

PART B: AURIZON NETWORK CAPITAL EXPENDITURE CLAIM 2020-21

Advanced Planning and Scheduling (APS) system

Queensland Competition Authority

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QUEENSLAND COMPETITION AUTHORITY

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Report prepared by

		Marcus Xavier
Authors	Author Name	Bruce Murnane

Approver	Approver Name	Clara Owen MIEAust RPEQ

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EXECUTIVE SUMMARY

Background

The Queensland Competition Authority (QCA) is an independent statutory body responsible for implementing competition policy in Queensland. As part of this role, it regulates third-party access to below-rail infrastructure operated by Aurizon Network.

Aurizon Network is a wholly owned subsidiary of Aurizon Holdings Limited. Aurizon Network's below rail infrastructure comprises a 2,670-kilometre multi-user track network comprising four major coal systems and one connecting system servicing Queensland's Bowen Basin coal region: Newlands, Goonyella, Blackwater, and Moura with Goonyella Abbot Point Expansion - the connecting system link. Collectively this is known as the Central Queensland Coal Network (CQCN).

Objective

The QCA appointed Arcadis to assess the prudence and efficiency of the works and expenditure undertaken in relation to the design, development, and implementation of the Advanced Planning and Scheduling (APS) system and associated enhancements to Aurizon Network's reporting capability. The assessment determines the prudence of scope, standard, and cost, as per the terms outlined in Schedule E clause 2 of the Aurizon Network 2017 Undertaking (UT5).

Total capital expenditure submission

The total claimed for the APS system, outlined in Part B of Aurizon Network's 2020-21 capital expenditure claim, totals \$60.0 million and forms 19% of the total 2020-21 claim.

Assessment Summary

Overall, Arcadis assesses the final scope and standard as prudent taking into account the following:

- It is considered that the delivered scope of the works will support the demands for capacity increases and operational supply efficiencies required for efficient proposed future operations of the CQCN Network. However, Arcadis caveats that the business benefits outlined to be delivered from the project will not be determined or fully confirmed till July 2022; hence it is not possible to currently confirm whether the full set of KPI's and benefits outlined in the original business case will be delivered.

Notwithstanding this, it is assessed, that in principle, the concept and requirement for an automated and data-driven planning and scheduling system is prudent. Considering the supply chain complexity of the CQCN, it is not considered prudent to rely upon "*discrete systems, excel spreadsheets, knowledge held by individuals and manual processes*"¹.

- From the information provided, it is considered that the final delivered standard of the works is adequate to deliver a "modern, integrated planning and scheduling platform" which will replace Aurizon Network's legacy planning and manual scheduling systems processes.

However, as noted in our report, from the documentation provided, the assessment team identified several concerns in the approach to deliver the scope and standard, which in principle did not impact the final scope and standard of the completed works. They are likely however to have had a significant impact on the scheduled delivery of the scope, the quality of work delivered in the interim stages, and on the final project budget. These in turn would have potentially impacted the costs incurred to AN in delivering the APS.

These concerns have been outlined in our report and the cost impact detailed within our cost assessment. In summary, these include:

¹ Aurizon submission FY21 capital claim final – consolidated – Sep 21

- Poor vendor selection for core product and lead system integrator/prime contractor.
- Lack of provision of delivery models, road maps, and clear transparency for Aurizon Network in terms of effort and time allocation for specific requirements during delivery.
- Perceived poor quality in deliverables, requiring rework and/or prolonged maintenance periods and multiple version implementation.
- Poor application and integration of risk assessment and lessons learned into decision making, especially during change variation and RFP to replace SolveIT.
- Poor change and project management/governance, which resulted in the transfer of deliverables project management to Aurizon Network and de-coupling of the vendor parties in 2018.

However, the assessment team notes the actions that were implemented by Aurizon Network to minimise the impact on performance requirements and operational efficiencies to be gained from the APS for access holders and end users. Hence, with the exclusion of the identified amounts listed in section 3 and summarised in the table below, Arcadis considers that in the given circumstances (Technology is not Aurizon Network core business and hence they relied on the advice and guidance provided by others) and considering that Aurizon Network ran a reasonable procurement process to secure a capable and competitive tenderer, Arcadis assesses the overall cost as prudent.

Claim Element	Brief description	Assessed as prudent			Impact on CAPEX Claim
		Scope	Standard	Cost	
GE Extension of Time (EOT) █████	Documented issues of Principal Contractor and Approved subcontractors' inability to deliver the product on time. It is expected that the Principal Contractor has committed to a fixed price delivery by an agreed date. █████ █████				█████
Norfolk Southern consulting	Previously included				-\$73,008
Software Maintenance & Support	Potentially OPEX, not CAPEX claim				-\$457,269
Contingency	<u>Vendor scope contingency.</u> Figure within Work Breakdown Structure (WBS) final cost for UT5 requirements varies compared to confirmed UT5 cost within final report.				-\$3,128,384
Expenditure Claim		\$53,300,000 (exclusive of IDC)			
Proposed total reduction		█████			
Recommended Expenditure Claim (exclusive of IDC and associated adjustments)		████████████████████			

1 INTRODUCTION

1.1 Background

The QCA is an independent statutory body responsible for implementing competition policy and regulating infrastructure owned by state and private entities that require third-party access. As such, the QCA is responsible for the regulation of third-party access to below-rail infrastructure operated by Aurizon Network Pty Ltd (Aurizon Network).

Aurizon Network is a wholly owned subsidiary of Aurizon Holdings Limited. Aurizon Network's below rail infrastructure comprises a 2,670-kilometre multi-user track network comprising four major coal systems and one connecting system servicing Queensland's Bowen Basin coal region: Newlands, Goonyella, Blackwater, and Moura with Goonyella Abbot Point Expansion - the connecting system link. Collectively this is known as the Central Queensland Coal Network (CQCN). A map of the whole of Aurizon Network's rail network is provided in Figure 1.

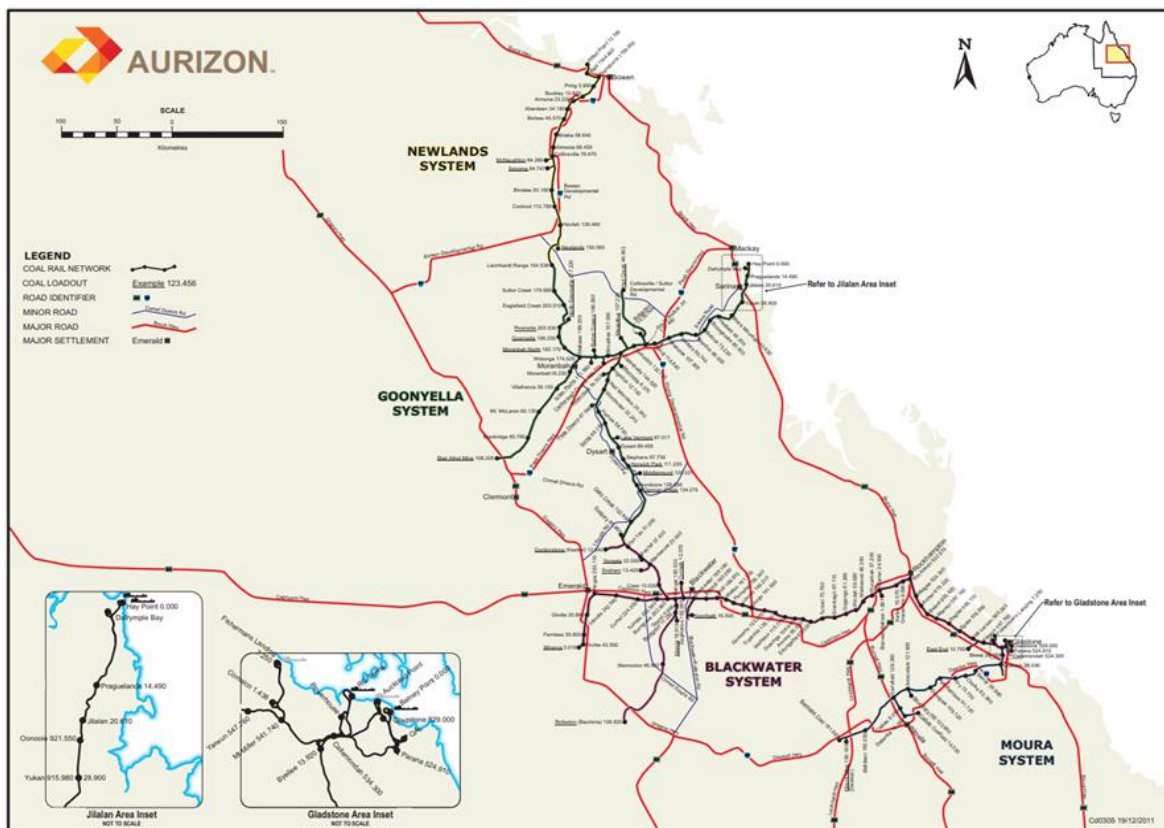


Figure 1 Aurizon Rail Network Map

1.2 Objective

The Queensland Competition Authority (QCA) has approved a Regulatory Asset Base (RAB) for the Central Queensland Coal Network. To ensure that current and future tariffs are charged fairly and for works deemed necessary, infrastructure work expenditure is subject to regulation from the Queensland Competition Authority Act 1997 (QCA Act) and the Queensland Competition Authority Regulation 2007 (QCA Regulation). Under the regulatory process, works must be submitted as a capital expenditure claim to the QCA, subject to the QCA approval process before inclusion in the RAB. An access undertaking, approved by the QCA and developed in accordance with the QCA Act, provides a framework for the provision of access to Aurizon Network's rail network. The current undertaking agreement is the fifth version of this undertaking, *Aurizon Network 2017 Access Undertaking (UT5)*, approved by the QCA – February 2019. The FY21 Capex Claim is the first to be

submitted under the collaborative provisions of the QCA approved Draft Amending Access Undertaking (DAAU) to the 2017 UT5.

Aurizon Network has submitted its 2020-21 (FY21) capital expenditure claim and is seeking QCA's approval. The FY21 Capex Claim is comprised of three parts. Part B, which is \$60 million including IDC (19% of the total claim), makes up the works and expenditure to deliver the Advanced Planning and Scheduling (APS) system.

QCA has engaged Arcadis to perform a prudence and efficiency assessment of Part B of the FY21 claim regarding scope, standard, and cost of the works. The acceptability of this claim will predominantly be based on Schedule E of UT5; specifically, this requires a test of prudence and efficiency of scope, cost, and standard as outlined in Clause 2.2 (a) Schedule E. The APS is considered a highly technical, integrated planning and scheduling system that replaced Aurizon Network's legacy planning and scheduling system and manual processes. The implementation works include project management, change management and training, software development and testing, interfacing with existing systems, and decommissioning the legacy system.

2 APS SYSTEM OVERVIEW

2.1 General

The APS system is a technology solution that has replaced Aurizon Network's legacy planning and scheduling systems and manual processes with a "modern, integrated planning and scheduling platform".

The APS was delivered as part of "Project Pluto". Project Pluto was a multi-faceted information and communications (ICT) project to fully replace the organisation's legacy planning and scheduling systems and processes.

