communications. This is particularly important in enabling integration with new technologies, and the scalability of the platform to support growth of Ergon's field workers as part of the Queensland Energy and Jobs Plan, as well as for better collaboration with emergency services and government agencies during major events. By making continuous improvements to the platform, Ergon can continue to prioritise critical calls in the presence of changing business needs and technologies. As the control room becomes more digitalised, keeping the communications platform up to date and modern, means that the control room operators have an enhanced user experience that enables them to do their job efficiently in the presence of more network complexity and higher call volumes.

Replacement of the Zetron platform and related technology stack assets would occur in FY29 ensuring that asset management of this critical platform aligns with the Digital Asset Management Guidelines, by not stretching the assets beyond their useful asset life. This will allow for the high availability and performance of the platform to remain constant to avoid costly business disruptions due to asset failures or performance issues.

5.3.2 Assumptions

- Refer to section 5.2.2 Assumptions
- Continuous improvement activities would be planned and executed annually as per the current arrangement
- A market scan will be conducted prior to FY29 to confirm if Zetron is still the most prudent offering on the market for Ergon to use as its main communications platform in the control room.

5.3.3 Costs

This option considered the capital and operating expenditure for Zetron asset replacement and continuous improvement.

Table 5 Cost overview for Option 1

| NPV | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------|-------|----------------|----------------|----------------|----------------|----------------|
| \$0.34M | | FY26 | FY27 | FY28 | FY29 | FY30 |
| Capex | Ergon | \$0.12M | \$0.13M | \$0.12M | \$4.26M | \$0.13M |
| Opex | Ergon | - | - | - | - | - |
| Totex | Ergon | \$0.12M | \$0.13M | \$0.12M | \$4.26M | \$0.13M |
| Benefits | Ergon | \$0.01M | \$0.46M | \$0.54M | \$0.68M | \$0.91M |

Breakdown:

- We have considered the feedback from the AER draft determination and reviewed the scope of the Continuous Improvement (CI) program. The new plan is to incorporate most enhancements into a future replacement product, which will reduce costs from \$2.16 million to \$0.50 million. The focus of the CI program will now be on smaller, critical security and

technology updates that ensure compliance with SOCI requirements and AESCSF standards. We also recognize that the CI program will be put on hold during the replacement program initiative.

- Zetron asset replacement with a capital investment of \$4.26M

5.3.4 Benefits

The following table details the financial and non-financial benefits to be realised from investment in the Option 1 – Zetron replacement and continuous improvement.

Table 6: Benefits overview for Option 1

| Benefit Type | Benefit Description | Value or Measure |
|---------------|---|--|
| Financial | Avoided cost associated with extended and sustainment support for legacy software and hardware, extra monitoring and security services, and remediation costs associated with escalating hardware failures | \$520k per annum in Opex |
| | Avoided costs associated with the VCR due to fewer hours per annum of interruptions for both planned and unplanned work from having both a stable communications platform, and all critical calls through all integrated communication technologies appropriately prioritised | \$389k per annum in Opex |
| Non-Financial | Improved scalability and adaptability of communications platforms to adapt to changing business requirements | Improved workforce capability and customer and community sentiment |
| | Avoid unplanned outages of critical communication systems and unplanned costs associated with aging infrastructure failures | Reduced impact and frequency of outages |
| | Customers are confident that critical OT systems are up to date and secured | Customer and community sentiment |
| | Ability to manage and prioritise calls efficiently for the control room | Improved workforce capacity and customer and community sentiment |
| | Customers are confident that Ergon can efficiently and effectively respond to network outages | Customer and community sentiment |
| | Ergon can safely control the network by having seamless communications with field staff and third parties such as QES | Customer and community sentiment |
| | Enabling easy communications and working collaboratively with QES and other government agencies through integrated and modern communication systems | Customer and community sentiment |

| Benefit Type | Benefit Description | Value or Measure |
|--------------|---|--|
| | The system is maintained in a manner that keeps pace with current skillsets of available work force resources | Improved workforce capacity and customer and community sentiment |

5.3.5 Risks

The following table details the risks that are addressed and / or mitigated through the investment in the Option 1.