Project Pluto was initiated in October 2012, and in addition to the APS, it delivered the Movement Planner system and improved reporting solution.

QCA approved the expenditure for the Movement Planner as part of the 2016-17 and 2017-18 capital expenditure claim. It is noted that references to Movement Planner within this submission are provided for completeness only. Arcadis acknowledges that Aurizon Network is not seeking QCA approval of costs relating to Movement Planner within this FY21 Capex Claim submission.

2.2 System and Operations

Aurizon Network has stated that the growth in coal volumes and train services, combined with increases in the number of port and mine combinations and train operators, created a more complex logistics environment, where its legacy systems could no longer efficiently operate, therefore creating inefficiencies within the supply chain. In addition, more efficient planning methods were required to cater to increasing maintenance and renewal activities, which were needed to support increased coal volumes.

The APS system was implemented to replace manual processes, such as drawing train schedules with pencil and paper, reliance on multiple discrete excel spreadsheets, and providing a central knowledge base instead of knowledge being held by numerous individuals scattered throughout the organisation.

2.3 Operational Benefits

Aurizon Network has stated that without the capability to manage supply chain data efficiently, it would not be able to manage the expected complexities arising from volume increases, changes in the regulatory environment, growing demands from customer and infrastructure interfaces, and efficiently undertake asset renewal and maintenance work while maintaining useable capacity.

Legacy systems were considered inefficient and did not have the flexibility and capacity to support the growing complex requirements of the supply chain. Without the functionality to manage and analyse large volumes of complex Supply Chain information, Aurizon Network claimed they would not fulfill their contractual obligations to Customers².

Project benefits included:

- Facilitating changes to asset conditions, last-minute scheduling changes (due to unforeseen circumstances such as weather warnings), and network constraints (e.g., speed restrictions) to be dynamically reflected in future train schedules. This enables improved, early visibility of impacts and opportunities to reduce disruptions in the Day of Operations, allowing greater planning accuracy and flexibility
- Provision of analytical capability to identify constraints and opportunities which may impact useable capacity, pathing distribution, or maintenance windows
- Improved accuracy in scheduling which provides the foundation to:
 - improve operations on Day of Operations (minimise cancellations through uptake of the windows of opportunity with maintenance or other activities)
 - increase cycle velocity with reduced cross-system delays and dwells
 - improved timings decreasing late arrivals at key locations, thereby improving customer satisfaction and reliability of services.

2.4 Project Functionality

Project Pluto replaced and upgraded the planning, scheduling, and operational decision support capabilities of Aurizon Network for the CQCN. The objective was to optimise planning and scheduling of paths through multiple systems and mitigate the risk of not planning and scheduling the contracted and anticipated capacity uplift.

Project Pluto had two key components:

1. Movement Planner; and
2. An APS.

Movement Planner was implemented in 2016 and was focused on developing a real-time electronic train graph for a day of operations and automated conflict detection.

The APS system provided the functionality to enable efficient scheduling and planning from the day of operations to long-term planning, that is, 28 days to 2 years.

The following table summarises the functionality provided across each APS release and the release date.

Table 1 Summary of functionality in each APS release. Source: Aurizon submission FY21 capital claim final

Release	Functionality
Release 1, December 2018	Asset activities Realisable capacity New PowerBI reports including CQCN asset activities
Release 2, July 2019	Scheduling and pathing of trains APS timetables – QR, Maintenance Traffic and pathing Electronic Train Graph (ETG) and Node Group Activity Form (scheduling) Access Agreements and Contracts User Interface Enhancements

² Part B FY21 Capital Expenditure Claim/Aurizon Network

Release	Functionality
	New and enhanced PowerBI reports, including CQCN Mines/Ports schedules and CQCN Schedules
Release 3, February 2020	<ul style="list-style-type: none"> Automatic application of temporary speed restrictions (TSRs) Conflict detection/speed restriction calculations New security settings Identification of potential scheduling constraints ahead of the Day of Operations and validation of section run times (SRT), excluding work trains Realisable capacity (Stage 2 of 3) ETG Enhancements Power BI Reporting enhancements
Release 4, July 2020	<ul style="list-style-type: none"> New train execution line – visual display in the ETG of each day's Agreed Daily Train Plan along with a second representation of the Actual Running Plan (ARP) based on near real-time updates Weekly Journey Order Import (JOI) file and Intermediate Train Planning (ITP) process changes (including replacement of the Network Operations Path Planner³) Validity periods for SRT sets (work trains) Functionality to consider branch lines in addition to main lines Crossing time included Schedule to the path (enhanced functionality) Realisable capacity (including branch lines) (Stage 3 of 3) PowerBI reporting enhancements (e.g., Load Point Awareness report)

2.5 Timeline and Budget

Project Pluto was initially proposed to be a 36-month project plus two years of support. Both Movement Planner and APS were approved to be delivered for \$32.3m, excluding the Wiggins Island Rail Project (WIRP) costs. Costs associated with Movement Planner were subject to Queensland Competition Authority (QCA) prudency assessment in FY16 and FY17 and subsequently approved by the QCA for inclusion in Aurizon Network's RAB.

Figure 2 summarises the Project Pluto implementation timeline.

³ The Network Operations Path Planner (NOPP) was a custom-built application that contained some planning information but no business logic or capability to dynamically consider 'real-time' constraints.

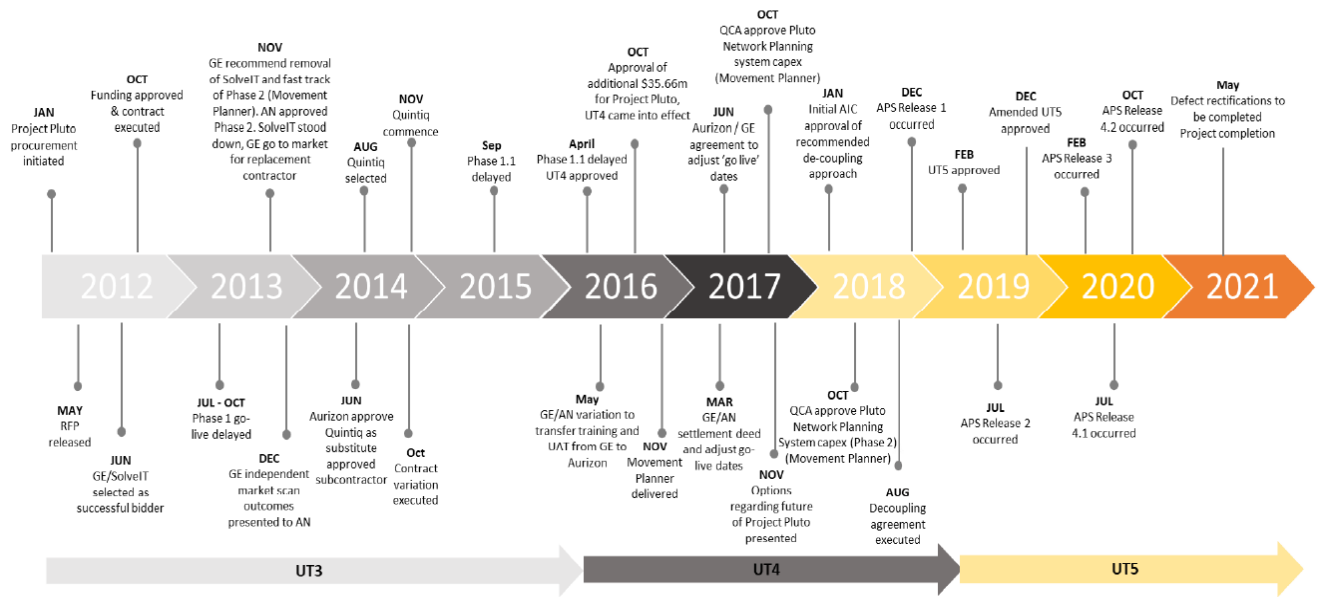


Figure 2 Summary of the timeline⁴.

Key events within the timeline include:

- January 2012 – Project Pluto initiated as a 3-year implementation project plus two years of support
- November 2013 sub-contractor Solve IT stood down due to lack of requirement capability
- November 2014 substituted sub-contractor Quintiq commenced
- October 2016 Approval of additional \$35.66 million funding
- August 2018 “de-coupling” of principal and sub-contractor, with sub-contractor Quintiq becoming Principal Contractor for delivery of APS
- May 2021 project completion

The following table summarises the budget approvals for the project.

Table 2 Approved budget summary

Date	Value approved	Comment
02.02.2012	\$ 555,000	Concept and Prefeasibility
22.11.2012	\$ 31,745,000	Feasibility and product implementation included a \$21.848 million fixed-price contract for vendor implementation services and licenses
10.11.2016	\$ 35,666,000	Funding increase to complete the project, inclusive of \$7.6 million contingency
05.2018	\$ 6,600,000	Funding increase for scope changes related to business changes and system enhancements required for UT5
	\$ 74,560,000	Total budget approved

⁴ Source: Project Pluto APS solution procurement and governance independent assessment EY Report May 2021

3 PRUDENCY ASSESSMENT METHODOLOGY

3.1 Overall methodology

Arcadis has implemented a five-stage process to assess Part B, Aurizon Network FY21 expenditure claim. Figure 3 identifies the key milestones with brief descriptions below.

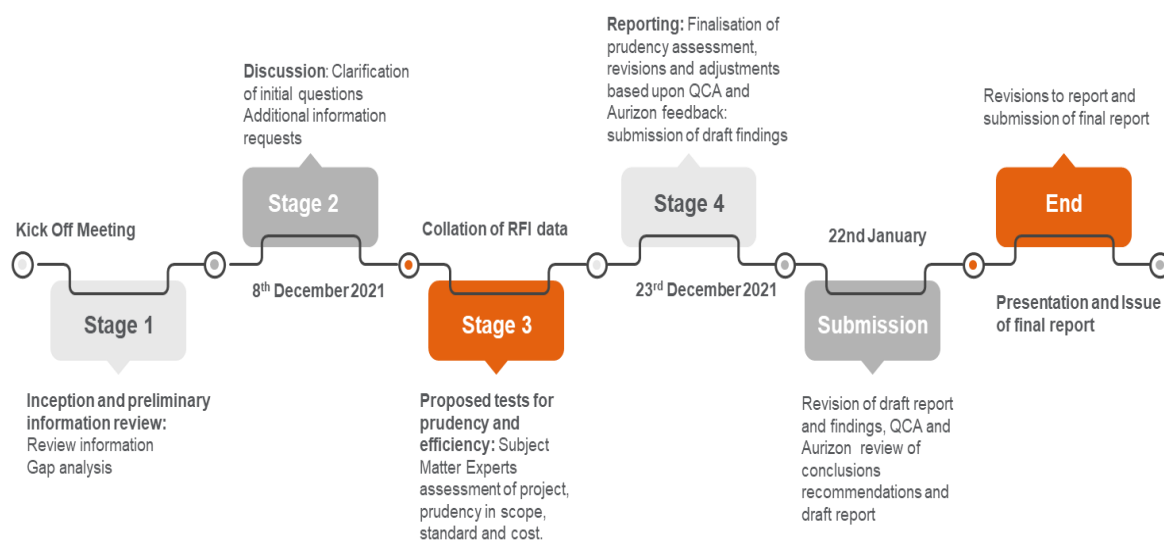


Figure 3 Summary of the process for prudency and efficiency assessment

3.1.1 Stage 1 – Preparation and Preliminary Assessment

Proceeding commission confirmation, the Arcadis team conducted an internal kick-off meeting to formalise the handover of information/resources required to perform the assessment. During this meeting, the following were confirmed:

- Confirmation of the Request for Information (RFI) process and agreement by all parties
- Communication channels were formalised and agreed
- QCA provided available information on the project and the Aurizon claim

The information provided included:

- 20211011 - Project Pluto – Capex_IDC_Adjustments_QCA_FINAL
- 20211018 - Pluto Project Completion Report - Appendix B Requirements Traceability
- 20211018 - Pluto Project Completion Report Final
- Aurizon - FY21 Capex claim - part b - appendix a -EY report

Arcadis undertook a preliminary assessment of the information provided and identified some information 'gaps and inconsistencies' for which the assessment team sought clarification.