Table 7 Ergon Risks for Option 1

| # | Risk | Description of Risk | How Option 1 addressed this risk |
|---|---|---|---|
| 1 | Increased risk of system failure or degradation of system performance | Aging Zetron system and underlying technology is past the end of its useful asset life and fails or reduces significantly in performance directly impacting business operations | As this option ensures the system and the technology stack are up to date, it means that the system will be appropriately managed against system failures associated with age |
| 2 | Increased cyber security risks | Aging Zetron system and underlying technology stack are no longer being supported and able to be patched or secured. This may expose Ergon to new and emerging cyber security vulnerabilities that could be exploited by actors with malicious intent | As this option ensures the system and the technology stack are up to date, it means that the system will be appropriately supported and known vulnerabilities are patched and managed appropriately |
| 3 | Communication system not fit for purpose | Increased risk of communications platform unable to integrate with new communication technologies or meet evolving demands and control room needs over time | Continuous improvement in Zetron will provide Ergon with the flexibility to adapt to changing communication needs within a planned annual program ensuring they remain fit for purpose |
| 4 | Increased restoration costs | An increase in frequency of technology-related failures will also mean an increase in the restoration costs to restore the communications platform back to normal operations | This option allows for proactive investment in Energy Queensland's OT asset lifecycle management of Zetron to mitigate outages caused from failure of aging technology |
| 5 | Increased risk of data loss | There will be an increased risk of data loss as legacy technology may not be able to be fully restored and/or data becomes breached and leaked | Prudent OT asset lifecycle management of Zetron will reduce the likelihood of this risk significantly |
| 6 | Inability to source skills required for legacy technologies | There will be an increase in the costs and complexity of sourcing the right skills required to maintain and support legacy technology | Prudent OT asset lifecycle management of existing Zetron will mitigate the risk of requiring specialist skills to support legacy technology |
| 7 | More OT support team time spent on major incidents | Effort will be required to focus on non-value adding activities such as restoration as more incidents occur, meaning less effort concentrated on adding value for both Ergon and the customer | Prudent OT asset lifecycle management of existing Zetron will mitigate the risk of major incidents occurring due to technology failure |
| 8 | Poor employee/user experience | Reduced employee engagement of control team when interacting with the platform due to aging UI | Continual improvement in Zetron will reduce the likelihood of this risk significantly |
| 9 | Major impact on executing planned and | Outages to the communication platform causes cancellation/rescheduling of planned and unplanned work to the network. This could result in significant consequences | Prudent OT asset lifecycle management of Zetron will reduce the likelihood of this risk significantly |

| # | Risk | Description of Risk | How Option 1 addressed this risk |
|----|---|---|--|
| | unplanned control system work | including approximately \$389k per annum of VCR costs and the rescheduling of \$3M per day of planned and unplanned work. | |
| 10 | Inability to efficiently respond to changing business needs | Inability to efficiently respond to changing business needs (Queensland Energy and Jobs Plan, new technology, etc) | The annual continuous improvement activities will enable for the configuration and integration of the communications platform to address changing business needs and new communications technologies |

5.4 Option 2 Zetron asset replacement only

5.4.1 Summary

This option delivers the replacement of the core communications platform and its underlying technology stack for Ergon's control room, however unlike Option 1, it does not invest in any continuous improvement of the platform throughout the period.

This means that the existing annual continuous improvement program would cease, and the platform would not be regularly reconfigured and integrated with new or emerging communications technologies as they are adopted by Ergon or third parties. Over time this could mean that critical calls through these new technologies would not be prioritised in the platform against other calls to the control room, directly impacting the end user experience for the control systems operators and field workers in being able to deliver their work efficiently and safely. This would also impact the restoration for customers related to those calls. It could also make it more difficult to easily collaborate with other government agencies during major events such as QES in being able to safely restore critical services for the community.

Replacement of the Zetron platform and related technology stack assets would occur in FY29 ensuring that asset management of this critical platform aligns with the Digital Asset Management Guidelines, by not stretching the assets beyond their useful asset life. This will allow for the high availability and performance of the platform to remain constant to avoid costly business disruptions due to asset failures or performance issues.

5.4.2 Assumptions

- Refer to section 5.2.2 Assumptions
- A market scan will be conducted prior to FY29 to confirm if Zetron is still the most prudent offering on the market for Ergon to use as its main communications platform in the control room.

5.4.3 Costs

All expenditure in this option is recurrent capital expenditure associated with the replacement and renewal of existing assets.

Table 8 – Cost overview for Option 2

| NPV - \$0.56 M | | Year 1 FY26 | Year 2 FY27 | Year 3 FY28 | Year 4 FY29 | Year 5 FY30 |
|----------------|-------|----------------|----------------|----------------|----------------|----------------|
| Capex | Ergon | - | - | - | \$4.26M | - |
| Opex | Ergon | - | - | - | - | - |
| Totex | Ergon | - | - | - | \$4.26M | - |
| Benefits | Ergon | \$0.01M | \$0.39M | \$0.44M | \$0.54M | \$0.68M |

5.4.4 Benefits

The following table details the benefits to be realised from investment in the Option 2 – Zetron replacement.

Table 9 Benefits overview for Option 2

| Benefit Type | Benefit Description | Value or Measure |
|---------------|---|--|
| Financial | Avoided cost associated with extended and sustainment support for legacy software and hardware, extra monitoring and security services, and remediation costs associated with escalating hardware failures | \$519k per annum in Opex |
| | Avoided costs associated with the VCR due to fewer hours per annum of interruptions for both planned and unplanned work from having both a stable communications platform, and all critical calls through all integrated communication technologies appropriately prioritised | \$156k per annum in Opex |
| Non-Financial | Avoid unplanned outages of critical communication systems and unplanned costs associated with aging infrastructure failures | Reduced impact and frequency of outages |
| | Customers are confident that critical OT systems are up to date and secured | Customer and community sentiment |
| | Ability to manage and prioritise calls efficiently for the control room | Improved workforce capacity and customer and community sentiment |
| | Customers are confident that Ergon can efficiently and effectively respond to network outages | Customer and community sentiment |

| Benefit Type | Benefit Description | Value or Measure |
|--------------|--|----------------------------------|
| | Ergon can safely control the network by having seamless communications with field staff and third parties such as emergency services | Customer and community sentiment |
| | Enabling easy communications and working collaboratively with emergency services and other government agencies through integrated and modern communication systems | Customer and community sentiment |

5.4.5 Risks

The following table details the risks that are addressed and / or mitigated through the investment in the Option 2.

Table 10 Ergon Risks for Option 2

| # | Risk | Description of Risk | How Option 2 addressed this risk |
|---|---|---|---|
| 1 | Increased risk of system failure or degradation of system performance | Aging Zetron system and underlying technology is past the end of its useful asset life and fails or reduces significantly in performance directly impacting business operations | As this option ensures the system and the technology stack are up to date it means that the system will be appropriately managed against platform failures associated with age. |
| 2 | Increased cyber security risks | Aging Zetron system and underlying technology stack are no longer being supported and able to be patched or secured. This may expose Ergon to new and emerging cyber security vulnerabilities that could be exploited by actors with malicious intent | As this option ensures the system and the technology stack are up to date it means that the platform will be supported and known vulnerabilities are patched and managed appropriately. |
| 3 | Communication system not fit for purpose | Increased risk of communications platform unable to integrate with new communication technologies or meet evolving demands and control room needs over time | [Not addressed] Without investment in continuous improvement Ergon are not able to adapt or easily integrate the communications with new technologies, therefore increasing this risk over time. |
| 4 | Increased restoration costs | An increase in frequency of technology related failures will also mean an increase in the restoration costs to restore the communications platform back to normal operations | This option allows for proactive investment in Energy Queensland's OT asset lifecycle management of Zetron to mitigate outages caused from failure of aging technology |
| 5 | Increased risk of data loss | There will be an increased risk of data loss as legacy technology may not be able to be fully restored and/or data becomes breached and leaked | Prudent OT asset lifecycle management of Zetron will reduce the likelihood of this risk significantly |
| 6 | Inability to source skills required for legacy technologies | There will be an increase in the costs and complexity of sourcing the right skills required to maintain and support legacy technology | Prudent OT asset lifecycle management of existing Zetron will mitigate the risk of requiring specialist skills to support legacy technology |