In the interests of efficiency in the assessment process, rather than going backward and forwards with a long list of RFI's, the Arcadis team requested an online meeting with key Aurizon Network staff to clarify and provide greater detail on some of the gaps and inconsistencies identified in the initial information.

3.1.2 Stage 2 – Meeting and Discussion

An online discussion was organised between the Arcadis assessment team and the key people within Aurizon Network involved in the project on 8 December 2021. Before the meeting, some high-level questions and topics for discussion were submitted by Arcadis. These covered three key areas, which were:

- Procurement process, original tender scope, and evaluation process
- Variations, specifically the additional scope totalling \$35.66 million added in 2016
- Governance and project management

From this meeting, several key data requests and targeted questions were developed and submitted to Aurizon Network for consideration on 8 December 2021. The details of these questions are provided in Appendix A; however, in summary, key issues and information requests included:

- Cost breakdown for all major work items, termination fees, contracting fees, and other charges not shown in the information provided
- Further information on requirements and breakdown of activities

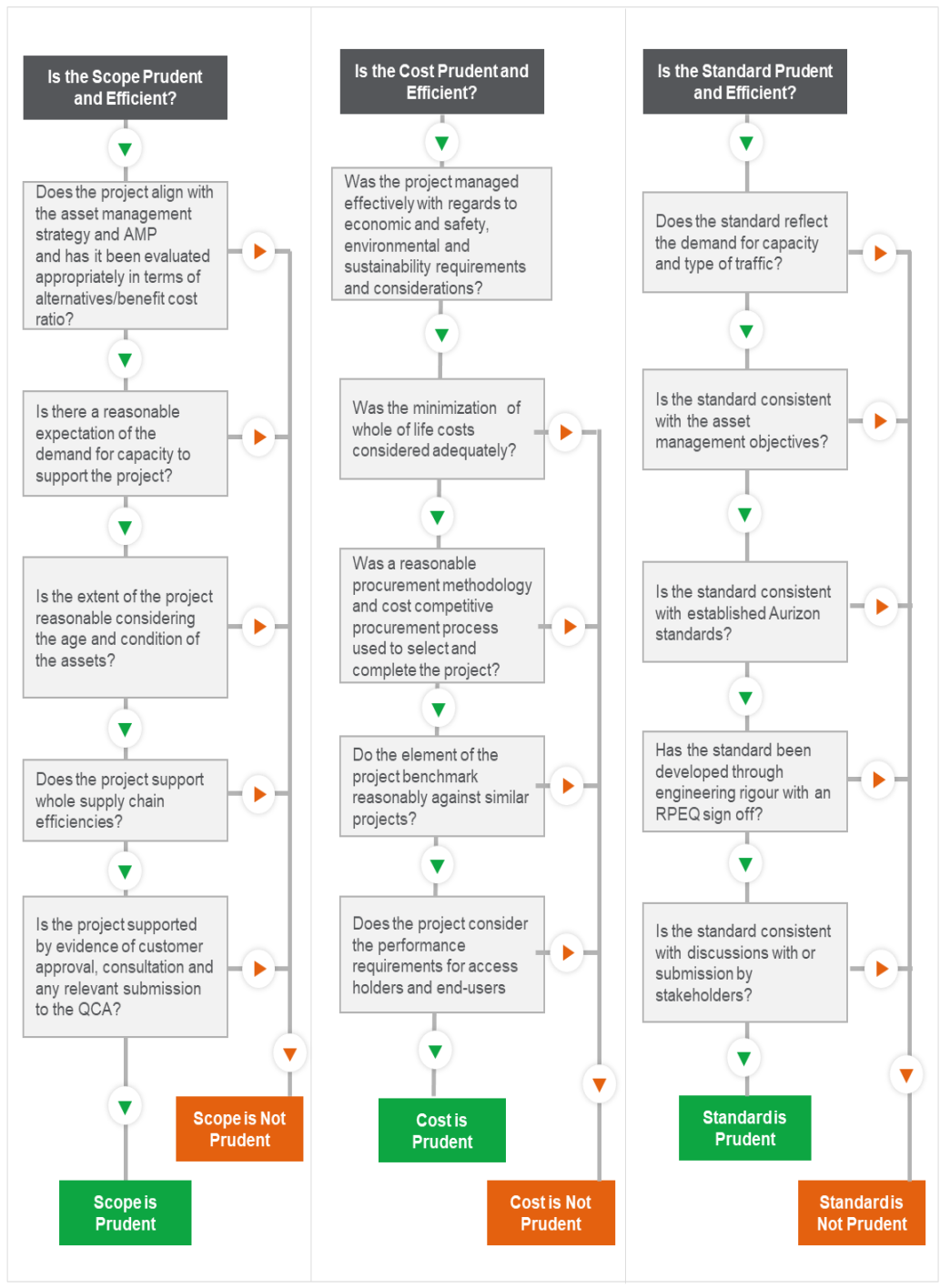
In response, additional data was provided by Aurizon Network promptly and efficiently, with responses to the clarifications being received by 17 December 2021. Arcadis would like to thank Aurizon for their co-operation in this matter. Further documentation provided included:

- Copy of 20211216 - Project Pluto - WBS Element Report_QCA
- 20211216 - APS Capex Claim - AN Response to RFI 8 December 2021 - Cost Questions
- D16 137911 A03980 Project Pluto - Funding Increase
- Project Pluto - Request for Proposal - Final v1 0
- Release Plan - Release 1 V2.0 14.06.18 - signed (002)
- Release Plan - Release 2 V1.0 22.10.18 countersigned
- Release Plan - Release 3 V 1.0 FINAL Countersigned Release Plan - Release 4 V2.0 - 21.11.19 countersigned
- 20211210 - APS Capex Claim - AN Response to RFI 8 December 2021
- Release Plan - Release 1 V2.0 countersigned page
- Requirement Response Template - Final v1 0

3.1.3 Stage 3 – Analysis

During this stage, Arcadis performed a desktop assessment of prudence and efficiency based upon the discussion findings and additional information provided by Aurizon Network. Arcadis used a framework template developed in alignment with the requirements of UT5 Schedule E and approved by the QCA. The key criterion used to create the framework is summarised in the flow chart depicted in Figure 4.

Key: Yes No



Adapted from QCA Aurizon Central Queensland Coal Network Capital Expenditure Review FY 19

Figure 4 Overview of key criteria considered.

3.1.4 Stage 4 and 5 – Reporting and Finalisation

Upon completing the prudence and efficiency assessment, Arcadis compiled and submitted this draft report to the QCA and Aurizon Network for review.

Arcadis will revise the draft and submit the final report upon receiving any revisions.

3.2 Extent of Review

Aurizon Network advised QCA it would be seeking approval of \$60 million of expenditure for FY21 Capital Expenditure Claim Part B: Advanced Planning and Scheduling (APS).

The APS capital Expenditure is made of the following (Table 3)

Table 3 Summary of Aurizon Network FY21 Part B capital expenditure claim Project Pluto

Element	Total Expenditure Claimed
Capital Expenditure	\$53.3 million
IDC	\$11.4 million
Less adjustments	\$ 4.7 million
Total expenditure claim	\$ 60.0 million

The assessment of these elements was conducted with respect to the Terms of Reference⁵ as set by the QCA and the terms and criteria outlined in Schedule E (schedule E, clause 2) of UT5 and summarised in the methodology outlined in Section 3.1.

The following section outlines the findings from the Arcadis assessment in detail.

4 PRUDENCY ASSESSMENT: SCOPE

4.1 Overview

Pluto, inclusive of the APS solution, was a transformational project delivering an integrated planning, scheduling, and day of operations solution for the CQCN and potentially the foundation for auto-routing and autonomous operations.

The project was scoped in 2012, where Aurizon Network tested the market through a Request for Information (RFI), resulting in selecting GE and SolveIT as the preferred suppliers to provide an “end to end” planning scheduling and Day of Operations solution. The contract included the delivery of project management, training and change management services, and the implementation of the product solution.

The final agreed scope is summarised in the table below from the information provided.

Table 4 Overview of APS project scope

Inclusions
Quintiq APS (Planning and Scheduling Rail Module) in 4 releases
Reporting and analytics in 4 releases accessible via a web portal
Change management and training to implement the above
Integration with Aurizon Network existing systems including: <ul style="list-style-type: none"> • Network Asset Management System (NAMS)/SAP

⁵ Terms of reference – 28/10/21

Inclusions

- ViziRail
- Movement Planner
- SAP HANA

Decommissioning of legacy systems

- Network Operations Path Planner (NOPP)
- Reports in Corporate Data Warehouse (CDW) which source data from APS/MP

4.2 Scope Assessment

The following summarises areas of concern and results of the prudency assessment on the APS scope. Each of the items below, while manageable independently, suggest that the governance and program management of this sizeable IT implementation could have been more rigorous. This potentially resulted in delays to schedule and incurred additional costs. The considered cost impact of the points discussed below, is detailed in Section 6 Cost Assessment.

4.2.1 Product implementation versus bespoke software solution

Given the expected growth in demand on CQCN, the existing systems in place in 2012, and the benefits identified, Aurizon Network had a reasonable expectation that the solution would more *“effectively manage to increase operational complexity resulting from strong demand projections for Queensland coal”*.

However, the approach to market seeking an “off the shelf” solution was not achieved. The assessment team notes the following comment from Aurizon Networks Additional Funds/Change of Scope Approval Request.

“delays in the project are due to sub-contractor failure and solution complexity – effectively turning this from a product implementation to a more bespoke software development project.”

This ‘shift’ from a product implementation to a software development project created additional costs and delays in the delivery of the project. In consideration of this, although scope requirements and ultimate objectives are assessed as prudent in terms of efficient operational requirements, it is noted that achieving these requirements through a bespoke solution would be considered inefficient and is not considered a standard industry practice. The current practice is to implement a product that is commercial off-the-shelf software (COTS) product. Implementing a COTS solution means that configuration only is usually required with limited customisation sought. The only time not to do so is if there are quite specific requirements or where it may be deemed to provide a competitive advantage. In addition to saving costs in development and implementation, the prudency of a COTS versus a bespoke solution flows through to reduced ownership costs over time as enhancements are amortised over several customers rather than funded by one alone.