| # | Risk | Description of Risk | How Option 2 addressed this risk |
|----|---|--|---|
| 7 | More OT support team time spent on major incidents | Effort will be required to focus on non-value adding activities such as restoration as more incidents occur, meaning less effort concentrated on adding value for both Ergon and the customer | Prudent OT asset lifecycle management of existing Zetron will mitigate the risk of major incidents occurring due to failure of legacy technology |
| 8 | Poor employee/user experience | Reduced employee engagement of control team when interacting with the platform due to aging UI | [Not addressed] Without investment in continuous improvement Ergon are not able to meet changing expectations and needs of the users when it comes to a modern communications platform |
| 9 | Major impact on executing planned and unplanned control system work | Outages to the communication platform causes cancellation/rescheduling of planned and unplanned work to the network. This could result in significant consequences including approximately \$415k per annum of VCR costs and the rescheduling of \$3M of planned and unplanned work per day of impact. | Prudent OT asset lifecycle management of Zetron will reduce the likelihood of this risk significantly. |
| 10 | Inability to efficiently respond to changing business needs | Inability to efficiently respond to changing business needs (Queensland Energy and Jobs Plan, new technology, etc) | [Not addressed] This option does not allow for continuous improvement of the communications platform so that it can be easily integrated or adapted to changing technologies or requirements |

5.5 Economic Analysis

5.5.1 Cost summary 2025-30

All capital expenditure in Option 1 and 2 is recurrent due to it being associated with the replacement of existing assets.

Table 11 Cost summary 2025-30

| Option | Year 1 FY26 | Year 2 FY27 | Year 3 FY28 | Year 4 FY29 | Year 5 FY30 | Total ³ 2025-30 |
|--|----------------|----------------|----------------|----------------|----------------|-------------------------------|
| Counterfactual (Base) | \$0.38M | \$0.72M | \$0.77M | \$0.83M | \$0.92M | \$3.62M |
| 1. Zetron asset replacement and continuous improvement | \$0.12M | \$0.13M | \$0.12M | \$4.26M | \$0.13M | \$4.76M |
| 2. Zetron asset replacement only | \$0.0M | \$0.0M | \$0.0M | \$4.26M | \$0.0M | \$4.26M |

5.5.2 NPV analysis

Table 12 NPV analysis

| Option | Discount rate |
|---|---------------|
| | % |
| 1 Zetron asset replacement and continuous improvement | 3.50 |
| 2 Zetron asset replacement only | 3.50 |

5.6 Optimal Timing

Delays in the replacement of the underlying technology stack (servers, database and operating systems) will result in degradation of asset performance directly impacting the control room's ability to efficiently manage communications required for controlling the network. If the delay was to occur beyond the useful asset life this may also expose Ergon to cyber security risks as detailed in Section 5.2.4 Risks.

5.7 Delivery Capability

Energy Qld has established has a robust framework in place to successfully deliver OT projects, leveraging a blend of internal expertise and external partnerships. By utilizing experienced contractors, we can quickly adapt to project demands and access specialized skills as needed. This flexibility not only allows us to scale our efforts based on the scope of each project but also ensures that we remain responsive to evolving client requirements. Over the past few years, we

³ Totals may not fully align due to rounding adjustments

have significantly ramped up our delivery capabilities, successfully scaling from several projects per year to over ten.

To enhance our project execution, we have built strong collaborations with leading external firms that provide us with expertise and industry best practices. These partnerships enable us to stay at the forefront of technological advancements, ensuring that we deliver appropriate solutions. Central to our project management approach is a dedicated program manager who oversees all aspects of delivery, ensuring that projects align with strategic objectives and are executed efficiently. This leadership ensures seamless communication and coordination among all project teams and stakeholders.

In addition, our project teams include a business analyst and a change manager, both of whom play vital roles in our project delivery process. The business analyst engages closely with stakeholders to gather requirements and define project scopes, ensuring that the final deliverables meet client expectations. Meanwhile, the change manager focuses on facilitating smooth transitions, supporting teams and end-users throughout the implementation process. This comprehensive approach, combined with our recent growth in project delivery capacity, underscores our capability to consistently deliver high-quality OT solutions that drive value for our clients.

6 RECOMMENDATION

Option 1 - Zetron asset replacement and continuous improvement is the recommended option as it will improve reliability, enhance security, increase flexibility, improve efficiently, and enhance customer service, all of which will contribute to a more robust and safer network.

Table 13 Options Analysis Scorecard

| Criteria | Counterfactual (Base Case) | Option 1 – Zetron asset replacement and continuous improvement (Recommended) | Option 2 – Zetron asset replacement only |
|-------------------------------------|----------------------------|---|---|
| Net Present Value | N/A | \$0.91m | (\$0.55)m |
| Investment cost (TCO)* | \$3.62m | \$4.76m | \$4.26m |
| Investment Risk | High | Low | Low-Med |
| Benefits | Low | High | Med |
| Delivery time | Not applicable | 12 months (replacement) + annual continuous improvement | 12 months (replacement) |
| Detailed analysis – Benefits | Lowest upfront cost | Replacement and continual improvement of the communications platform will improve platform reliability, mitigate security risks associated with legacy technology, and increase adaptability to new | Replacement of the communications platform will improve platform reliability and mitigate security risks associated with legacy technology to enable efficient and safe control of the network. |

| Criteria | Counterfactual (Base Case) | Option 1 – Zetron asset replacement and continuous improvement (Recommended) | Option 2 – Zetron asset replacement only |
|---------------------------------------|--|---|--|
| | | communications technologies. It also avoids costs of \$909k p.a. through VCR and additional support costs. | It will also avoid costs of \$519k p.a. related to additional support costs. |
| Detailed analysis – Risks | Whilst this option has low upfront expenditure this is outweighed by the growing risks and long-term costs that would have a direct impact on Ergon’s operation of its network and its ability to restore power for its customers. | Identified risks are mitigated as part of this option. | Communications platform is no longer fit for purpose over time. It is unable to easily integrate with new and emerging communications technologies. Critical calls may not be appropriately prioritised. |
| Detailed analysis - Advantages | No upfront capital investment or change management required. | Prudent and efficient asset lifecycle management of this platform in supporting critical business processes. Continuous improvement of the platform positions Ergon to easily adapt to changing communication needs as required so that critical calls are always prioritised. | Lower upfront capital investment than option 1. Prudent and efficient asset lifecycle management of this platform in supporting critical business processes. |

**Investment cost is equal to the sum of Capex and Opex costs during the 2025-2030 Regulatory Period*

6.1 Program Delivery Approach

Annual delivery of the continuous improvement program will continue as per the existing delivery cycle and include a combination of both internal resources, augmented with contractors and external specialists as required.

The delivery approach for the major upgrade and/or replacement of Zetron in FY28-29 will be determined as part of a future market exercise in the year leading up to the implementation. This will be influenced by whether Zetron is still the preferred product and if a major upgrade of it and the supporting technology stack is progressed, or if an alternate product is selected and implemented. The previous implementation of Zetron used a combination of system integrator and internal resources for its successful delivery.