Through the information provided, it appears that Aurizon Network tested the market through an RFI. Fourteen companies responded to the RFI, which was released only to companies with commercial ‘off the shelf’ capabilities in planning, scheduling, and day of operations in line with Class 1 railways⁶. This initial RFI process, which provided an efficient way to gain market intelligence, appeared to indicate that there were several off the shelf options available in the market that could potentially fulfill Aurizon Networks requirements without the need to develop a bespoke solution.

The assessment team confirms that the initial intent of the request for proposal (RFP) to commission a product implementation solution is considered prudent. However, it is unclear from the information provided what key complexity drivers drove this change to principally, a bespoke software

⁶ Aurizon FY21 capex claim – part b – appendix a

development project, considering that commercial solutions that were assessed were in line with Class 1 railways.

4.2.2 RFP Process

As outlined in the information provided, the RFP process was thorough with a rigorous set of evaluation criteria described. One of the key areas of the evaluation assessed was the fit of the solution to Aurizon Network's business needs. The assessment highlighted that should a better scope of work have been defined in the RFP, a different solution selection, particularly the underlying product, may have been made.

Taking this into account, and after the affirmation that SolveIT, the original vendor team sub-contractor, did not have the capability or resources to deliver the requirements, it is reasonable to expect that these learnings should have significantly impacted the RFP process to replace SolveIT.

This conclusion was also reflected in the EY report "Project Pluto APS solution procurement and independent governance assessment, May 2021 which comments that

*"Changing software vendors mid-project is not common. As such, lessons learned from the SolveIT selection and delivery shortcomings should have been applied to selecting the replacement vendor. Given the work already performed by GE and SolveIT and the decision to replace SolveIT with a new GE subcontractor, the RFP documentation could have been more detailed to build on learnings from prior work."*⁷

Arcadis has not sighted a risk assessment, or lessons learned review with associated documented evidence on how that was applied as part of the change variation RFP evaluation. In consideration of the events leading up to the change variation, and for an IT project of significant complexity requirements, robust implementation of a risk assessment in the evaluation process would have been prudent.

From the information provided, it is noted that Aurizon Network spent a year confirming the requirements for the solution prior to a change of sub-contractor. Nevertheless, GE used the original requirements to select Quintiq from the field of five responses. It was not clear from the information provided, but it is considered that this may have impacted the schedule once Quintiq was commissioned. The cost impact is considered in section 6 of this report.

4.2.3 Requirements and Functionality

The assessment team requested additional information that would provide a detailed breakdown of the scope provided, i.e., an up-to-date requirements traceability matrix (RTM) and blueprints produced from SolveIT and Quintiq, which would give greater detail on requirements delivered. However, Aurizon Network responded that it was considered that 'blueprints' contained the detailed design and formulas associated with the APS software. Hence, this information is deemed to be the Intellectual Property of the software developer and not available for assessment.

Aurizon Network stated that as part of the development of the APS, a set of requirements was outlined in the RFP documentation, which was then worked through with each vendor to determine the functionality that would best meet these requirements. Aurizon Network confirmed that the outcomes of this blueprinting process with the vendors were reflected in the RTM.

However, Arcadis notes that the documentation did not detail the effort required or deliverable timeframes for individual requirements. As requirements can significantly differ in terms of effort, time, and cost to develop, the lack of this information creates difficulty in benchmarking costs and estimating time to complete an activity. When questioned, Aurizon Network stated that this information formed part of Vendor IP, and as such, Aurizon Network had no visibility. This would have made it very difficult for Aurizon to validate the additional funding required as it would not have been possible to validate the remaining tasks against effort and costs. Arcadis considers that at minimum for the Time and

⁷ Independent review of procurement and project governance for the APS project, Ernst & Young, 14 December 2020

Material engagement with Quintiq, following the contract termination and decoupling with GE, an agile development plan should have been provided to justify spending and as a demonstration of prudence. From discussions with Aurizon Network, it appears this was not provided during the process.

Aurizon also confirmed that changes in supplier, such as the change from SolvelT to Quintiq, didn't change the underlying business requirements reflected in the RTM. It is also noted that the RTM outlined the new requirements associated with the change in the UT5 Access Undertaking.

Arcadis has reviewed the RTM provided and acknowledges that generally, the requirements as expressed in the 2012 Request for Proposal appear to, at a high level, adequately describe the requirements that are reflected in the RTM. However, it is noted that a delivery model (inclusive of an implementation roadmap that states how the product will be delivered) was not provided; hence it is difficult to confirm whether the supplier did understand the requirements. Developing a delivery model is an industry expected norm for any software implementation project.

4.2.4 Additional scope

The additional scope was stated to have been required in 2018 due to the changes brought about by the introduction of UT5 and the related business changes imposed upon Aurizon Network.

This additional scope was budgeted at \$6,600, with an actual spend of \$4,937. Such changes also related to business process efficiency and system useability, identified while using the APS system, post the v1.1 Release in 2017⁸.

However, it is noted throughout the documentation that cost increases were driven more by time extensions rather than significant scope changes, where only the *"subsequent smaller delays were primarily due to changes in the regulatory environment."* and *"that from early on, the project was impacted by delivery delays relating to contractor performance and capability"*⁹.

The assessment team notes that it is stated throughout the information provided that original timelines had to be extended due to the *"complexity and bespoke nature of the project"*. Much of this is evidently due to the initial vendor not having the capability to deliver the requirements, with performance gaps being identified after the detailed design requirements were completed. The subsequent removal of the original vendor SolvelT from the project impacted project timeline delays.

The assessment team notes from the documentation provided that there does not appear to be significant changes in scope to warrant the additional \$36.55 million. Instead, the more substantial portion of delays and costs were driven by the vendor's incapability to deliver, with only smaller delays due to changes in the regulatory environment and associated business process changes required.

4.2.5 Delivery of scope

The assessment team notes that there was a significant delay from the standing down of SolvelT in November 2013 until Quintiq commenced work in November 2014. From the information provided, it is difficult to ascertain the reason for this. However, we acknowledge the following comment from the EY report and consider that this should have been accepted under the circumstances.

Considering the SolvelT performance, a risk assessment as part of the change evaluation process would have been a prudent approach to document lessons learned and ensure mitigation measures were being implemented for the variation.

⁸ Appendix B Requirements Traceability Matrix

⁹ Project Pluto APS solution procurement and governance independent assessment, Final Report May 2021, Ernst & Young (EY)

The evaluation plan and process for evaluating the RFP was documented and included the involvement of both GE and AN in each step of the process. It appears adequate for an IT project of this size and nature at the date of scoring, except that it does not explicitly present a risk assessment matrix as part of the evaluation process¹⁰.

In addition, it is noted in Aurizon Network's "Additional Funds/Change of Scope Approval Request" document that five delivery options to complete the project were evaluated. These included:

- Option 1 – **Full Concurrent** (additional funding of \$33.700m, delivered November 2018)
- Option 2 – **Full Sequential** (additional funding of \$35.660m, delivered November 2019)
- Option 3 – **Optimised planning and scheduling only** (additional funding of \$22.338m (\$18.406m with Phase 3 rebate), delivered August 2018)
- Option 4 – **Optimised planning and scheduling with enhanced Phase 2 and full reporting** (additional funding of \$26.620m (\$22.687m with Phase 3 rebate), delivered December 2018)
- Option 5 – **Foundation functionality only** (additional funding of \$14.318m (\$9.686m with Phase 1.2 and 3 rebates) deliver June 2017)

With Option 2 being the preferred, most expensive, more extended development period and final implemented option. The assessment notes that none of the options evaluated included the option of re-tendering for the principal contractor. All options had continuation with GE, despite several concerns being documented. Notwithstanding, it is noted that in 2018 the roles of project management and change management were transferred to Aurizon Network, and in August 2018, GE and Quintiq were decoupled, with GE responsible for completing the Movement Planner and Quintiq accountable for fulfilling APS. Concerns documented justifying the decoupling were reflected within Aurizon Networks' earlier documentation. Hence it is reasonable to question why this option was not considered within the Approval Request.

4.2.6 Benefits realisation

Aurizon Network provides information that the delivered solution has already yielded benefits. It is interesting to note that one of the impacts of the delayed implementation is the corresponding delay in benefits realisation. Hence, the interim benefits shown by Aurizon Network are expected to be larger by July 2022. It is noted that delays in project delivery from the original anticipated 2015, potentially may have resulted in the loss of operational efficiencies and business opportunities for CQC users during that period.

Aurizon Network's Project Completion Report states that:

"According to the project justification documentation, these business benefits are expected to be realised in the Aurizon business over two years from the project completion date.

Please refer to Appendix C for the interim measurement of realised business benefits showing progress toward the defined targets (expected to be recognised two years post completion of Project Pluto).

*Please refer to Appendix D, which will be completed after business benefits have been measured two years post completion of Project Pluto, in July 2022."*¹¹

EY commented in their report that:

"Different perspectives also existed in relation to the improvement that the APS system delivered compared to the previous mostly manual processes. For example, the Optimisers would have automated some manual processes. AN advised EY that automation would not in and of itself have improved throughput of coal on the network. Instead, increased throughput was more closely supported by capacity, dynamic scheduling, and train execution line functionality. Interviewees generally agree that Optimisers aside, APS significantly improved productivity relative to business as usual (BAU). This included a general agreement that APS improved the

¹⁰ Independent review of procurement and project governance for the APS project, Ernst & Young, 14 December 2020

¹¹ Project Completion Report, p18

*ability to plan and schedule in the CQCN's complex operational environment, but the need for some manual handling remained.*¹²

Considering that the project was to be completed in 2015-16 with benefits flowing to the users from that date, the assessment team considers it would be reasonable to assume that this loss of functionality over the last 5-6 years has potentially resulted in opportunity loss to the users and subsequent efficiency costs to Aurizon Network which can never be realised.

4.3 Conclusion

The team assessed that the scope required for the works is prudent but noted several concerns in the approach, specifically the governance and project management, which impacted the cost and benefits realisation period. The assessment team acknowledges the complexity in the requirements and potential misinterpretation of this complexity by all parties. However, it is noted that from the information provided, several industry-accepted practices and tools (for example, software delivery model, risk assessment, breakdown of effort, and timeline for RTM) were not utilised. This ultimately affected the efficiencies within the process with an adverse impact on the costs incurred potentially to both parties, such impacts are discussed in Section 6 of this report.

The assessment team concluded that the scope of work may not be fully reflective of the costs incurred, and expenses claimed. The reasoning for this was that it appears that a portion of the cost claim was expenditure due to inefficiencies and delays by the supplier, and not due to the increased scope or changes in requirements, except the business process changes required due to the adoption of UT5. However, in hindsight and with a lack of a requirements traceability matrix and delivery model it is difficult to calculate the exact costs borne due to inefficiencies and the assessment team acknowledges that Aurizon Network implemented several strategies and mitigation measures to attempt to minimise the overall adverse impact.

5 PRUDENCY ASSESSMENT: STANDARD

5.1 Overview

It is noted that the solution will enable Aurizon Network to improve its planning, scheduling, and operational decision support capabilities, which is consistent with Aurizon business objectives. Enhanced scheduling also allows better maintenance planning decisions aligned with Aurizon Network asset management objectives.

It is also noted that Project Pluto was part of Aurizon Network's technical strategy, which forms and outlines Aurizon Networks' roadmap for delivering improved productivity and efficiency in the CQCN. The process was published in 2016 and is consistent with the objectives to support whole supply chain efficiencies.

5.2 Standard Assessment

5.2.1 Business Case KPI Targets and benefits realisation

Aurizon Network has stated that the Capital Value Maximisation analysis performed as part of the business case in August 2012 determined that through operational improvements, Project Pluto could enable a capacity uplift of about "7.1mtpa when unconstrained"¹³.

¹² Aurizon – FY21 capex claim – part b – appendix a -EY report, p30

¹³ Aurizon Network Additional Funds/Change of Scope Approval Request

The assessment team requested measured evidence of these benefits and capacity increases; however, due to the system changes in how the data is collated and processed, it is not possible to obtain 'before and after' comparative figures, as with the changes in reporting methodology there is no longer a base case to demonstrate gained benefits. Due to this, the APS Business Case KPI targets were recalibrated at decoupling. The timeframe for realising the project benefits is expected to be two years post project completion¹⁴. The timeframes for benefits realisation depend on business process application and adaptation by supply chain participants.

5.2.2 Reporting system

The reporting system using data stored in SAP HANA, with PowerBI as the dashboard, is currently normal industry practice. It is pointed out that the reporting system was removed from GE's control at the decoupling and became the responsibility of Aurizon Network. The cost impact of this is discussed in section 6.

Notwithstanding the above, from the information provided, the assessment team note that there appears to have been significant issues with the quality of the solution from the initial stages of the implementation through to the delivery of the solution. Arcadis considers that these quality issues impacted upon the standard of the deliverables with subsequent schedule delays and cost impact. The cost impacts are discussed in section 6; the points noted are listed below:

- Early in 2013, SolveIT was experiencing issues and thus struggled to meet delivery milestones and quality outcomes. At this point, GE worked closely with SolveIT to reverse schedule slippage. However, GE acknowledged in October 2013 that SolveIT was unable to deliver the APS component of the solution (known as APEX {Advanced Planning and Execution}), and SolveIT ceased work on the project.
*"Project kick-off commenced in November 2012. From early 2013, SolveIT struggled to meet its delivery milestones and quality outcomes. Various "Corrective Action Plans" put forward by GE failed to reverse schedule slippage. In October 2013, GE concluded that SolveIT was unable to deliver the APS component of the solution, known as APEX (Advanced Planning and Execution)."*¹⁵
- Ongoing 'go-live' delays were experienced throughout the project for the APS module (SolveIT, Quintiq) and the Movement Planner (GE). This resulted in a 36-month project duration becoming 92 months in total (including product defect rectification period).
*"Phase 2 delays are attributable primarily to the inability of the US-based software engineering team to deliver quality software on time."*¹⁶
- Following the go-live in October 2020, it took until May 2021 to fix the defects. This points to a poorer quality solution. Further investigation would be required to confirm this view.
*"The final scheduled functionality release of APS was delivered in October 2020. Project Pluto had not been completed at the time of this review as there are numerous defect and warranty fixes that are planned to be deployed until May 2021".*¹⁷
- Inappropriate resources of the project by GE resulted in ongoing project delays. It is also noted that key staff (i.e., Program Manager, Project Manager) were replaced on numerous occasions by GE. It is noted also that the Systems Integrator role for IT projects was well known in 2013 and so it is puzzling that "GE under-estimated the nature of their obligations".
"GE also under-estimated the nature of their 'System Integrator' obligations under the contract. This manifested itself through inadequate resourcing of the Brisbane-based team for

¹⁴ Aurizon Network Project Completion Report

¹⁵ 1.0 D16 137911 A03980 Project Pluto – Funding Increase, p2

¹⁶ 1.0 D16 137911 A03980 Project Pluto – Funding Increase, p4

¹⁷ Aurizon – FY21 capex claim – part b – appendix a -EY report, p1

the early part of the project. Likewise, the US-based software engineering team was not sufficiently resourced to meet the code development velocity necessary to build in Aurizon Network requirements to meet agreed milestones.”¹⁸

5.2.3 Compliance

For the purposes of efficient software requirements, capability evaluation compliance cannot be just considered in terms of usability and efficiency but how well that compliance will work in practice.

The assessment team acknowledged that the evaluation process was thorough; however, the challenge for any customer is to understand how well that state of compliance will work in practice. From the information provided, it is not clear whether a thorough evaluation of the compliance working in practice has been undertaken.

5.3 Conclusion

Although the final solution standard appears to be prudent, the above implementation issues caused costs and delays that may have been avoidable should more efficient testing and quality rigour been in place at the commencement of Project Pluto.

From the information provided, it is assessed that these quality issues, although finally rectified and completed to a prudent and efficient standard which has enabled Aurizon Network to improve its planning, scheduling, and operational efficiencies, resulted in costly delays and the requirement for Aurizon Network to apply more inhouse resources and incur greater costs than initially anticipated.

The assessment team considers that some of the cost impacts of these quality issues could have been mitigated if more rigorous and robust processes had been implemented during RFP and commissioning, both at the beginning of Project Pluto and during the changeover to Quintiq. Notwithstanding, despite process inefficiencies and subsequent delays and cost increases, Arcadis acknowledges that the ultimate standard and project requirements do not appear to have been diminished, hence the project standard is assessed as prudent.

The impacts of identified delays and process inefficiencies in terms of cost are discussed in Section 6 of this report.

6 PRUDENCY ASSESSMENT: COST

6.1 Overview

One of the key roles of Program Governance is to manage cost and scope variations from that which was approved initially. As outlined in the sections above, this project, from its early days in 2012 and 2013, has suffered from:

- Poor vendor selection of core product and lead system integrator/prime contractor.
- Non-conducive contractual arrangements where Aurizon Network was bound to pay time and materials required to develop the solution, without delivery model or clear transparency of the effort required.
 - While Aurizon Network approved the design and cost associated with detailing the key business requirements, the effort element associated with those requirements was not fully transparent or provided in detail¹⁹.
- The delays resulting from those selections and several significant contract changes being:

¹⁸ Project Pluto – Additional Funds/Change of Scope Approval Request, p4

¹⁹ Refer Table 3 Q2 in RFI/Q&A document

- SolveIT to Quintiq as a core product provider
- Removal of GE as the SI/prime contractor and transfer of responsibility to Aurizon Network of change management, reporting, and integration to Aurizon Network systems.

6.2 Assessment

Table 5 below has been developed from the information provided by Aurizon Network. It is an analysis of the contract financial performance that has been put together based upon the various documented instances of economic change across Project Pluto, including the initial contract value, the original approval and estimate values, any subsequent additional budget variations, and the final cost itself.

The desktop review of the financials across the project lifecycle identified changes to the financial budget allocation, relating to Table 5 below, are summarised as follows.

6.2.1 Original Contract vs Original Approval

The original contract identified only \$ 21,295,000 that applied to GE/SolveIT to provide the software solution under a 'fixed price' contract agreement. The remaining \$11,005,000 was to be made available to Aurizon to cover the prefeasibility of the project (\$555,000), their project costs (\$5,150,000), and two years of maintenance and support for the new solution once implemented (\$5,300,000). No contingency figure was identified at this stage.

Within the "Additional Funds/Change of Scope Approval Request" document, it shows a realigned 'Original Approval' contract value in which the software maintenance and support costs have been removed, with the costs being spread between Aurizon costs (i.e., internal labour, system changes) and a contingency figure.

6.2.2 Original Approval vs Updated Estimate

Through the funding request, seen within the "Project Pluto – Additional Funds/Change of Scope Approval Request" document, the additional \$35,660,000 funding amount (only \$35,625,000 within the breakdown table within the composition) can be seen to be added across the different task items for the project. The justification for the increase in funding was provided within the funding document, as shown in Table 5.

As a summary, the key areas that increased in funding included:

1. GE/Quintiq licencing and implementation (additional \$13,877,000 above the original approval value),
2. Aurizon costs (additional \$17,469,000 above the original approval value), and
3. Contingency (additional \$4,280,000 above the original approval value).

To facilitate the assessment, the team collated costings from all the documentation to develop a logical way to interpret the costings and actual spending across the project period (Table 6). As noted, there are several inconsistencies found across the documentation which made the totals difficult to reconcile. However, Table 6 details the team interpretation and assumptions of the documentation provided.

Table 5 summarises the project financial changes, whereas Table 6 provides details of financial changes and budget approvals against final costs as extracted from the information provided.

Please note that in addition to the approved budget amounts listed in 2012 and 2016, in May 2018, \$6.6 million was approved internally within Aurizon for Project Pluto. The additional funding was to cover scope changes related to the introduction of business process changes and/or system enhancements associated with UT5 requirements. As a breakdown for the proposed expenditure on this item was not available, this amount has been reflected as a single line item under UT5 requirements in Table 5.

Table 5 Comparison of Ongoing Project Financial Changes

Task Description		Contract Values					Reason for Change / Processes in Place to Minimise the Risk of Occurrence ²⁰
Item	Sub-Item	Original Contract (\$) ²¹	Original Approval (\$) ²²	Updated Estimate (\$) ²³	Updated Estimate (\$) ²⁴	Final Cost (\$) ²⁵	
Prefeasibility	RFP	555,000	555,000	554,000		553,619	
Licencing & Implementation	Licences	21,295,000	8,850,000	8,850,000		8,850,000	3 additional MP licenses (value \$1.287m) provided by GE to Aurizon at no cost in 2015 per variation #3 to ISD970
	WIRP contribution to Licence Fee		- 5,000,000	- 5,000,000		- 5,000,000	As part of the initial approval, WIRP contributed \$5m to the project (i.e., costs transferred from Pluto to WIRP).
	External Labour		2,790,000	10,643,000		11,454,468	Schedule delay requiring the project to run longer
						-	Additional team members, i.e., Platform Lead, Downstream Tester, Analysts, and Scheduler identified during the detailed planning
						-	Transfer of User Training and UAT responsibilities from GE to Aurizon Network (per variation #4 to ISD970)
	Vendor Implementation Services		12,998,000	12,670,000		19,584,427	\$12.67m original contracted services value
		2,200,000		-	\$2.2m Ph1.1 product enhancement		
		137,000		73,008	\$0.137m for Norfolk Southern consulting		
Travel & Accommodation - GE/QTQ		575,000	650,000		791,825	A higher number of business resources required to support the project in Brisbane	