Figure 1 Program Delivery Timeline



6.2 Dependencies

This investment is dependent on the following programs, projects or business activities.

Table 14 Program Dependencies

| Program/ Project/Activity | Dependency | Effect |
|---|---|--|
| Cybersecurity Program | Broader infrastructure and operating system renewal activities required to remove exposure to known and future cyber security vulnerabilities may be stipulated by the Cyber Security Program | This may impact the timing of planned renewal activities for Zetron and its supporting technology stack |
| New and emerging telecommunications technologies | Introduction of new telecommunications technologies by Ergon or third parties (such as QPS) will require these to be integrated with the communications platform | This may impact timing of continuous improvement activities to meet expected timelines for implementation of new telecommunications technologies |
| OTE Engineering Team BAU activities | Volume of BAU activities may mean that the OTE Engineering Team resourcing may be at capacity during peak periods | External contractors may need to be engaged to either backfill the BAU roles or help with the delivery of this investment |

6.3 Program Risks

Program risks will be managed through standard program governance practices as followed previously during the installation of Zetron.

As Ergon has experience in delivering Zetron, deep knowledge from the existing support team will help mitigate the known delivery risks such as those across technical, implementation, operational, integrational, security, regulatory and change management.

6.4 Change Impacts

The key change impacts associated with this business case include effort associated with the decommissioning of legacy assets, continual improvement of the asset, minor upskilling of control room operators, and technical team's time associated with the delivering replacement software and hardware.

For further details regarding all change impact please refer to Appendix 2: Change Impacts.

APPENDICES

Appendix 1: Alignment with the National Electricity Rules

Table 15 Recommended Option's Alignment with the National Electricity Rules

| NER capital expenditure objectives | Rationale |
|--|--|
| A building block proposal must include the total forecast capital expenditure which the DNSP considers is required in order to achieve each of the following (the capital expenditure objectives): | |
| 6.5.7 (a) (1) meet or manage the expected demand for standard control services over that period | The recommended option strengthens Ergon's communication platform capabilities so that they remain reliable and efficient in supporting Ergon's delivery of standard control services to North Queensland. |
| 6.5.7 (a) (2) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services; | The recommended option helps enable Ergon's ability to comply with all regulatory obligations due to the efficient asset lifecycle management and continuous improvement of Ergon's communications capabilities for control of its network. |
| 6.5.7 (a) (3) to the extent that there is no applicable regulatory obligation or requirement in relation to: <ul style="list-style-type: none"> (i) the quality, reliability or security of supply of standard control services; or (ii) the reliability or security of the distribution system through the supply of standard control services, to the relevant extent: <ul style="list-style-type: none"> (iii) maintain the quality, reliability and security of supply of standard control services; and (iv) maintain the reliability and security of the distribution system through the supply of standard control services | The recommended option modernises Ergon's existing communications platform for the control room mitigating risks associated with disruption to critical business services due to asset failures. It also contributes to the protection against cyber security threats associated with emerging vulnerabilities linked to unsupported and unpatched infrastructure and systems. Investments in continuous improvement of the platform, will help Ergon in efficiently integrating and adapting to new communications technologies as network complexity and major events increase. |
| 6.5.7 (a) (4) maintain the safety of the distribution system through the supply of standard control services. | The recommended option ensures that Ergon's communications platform is appropriately equipped for effectively collaborating with government and emergency agencies in the safe restoration of critical services for the community. |
| NER capital expenditure criteria | Rationale |
| The AER must be satisfied that the forecast capital expenditure reflects each of the following: | |
| 6.5.7 (c) (1) (i) the efficient costs of achieving the capital expenditure objectives | The recommended option meets the regulatory capital expenditure objectives by demonstrating prudent and efficient investment in the asset management of Ergon's communications platform assets. |
| 6.5.7 (c) (1) (ii) the costs that a prudent operator would require to achieve the capital expenditure objectives | The cost-benefit analysis of the recurrent expenditure being proposed balanced with the risks of not investing, demonstrates a strong reasoning for progressing with the recommended Option. Costs were estimated using historical project delivery costs, vendor provided estimates for support and maintenance costs, and knowledge of recent market procurement for equivalent services and products (as per the recent implementation). |
| 6.5.7 (c) (1) (iii) | |

| NER capital expenditure objectives | Rationale |
|---|-----------|
| a realistic expectation of the demand forecast and cost inputs required to achieve the capital expenditure objectives | |