²⁰ 1.0 D16 137911 A03980 Project Pluto – Funding Increase, p7/8

²¹ 1.0 D16 137911 A03980 Project Pluto – Funding Increase, p2

²² 1.0 D16 137911 A03980 Project Pluto – Funding Increase, p7/8

²³ 1.0 D16 137911 A03980 Project Pluto – Funding Increase, p7/8

²⁴ P.61 FY21 Capital Expenditure Claim / Aurizon Network

²⁵ 20211216 – Project Pluto – WBS Element Report_QCA

Table 5 Comparison of Ongoing Project Financial Changes

Task Description		Contract Values					Reason for Change / Processes in Place to Minimise the Risk of Occurrence ²⁰
Item	Sub-Item	Original Contract (\$) ²¹	Original Approval (\$) ²²	Updated Estimate (\$) ²³	Updated Estimate (\$) ²⁴	Final Cost (\$) ²⁵	
Aurizon Costs	Internal Labour	5,150,000	3,436,000	11,996,000		12,677,958	Schedule delay requiring the project to run longer
						-	Increase the number of business resources to support scoping and test activities as determined during the detailed planning
						-	Transfer of Change Management responsibilities from GE to Aurizon Network (per variation #4 to ISD970)
						-	Increasing loaded cost rate for internal resources
	Aurizon System Changes		3,820,000	3,800,000	4,693,103	\$3.8m IT platform and Fujitsu services	
				2,000,000	2,071,203	\$2.0m Integration (Web Methods resources)	
				3,100,000	70,985	\$3.1m Business Intelligence	
				1,000,000	613	\$1.0m OTIS/UTC integration	
				800,000	-	\$0.8m Web Portal	
				780,000	396,588	\$0.2 to 0.3m (each) test automation, ViziRail changes, SAP test, master data	
UT5 Requirements			6,600,000				
Travel & Accommodation - Aurizon	326,000	1,680,000	1,079,642	Schedule delay requiring the project to run longer			
Miscellaneous Costs	630,000	525,000	621,764	Control Room fit-out, independent reviews (4PL, EY), stationery, legal, telco			
Contingency	Contingency	-	3,320,000	2,400,000	-	\$2.4m schedule contingency (6-month team run time)	
				2,300,000	8,065,384	\$2.3m vendor scope contingency (added UT5 contingency)	
				1,900,000	-	\$1.9m Ph1.1 Extension of Time contingency	
				1,000,000	-	\$1.0m Aurizon work package contingency	
Software Maintenance & Support	Software Maintenance & Support	5,300,000	-		457,269		
TOTAL		32,300,000	32,300,000	67,925,005	74,525,005		

6.2.3 Capital Expenditure Claim

Aurizon Network is seeking approval for \$60 million of APS capital expenditure in the FY21 capital expenditure claim. This consists of:

- Capital Expenditure of \$53.3 million; plus
- Interest During Construction (IDC) of \$11.4 million; less
- Adjustments of \$4.7 million for costs incurred in internal labour costs, costs incurred to maintain compatibility with non-coal traffic, and in the recognition of the delays in the delivery of the APS solution

6.3 Conclusion

A detailed review of the costs outlined above was undertaken following a thorough examination of the overall performance of Project Pluto.

Previous points made in the assessment of the scope and standard note that notwithstanding the delays, process and quality issues experienced through poor vendor selection and lack of full comprehension from all parties of the complexities involved in the solution, Arcadis considers that, in the circumstances, Aurizon Network ran a reasonable process of procurement and implemented processes where they could, to mitigate adverse impacts to the final delivery of the project.

It has been identified through this assessment process that process inefficiencies and non-application of tools and methods that could have provided greater rigour and transparency for Aurizon Network during this process resulted in delays and additional resource requirements. These impacted on the ultimate cost of the project to Aurizon Network. However, while it is evident that these resulted in additional costs, it is difficult to calculate the extent.

The review assessed that the scope and standard of the project was prudent and was in consideration of performance and operational efficiency requirements for access holders and end-users. The procurement process, which was independently reviewed by Ernst & Young in 2018 was assessed as reasonable, with a competitive process used to select and evaluate the preferred tenderer. Although it is considered that a sixth option, that is to completely retender for an off the shelf solution, should have been considered during the 2014 standdown of SolvelT, it would be reasonable to conclude that such action could have been even more disruptive to the progress of the program and resulted in higher whole of life project costs associated with retendering and initiation of a new provider. In addition, logic dictates that as a 50% spend had already occurred, starting again may have incurred even more costs, than focusing on trying to get the existing incumbent to successful project delivery. Similarly, it is unclear and difficult to ascertain whether operational inefficiency costs potentially imposed by adopting an off-the-shelf and potentially 'compromised' system may have impacted the whole of life operational costs, and whether the efficient costs of the delivered bespoke system would be lower than the claimed amount.

Arcadis also notes that Aurizon Network has acknowledged the potential cost impact of some of the delays and adjusted their claim accordingly. It is noted that in consideration of the 6-month delay (November 2017 to April 2018) experienced whilst Aurizon Network decoupled from GE and appointed Dassault Systems as Principal Contractor to deliver the APS, Aurizon has reduced its overall IDC calculations and is not claiming any accrued interest for that period. Internal labour costs have also been adjusted in recognition of the fact that the ordinary costs of some of the personnel will have been partially, or fully funded through the regulated operation cost allowance.

Arcadis also notes the approved contingency of \$4,937,000 (refer Table 6, sub-item "Contingency"), which is calculated at approximately 5% of the total budgeted estimate. A contingency of this amount is considered reasonable and prudent industry practice in view of the nature and potential complexity of the project.

However, despite the key considerations above, Arcadis assesses that there remain some disputed calculations and points out some considerations within the total cost claim. These are detailed below:

Considerations

Comment/Impact to claim

- | | |
|---|---|
| <p>1. In de-coupling GE, Aurizon Network accepted several additional deliverables from GE as part of the new commercial arrangements. These included additional licences and an extension to the support regime from five (5) to ten (10) years. While the “retail value” of these items is provided, it is not clear that the business benefit is comparable to that nominated value.</p> | <p>Noted for consideration only—no impact assessed</p> |
| <p>2. In approving the increase of \$35.66m in 2016, Aurizon Network considered five options. Three options showed no financial benefits, with the selected option (two) showing \$0.5m pa financial benefit. The benefits demonstrated in Option Two are achieving 100% of the KPIs with no financial help described. None of the options shown was to terminate Project Pluto or retender for an alternative solution, despite significant concerns in relation to the GE governance and performance being articulated throughout the documentation. In considering rapid changes in technology and that there may have been significant development to off-the-shelf and software solutions in the market from the market research undertaken in 2012.</p> | <p>Noted for consideration only—no impact assessed</p> |
| <p>3. A fee of \$73,008 for Norfolk Southern Consulting is included with the statement of “customer reference” for Movement Planner. The assessment team question whether this should be included as this appears to be a cost relating to Movement Planner, in which GE is consulting with their customer on how to implement their own solution for Aurizon Network.</p> | <p>Impact, reduction \$73,008 from expenditure claim</p> |
| <p>4. From the information provided it appears that there was a transfer of scope requirements back to Aurizon Network, associated with reporting capabilities of the solution implemented by GE/Quintiq. Through review of the documentation, the assessment team is unable to determine any instance of cost reimbursement to recognise the change in ownership/responsibility.</p> | |
| <p>5. [REDACTED]</p> | <p>[REDACTED]</p> |
| <p>6. The contingency amount associated with ‘vendor scope contingency’ (\$8,065,384) has been viewed to be associated with the addition of UT5 requirements as extension of time claims are stated elsewhere within the financial information, and there were no documented changes in scope through the project apart from UT5.</p> | <p>Impact, reduction \$3,128,384 from expenditure claim</p> |
| <p>As stated within the ‘Project Completion Report’ for Project Pluto, under Section 2.12, it states that the final value for the additional UT5 requirements was \$4,937,000. This therefore has resulted in a reduction due to the inability to determine the validity of the additional amount identified (\$3,128,384).</p> | |
| <p>7. Costs of \$457,269 software maintenance and support appear to be OPEX related.</p> | <p>Impact \$457,269 adjustment</p> |

Taking into account the above the assessment team calculate the final adjusted figure in Table 7 of [REDACTED]

Table 6 Financial Review

Task Description		Contract Values		Arcadis Review Outcomes			
Sub-Item	Reason for Change / Processes in Place to Minimise the Risk of Occurrence ²⁶	Final Cost (\$) ²⁷	Cost Type	Action	Final Cost Reduction (\$)	Comment	Reimbursed Estimate (\$)
RFP		553,619	Capex	Approve - Final Cost	-		553,619
Licences	Three additional MP licenses (value \$1.287m) were provided by GE to Aurizon at no cost in 2015 per variation #3 to ISD970	8,850,000	Capex	Approve - Final Cost	-		8,850,000
WIRP contribution to Licence Fee	As part of the initial approval, WIRP contributed \$5m to the project (i.e., costs transferred from Pluto to WIRP).	- 5,000,000	Capex	Approve - Final Cost	-	WIRP funding for licencing (Reduction of \$5Million) in licencing fees	- 5,000,000
External Labour	Schedule delay requiring the project to run longer	11,454,468	Capex	Approve - Original	-	Ongoing issues documented state issues have been attributed to the Principal Contractor (see: 'Additional Funds/Change of Scope Approval Request'). The additional scope required is covered through vendor scope contingency.	11,454,468
	Additional team members, i.e., Platform Lead, Downstream Tester, Analysts, and Scheduler identified during the detailed planning	-	Capex	No Action	-	Additional GE team should be GE responsibility under the initial contract. Additional staff would be required to develop the product further, but this would fall under the commercial agreement that GE & AN entered into in terms of future product sales.	-
	Transfer of User Training and UAT responsibilities from GE to Aurizon Network (per variation #4 to ISD970)	-	Capex	No Action	-	There is no documentation of project savings to AN due to the transfer of responsibilities to AN from GE.	-
Vendor Implementation Services	\$12.67m original contracted services value	19,584,427	Capex	Approve - Original	-		19,548,427
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	\$2.2m Ph1.1 product enhancement	-	Capex	No Action	-	UT5 product changes stated in the contingency below - additional enhancement required based on "lower than expected product maturity".	-
	\$0.137m for Norfolk Southern consulting	73,008	Capex	Reject Claim	73,008	Movement Planner 'customer reference' - should not be for AN/QCA to pay for this.	-
Travel & Accommodation - GE/QTQ	A higher number of business resources required to support the project in Brisbane	791,825	Capex	Approve - Original	-		791,825
Internal Labour	Schedule delay requiring the project to run longer	12,677,958	Capex	Approve - Final Cost	-		12,677,958
	Increase the number of business resources to support scoping and test activities as determined during the detailed planning	-	Capex	Approve - Final Cost	-		-
	Transfer of Change Management responsibilities from GE to Aurizon Network (per variation #4 to ISD970)	-	Capex	No action	-	There is no documentation of project savings to AN due to the transfer of responsibilities to AN from GE.	-
	Increasing loaded cost rate for internal resources	-	Capex	Approve - Final Cost	-		-
Aurizon System Changes	\$3.8m IT platform and Fujitsu services	4,693,103	Capex	Approve - Final Cost	-	Adjusted value due to extended delays and multiple releases required. The initial budget allocation should have expected IT costs such as hardware, set up, and management of the rollout tasks by AN (or its IT Infrastructure provider). The delays and multiple releases will have added to the costs.	4,693,103
	\$2.0m Integration (Web Methods resources)	2,071,203	Capex	Approve - Final Cost	-	Originally part of GE deliverable - no documented savings from the transfer of ownership/responsibility	2,071,203
	\$3.1m Business Intelligence	70,985	Capex	Approve - Final Cost	-	Originally part of GE deliverable - no documented savings from the transfer of ownership/responsibility	70,985
	\$1.0m OTIS/UTC integration	613	Capex	Approve - Final Cost	-		613
	\$0.8m Web Portal	-	Capex	No action	-	Not a stand-alone item within final financial information. The fee is included within the IT platform and Fujitsu services item.	-
	\$0.2 to 0.3m (each) test automation, ViziRail changes, SAP test, master data	396,588	Capex	Approve - Final Cost	-		396,588
Travel & Accommodation - Aurizon	Schedule delay requiring the project to run longer	1,079,642	Capex	Approve - Final Cost	-		1,079,642
Miscellaneous Costs	Control Room fit-out, independent reviews (4PL, EY), stationery, legal, telco	621,764	Capex	Approve - Final Cost	-		621,764

²⁶ 1.0 D16 137911 A03980 Project Pluto – Funding Increase, p7/8

²⁷ 20211216 – Project Pluto – WBS Element Report_QCA

Table 6 Financial Review

Task Description		Contract Values		Arcadis Review Outcomes			
Sub-Item	Reason for Change / Processes in Place to Minimise the Risk of Occurrence ²⁸	Final Cost (\$) ²⁷	Cost Type	Action	Final Cost Reduction (\$)	Comment	Reimbursed Estimate (\$)
Contingency	\$2.4m schedule contingency (6-month team run time)	-	Capex	No action	-	Appears to be already included within the internal labour category.	-
	\$2.3m vendor scope contingency	8,065,384	Capex	Adjusted Claim - Final Cost	3,128,384	Adjusted claim based upon scope changes for UT5 requirements. Section 2.12 of the Project Completion Report states the actual value of different scope execution being \$4,937,000.	4,937,000 ²⁸
	\$1.9m Ph1.1 Extension of Time contingency	-	Capex	No action	-		-
	\$1.0m Aurizon work package contingency	-	Capex	No action	-	Insufficient details to determine what was covered under this item.	-
Software Maintenance & Support		457,269	Opex	Reject Claim	457,269	Maintenance and support costs for a product that has not been completely implemented. This is also a capital claim in which ongoing support and maintenance are classified as OPEX.	-
Total Final Cost		██████████		Total Reduced Costs	██████████		
						Total Adjusted Claim	██████████
						QCA Paid - Movement Planner (FY16 & FY17 Capex Claims) *	15,875,171
						Final Adjusted Claim	██████████

²⁸ Project Completion Report, p14

7 SUMMARY OF PRUDENCY ASSESSMENT

7.1 Prudency assessment

Overall, Arcadis assesses the final scope and standard as prudent taking into account the following:

- It is considered that the delivered scope of the works will support the demands for capacity increases and operational supply efficiencies required for efficient proposed future operations of the CQCN Network. However, Arcadis cautions that the business benefits outlined to be delivered from the project will not be determined or fully confirmed till July 2022; hence it is not possible to currently confirm whether the full set of KPI's and benefits outlined in the original business case will be delivered.

Notwithstanding this, it is assessed, that in principle, the concept and requirement for an automated and data-driven planning and scheduling system is prudent. Considering the supply chain complexity of the CQCN, it is not considered prudent to rely upon “*discrete systems, excel spreadsheets, knowledge held by individuals and manual processes*²⁹.”

- From the information provided, it is considered that the final delivered standard of the works is adequate to deliver a “modern, integrated planning and scheduling platform” which will replace Aurizon Network’s legacy planning and manual scheduling systems processes.

In terms of cost prudency, as detailed throughout the report the assessment team noted several concerns in the approach to deliver the scope and standard. Although in principle these concerns did not impact on the final scope and standard of the completed works, they each had a significant impact on the scheduled delivery of the scope, the quality of work delivered in the interim stages and on the final project budget.

These have been outlined in our report and the impact to the efficiency in process and governance rigour detailed. In summary, these include:

- Poor vendor selection for core product and lead system integrator/prime contractor.
- Lack of provision of delivery models, road maps, and clear transparency for Aurizon Network in terms of effort and time allocation for specific requirements during delivery
- Perceived poor quality in deliverables, requiring rework and/or prolonged maintenance periods and multiple version implementation
- Poor application and integration of risk assessment and lessons learned into decision making, especially during change variation and RFP to replace SolveIT
- Poor change and project management/governance, which resulted in the transfer of this deliverable to Aurizon Network and de-coupling of the vendor parties in 2018

However, the assessment team notes the actions that were implemented by Aurizon Network to minimise the impact on performance requirements and operational efficiencies to be gained from the APS for access holders and end users. Hence, with the exclusion of the identified amounts listed in section 6.3 and summarised in Table 7, Arcadis considers that in the given circumstances (Technology is not Aurizon Network core business and hence they were reliant on the advice and guidance provided by others) and considering that Aurizon Network ran a reasonable procurement process to secure a capable and competitive tenderer, the overall cost is assessed as prudent.

Notwithstanding the above, Arcadis recommends that Aurizon Network apply some of the tools and methodologies suggested within this report, i.e., agile application, development of a delivery model at the inception stage, etc, in future IT programs.

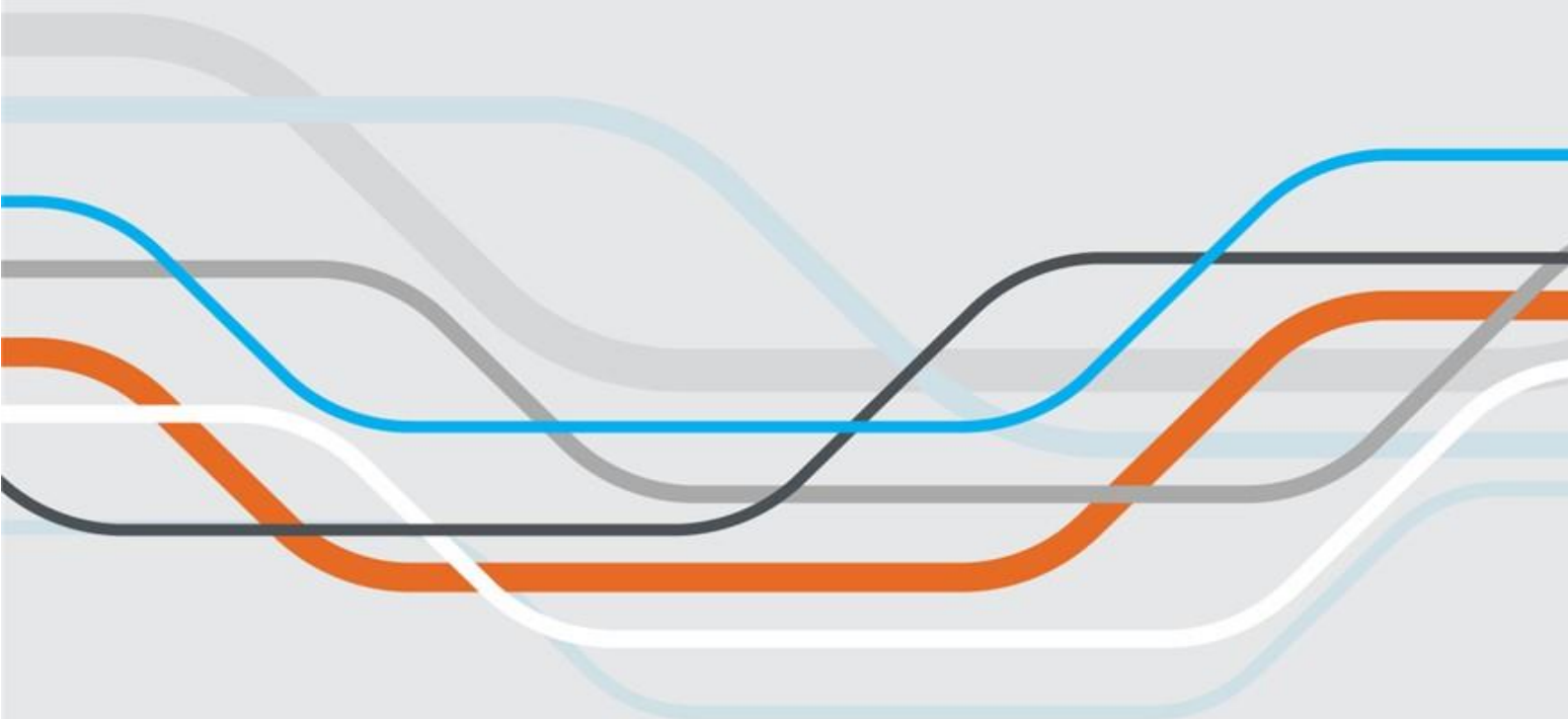
²⁹ Aurizon submission FY21 capital claim final – consolidated – Sep 21

Table 7

Claim Element	Brief description	Assessed as prudent			Impact on CAPEX Claim
		Scope	Standard	Cost	
GE Extension of Time (EOT) ████	Documented issues of Principal Contractor and Approved subcontractors' inability to deliver the product on time. It is expected that the Principal Contractor has committed to a fixed price delivery by an agreed date. ██████████ ████				██████████
Norfolk Southern consulting	Previously included				-\$73,008
Software Maintenance & Support	Potentially OPEX, not CAPEX claim				-\$457,269
Contingency	<u>Vendor scope contingency</u> . Figure within WBS final cost for UT5 requirements varies compared to confirmed UT5 cost within final report.				-\$3,128,384
Expenditure Claim		\$53,300,000 (exclusive of IDC)			
Proposed total reduction		██████████			
Recommended Expenditure Claim (exclusive of IDC and associated adjustments)		██			

APPENDICES

Sojitz MDS Private Incremental Cost claim



APPENDIX A RFI AND RESPONSES

FY2021 APS Capex Claim Response to RFI 8 December 2021

Table 1 Information Requested

QCA / Arcadis Question	Aurizon Network (AN) Response
Information Requested:	
<p>1. Requirements Traceability Matrix – Up-to-date version that includes its development through the different project phases (or confirm that the copy we have is the final, from the discussion this morning, it appears that there is now a more complete one).</p>	<p>AN confirms that the RTM previously provided to the QCA (via Microsoft Teams) is the final copy; file name “20211018 - Pluto Project Completion Report - Appendix B Requirements Traceability.xls”.</p> <p>This file was finalised as part of the Project Close activities, which took place following completion of EY’s independent assessment. Hence, the comments in the EY report relate to an earlier version of the RTM.</p>
<p>2. Blueprints produced from both SolvelT and Quintiq, also the original list of requirements from RFP.</p>	<p>Original RFP requirement: Please find attached:</p> <ul style="list-style-type: none"> - Project Pluto - Request for Proposal - Final v1 0.doc; and - Requirement Response Template – Final v1 0.xlsx <p>In relation to the outputs from the blueprinting exercise – please refer to the final Requirements Traceability Matrix (RTM).</p> <p>AN’s interpretation is that ‘blueprints’ contain the detailed design and formulas associated with the APS software. This information is considered to be the confidential Intellectual Property of the software developer.</p> <p>As part of the development of APS, AN notes that a set of requirements was outlined in the RFP documentation. AN then worked with the vendors to agree the functionality that would best meet these requirements. The outcomes of the blueprinting process with the vendors is reflected in the RTM.</p> <p>Please note that the change from SolvelT to Quintiq didn’t generate a change in the underlying business requirements (as reflected in the RTM), but allowances relating to their delivery did have to be made for the change in the underlying platform.</p> <p>The RTM also outlines the new requirements associated with the change in the UT5 Access Undertaking. Please refer to the ‘second investment’ tab.</p>
<p>3. Business case documentation submitted in 2016 for the request of additional funding.</p>	<p>Please refer to attached file “1.0 D16 137911 A03980 Project Pluto - Funding Increase.pdf”</p> <p>NB: Page 12 of this PDF provides a comparison of ‘original’ vs ‘updated’ estimates for key categories of cost such as Internal Labour / External labour, Vendor Implementation services etc.</p> <p>The request for additional funding noted the following key points, which are relevant to the request for additional funding:</p> <ul style="list-style-type: none"> - the original business benefits remain valid and achievable, and additional benefits identified;