Appendix 2: Change Impacts

Table 16 System Change Impacts

| ID | System | Impact | Rating |
|-----|--|---|--------|
| 001 | Zetron System | This will be upgraded or replaced based on the assessment of the available solutions prior to FY29 | High |
| 002 | Downstream systems: <ul style="list-style-type: none"> In Vehicle Asset Monitoring System (IVAMS) (NetStar) Roster and Status Paging System (RPSP) (in-house developed application) Wall boards | As new integrations, modern technology and devices are introduced the implementation and scaling of these will need to be staged to minimise business disruptions while enabling sufficient training time | Medium |

Table 17 People & Process Change Impacts

| ID | Unit / Team | Impact | Rating |
|-----|----------------------------|--|--------|
| 003 | Control System Operators | All control system operators will require training on the system | Medium |
| 004 | OT Systems Team | OT systems team will be required to assist with delivery of upgrades | High |
| 005 | OT Telco and digital Teams | OT Telco and Digital Team will be required to assist with delivery of upgrades | Medium |

Table 18 Technology Change Impacts

| ID | Technology change | Impact | Rating |
|-----|---|---|--------|
| 006 | Operating Systems such as Windows servers, Linux (CentOS) | As the replacement of these assets occur this will require appropriate decommissioning of the legacy assets being replaced | Medium |
| 007 | Infrastructure assets to be replaced: Dell servers approx. 50 (3 data centres, 7 control rooms) 130 consoles (includes vendor hardware) | As the replacement of these assets occur this will require appropriate decommissioning and disposal of the legacy assets being replaced. Given the complexity of the refresh, outages and disruptions to business services will need to be closely coordinated to minimise business impacts | High |

Appendix 3: Strategic Alignment

Alignment to Energy Queensland’s Strategic Framework

This investment aligns with the following Energy Queensland ‘Enable’ building blocks:

Table 19 Alignment to ‘Enable’ Building Blocks

| ‘Enable’ Building Blocks | How this investment contributes | Impact |
|---|---|--------|
| 1. Safety The safety of our people, customers and communities is our first priority | This investment provides a reliable and efficient communications platform for use by network operations and field services for safely controlling the network and restoring power for the community. It also enables Ergon to collaboratively provide a safe restoration of services in conjunction with QPS and Emergency Services during major weather events | High |
| 2. Keep the lights on We will design, build and maintain a safe and reliable electricity network | This investment will maintain a safe and reliable electricity network by enabling faster fault response, facilitating maintenance and repair work, improving coordination, and enhancing communication with customers | High |
| 3. Financial sustainability We will ensure funds spent are done so prudently and we will grow our revenue streams | This investment will assist Ergon to be financially sustainable by improving operational efficiency, enhancing situational awareness, improving customer service, and ensuring regulatory compliance. This can help Ergon to respond more quickly and effectively to emergencies, reducing downtime and minimising financial losses | Medium |
| 4. People & Culture Continue to build a capable & productive workforce to ensure we deliver EQL’s electric life ambition. | This investment can assist Ergon to continue building a capable and productive workforce by enhancing the employee experience, ensuring a modern and efficient communications platform | low |

Alignment to Digital Application Asset Management Guidelines (If Applicable)

This investment aligns to the following Digital Application Asset Management Guidelines:

Table 20 Alignment to Digital Application Asset Management Guidelines

| Guideline | How this investment contributes | Impact |
|--|--|---|
| Complex Solution - Replacement / Decommissioning | “... will be evaluated based on business value, business fit, risk, technology fitness and cost to determine appropriate replacement and decommissioning timeframes” | The proposed investment looks to replace or renew the Zetron system and supporting operating systems (Windows 2018 and CentOS 7.9), so that both remain vendor supported and secure. This will help mitigate risk of failure/outage associated with vulnerabilities being exploited due to patches no longer being available. |

| | | |
|---|--|--|
| <p>Infrastructure and consumable assets - Replacement / Decommissioning</p> | <p>“... will be evaluated based on business value, business fit, risk, technology fitness and cost to determine appropriate replacement and decommissioning timeframes.”</p> | <p>The proposed investment looks to replace and decommission the underlying technology stack that supports Zetron so that it is no longer beyond its useful asset life. This includes Dell Generation 14 Servers and SQL Server 2016. This will help mitigate risk of failure associated with aging OT infrastructure.</p> |
| <p>ALL - Procurement</p> | <p>“Digital assets must be requested and procured in compliance with Energy Queensland’s sustainable procurement policy, procurement business rules and tools (e.g. IT Service Request Form). Strategic Procurement, Digital Platform Managers, Portfolio and Investment and Enterprise Architects work together to utilise existing inventory where appropriate, purchase technology on appropriate terms and conditions, establish the best pricing models and ensure adequate budget is made available to procure, implement, maintain, and retire digital assets. Asset life-cycle costs and timeframes should be considered at procurement (e.g. technical obsolescence, upgrade costs).”</p> | <p>The proposed investment will procure new servers and new solutions in line with Energy Queensland’s Digital Asset Management Guidelines.</p> |

Regulatory and Compliance Obligations

The proposed investment addresses the following regulatory and compliance obligations.

Table 21 Alignment to Regulatory/Compliance Obligations

| Regulatory/ Compliance Obligation | How this investment contributes to compliance | Implication | Residual Risk Level |
|--|--|--|------------------------|
| Security of Critical Infrastructure Act | Zetron is classified as critical infrastructure under SOCI ACT | Aged legacy OT assets are at risk of no longer being able to be patched or secured. Increased risk & frequency of failure/quality of service. | High |
| Privacy Act 1988, Information Privacy Act 2014 | As specified in the Privacy Act 1988, Ergon is required to maintain strong controls and security on the accessibility of employee and customer data as well as ensuring appropriate availability of data. | Keeping Ergon's critical systems up to date, supported and secured is a key enabler of maintaining these controls. | Medium |
| National Electricity Law (NEL) and National Electricity Rules (NER) | The NEL requires Energy Queensland to promote efficient investment in, and efficient operation and use of electricity services for the long-term interests of consumers of electricity with respect to price, quality, safety, reliability, and security of supply of electricity as per the National Electricity Objective. | The operating and capital expenditure objectives set out in the NER require Ergon to maintain both the quality, reliability, and security of supply of standard control services and the reliability and security of the distribution network. | Medium |
| The Australian Energy Cyber Security Framework (AESCEF) | Ergon must ensure their OT infrastructure is up to date, support and secured to meet the AESCSF maturity targets | There is potential that this will become a licensing requirement in the future and therefore the assets must be maintained to enable licenses to be up to date. | Medium |

Appendix 5: Glossary

| Term | Definition |
|--------|---|
| AESCEF | The Australian Energy Sector Cyber Security Framework |
| BAU | Business as usual |
| Capex | Capital Expenditure |
| DER | Distributed Energy Resources |
| EQL | Energy Queensland Limited |
| IVAMS | In Vehicle Asset Monitoring System |
| NEL | National Electricity Law |
| NER | National Electricity Rules |
| Opex | Operational Expenditure |
| OT | Operational Technology |
| OTE | Operational Technology Environment |
| QES | Queensland Emergency Services |
| QEJP | Queensland Energy and Jobs Plan |
| QPS | Queensland Police Service |
| RSPS | Roster and Status Paging System |
| SOCI | Security of Critical Infrastructure |
| UI | User Interface |
| VCR | Value of Customer Reliability |