- delays in the project are due to sub-contractor failure and solution complexity – effectively turning this from a product implementation to a more bespoke software development project;
- In relation to the commercial implications of SolveIT failure and the related delays;
 - o “...the contract value between Aurizon and GE did not change as a result of this variation as charges already paid by Aurizon for Phase 1 services and SolveIT licenses (\$2.38M) were offset against future Quintiq charges.”
- In relation to the implications of contractor delays;
 - o “The schedule delay increases project delivery costs and delays benefit realisation ... Of the additional funds required, over 46% can be attributable to incremental resourcing costs, and remaining to increases in Aurizon system changes, risk-based contingency, functional enhancements and miscellaneous costs. GE did however, in 2015 provide Aurizon Network with 3 additional Movement Planner licenses (\$1.287m value) at no cost, as a good-faith gesture in recognition for the delays. Furthermore, Aurizon Network has agreed to a contract variation with GE whereby responsibility for certain ‘non-core’ project services (Change Management, User Training and UAT) are transferred from GE to Aurizon Network as consideration for ‘additional product development effort (at no cost) after go-live, and the extension of the business-as-usual support and maintenance period from five to 10 years, with cost increases limited to CPI. It should be noted that due to the fixed price terms of the contract, GE is also incurring its own cost over runs which are likely to be significantly higher than Aurizon’s.”

4. Implementation roadmap – breakdown of the activities undertaken within the agile approach tracking through to delivery (seeking different versions also; original GE/SolveIT, GE/Quintiq, and Quintiq).

The agile approach was introduced as part of Release 3. The RTM is the ‘master’ document outlining each requirement and its delivery status. It also includes a breakdown of the activities undertaken within the agile approach. Please refer to the following tabs within the RTM:

- 3. P_S_O Reqts (rows 413 - 464)
- DoO_O Reqts (rows 671 - 737)

In relation to the implementation roadmap, AN has provided the release plans for R1-R4, which outline the contractual arrangements associated with each major functionality release of APS.

A change request process was implemented to manage variations. A list of the change requests is outlined in the Project Completion Report previously provided to QCA staff.

The release plan documents are as follows:

- Release Plan - Release 1 V2.0 14.06.18 - signed (002).pdf
- Release Plan - Release 1 V2.0 counter signed page.pdf
- Release Plan - Release 2 V1.0 22.10.18 countersigned.pdf
- Release Plan - Release 3 V 1.0 FINAL Countersigned.pdf
- Release Plan - Release 4 V2.0 - 21.11.19 counter signed.pdf

Table 2 Question 1 - Please provide further details on the costs shown

QCA / Arcadis Question	AN Response
<p>1. Prefeasibility is shown as \$0.6m. Procurement is or is not included in the \$0.6m. If not, where are the costs?</p>	<p>Yes, Procurement costs are included. A Minor capital funding request was raised for seed funding to complete prefeasibility assessment of operation for the development of the next generation Network Planning System. This covers identification of scope and functional requirements, connectivity required, develop RFI and develop criteria to shortlist suppliers.</p>
<p>2. The initial contract with GE will have included:</p> <ol style="list-style-type: none"> a. SolveIT software licence b. implementation charges, and c. Any significant variations to that initial fee 	<p>The charges outlined within the IT Services Agreement with GE are as follows. All are expressed excluding GST and escalation (where relevant).</p> <ol style="list-style-type: none"> a. Software License charges of \$8.85m b. Implementation Costs of \$12,988,000, comprised of: <ul style="list-style-type: none"> • Project Management and Systems Integration Leader @ \$2.92m • APS/SCNO Deployment @ \$1.87m • Movement Planner Deployment 1 @ \$3.42m • Movement Planner Deployment 2 @ \$2.08m • Change Management / Business Process Consulting Services @ \$2.38m • Norfolk Southern Advisory Services @ \$0.33m* (<i>*in subsequent contract variations, this amount was presented under 'Additional Expenses'</i>) <p>Addition Expenses Listed include:</p> <ul style="list-style-type: none"> • Travel and accommodation @ \$0.58m • Software Escrow @ \$0.035m • Software Maintenance and Support Services during implementation @ \$1.73m • Software Maintenance and Support Services post implementation. 5 years @ \$9.03m <ol style="list-style-type: none"> c. Variation 2 Subcontractor swap – no material variations to fee schedule but notes that Aurizon is not required to pay the Contractor for any travel and accommodation expenses previously incurred by SolveIT Software Pty Ltd in connection with this Agreement. <p>Variation 3 – additional Movement Planner licenses (15 to 18-seats) granted by GE to Aurizon as gesture of good faith acknowledging difficulties GE faced with implementation. Variation did not change fee schedule.</p> <p>Variation 4 – Aurizon takes on additional functions (change management, training and user acceptance testing services). As compensation, GE commits to additional product development at no cost during first year of BAU support, established a Joint Marketing Agreement and increase of Software Maintenance and Support period from 5 to 10 years. Platinum service option but 'Gold' pricing maintained. Represents an increase in contract value by \$9.597m primarily driven by extension of the support period.</p>

QCA / Arcadis Question	AN Response
	Variation 5 – Decoupling from GE – refers to additional Movement Planner licensing costs for v1.5 upgrade (\$3,696,000). However, these are not in scope for the FY21 Capex Claim.
3. Termination fees or charges when SolveIT were removed	Aurizon Network confirms that no termination fees were charged when SolveIT were removed.
4. Recontracting fee with GE using Quintiq a. Quintiq software licence b. Updated implementation fees	Subcontractor swap from SolveIT to GE was given effect through a contract variation. Aurizon did not incur recontracting fees associated with this swap of subcontractors. The IT Services Agreement with GE was a fixed price contract for licencing, implementation, software maintenance and support for the planning and scheduling, and day of operation solution. Within Schedule 5 of the amended contract, 'Quintiq Enterprise Edition Rail Network Operations Solution' is referenced under the licensing costs section. No change to price and no change to the other pricing arrangements.
5. Termination fees or charges when GE were removed. Noting that agreement to retain and upgrade GE's MP solution is covered in another determination	There were no termination fees or termination charges when GE were removed. As noted in prior discussions with QCA staff, the decoupling from GE was agreed on the basis that: <ul style="list-style-type: none"> • GE would be released from any ongoing obligations to Aurizon in relation APS; • that Aurizon would directly engage with Dassault in relation to remaining services / licence in relation to APS software; • Aurizon would pay GE for the work performed by GE up to the effective date; • Aurizon Network commits to upgrade its Movement Planner software from v0.5 to v1.5 (as v0.5 would be going out of support). Please note that these Movement Planner costs do not form part of the FY21 Capex Claim.
6. Fees paid to Quintiq	Please refer to the excel workbook 20211216 – Project Pluto – WBS Element Report_QCA.xls Fees paid to Quintiq are ~ \$13.1m <ul style="list-style-type: none"> • QTQ APS Software Devl & Imp Serv @ \$12.2m • QTQ Travel and Expenses @ \$0.4m • QTQ APS Software Licence Support @ \$0.46m
7. Other fees: For example a. IT hardware, b. Third parties employed for, say, testing, reviews (e.g. KPMG and EY) c. Travel, consumables etc...	Please refer to the excel workbook 20211216 – Project Pluto – WBS Element Report_QCA.xls This provides further information on other cost categories.
8. AN costs for each of the above phases	Please refer to the excel workbook 20211216 – Project Pluto – WBS Element Report_QCA.xls This provides further information on Aurizon Network's costs over the life to the project.

QCA / Arcadis Question	AN Response
9. Contingency allocation	Please refer to the 'Contingency' tab within excel workbook 20211216 – Project Pluto – WBS Element Report_QCA.xls
10. Other charges	Please refer to the excel workbook 20211216 – Project Pluto – WBS Element Report_QCA.xls

Table 3 Question 2 - Please provide further details on the costs shown

QCA / Arcadis Question	AN Response
<p>As discussed in the meeting, many companies use a “points measure” to estimate and manage the effort to assess IT development costs. AN has provided the Requirements Traceability Matrix.</p> <p>It would be useful, in lieu of a points metric, if some estimate of the size of each of the requirements could be provided.</p>	<p>AN notes that the contractual arrangements associated with the development and implementation of APS meant that development effort was managed by the Contractor, not by AN.</p> <p>Contractual arrangements meant that Aurizon Network was paying for the time and materials required to develop the solution. While AN approved design and cost associated with the delivery of the key business requirements, AN was not provided full transparency of the effort for each individual element associated with those requirements.</p> <p>Functionality and cost associated to with each major release is outlined within the Release Plans for R1 – R4, with change management through a documented change request process.</p> <p>Please refer to the individual release plans, the RTM and the Project Completion Report.</p>

APPENDIX B LIST OF DOCUMENTS PROVIDED

The following is a list of the documentation provided by Aurizon Network for the purposes of undertaking the Prudency Assessment:

Original documentation provided:

- 20211018 - Pluto Project Completion Report - Appendix B Requirements Traceability.xls
- 20211018 - Pluto Project Completion Report Final.pdf
- Aurizon - FY21 capex claim - part b - appendix a -EY report.pdf
- Aurizon submission FY21 capital claim final - consolidated - Sep 21.pdf

Post RFI and Aurizon Network/Arcadis workshop:

- 1.0 D16 137911 A03980 Project Pluto - Funding Increase.pdf
- 20211216 - Project Pluto - WBS Element Report_QCA.pdf
- Project Pluto - Request for Proposal - Final v1 0
- Release Plan - Release 1 V2.0 14.06.18 - signed (002).pdf
- Release Plan - Release 1 V2.0 counter signed page.pdf
- Release Plan - Release 2 V1.0 22.10.18 countersigned.pdf
- Release Plan - Release 2 V1.0 FINAL countersigned.pdf
- Release Plan - Release 4 V2.0 - 21.11.19 counter signed.pdf
- Requirement Response Template - Final v1 0.xls

APPENDIX C COST ANALYSIS AND CLAIM IMPACT

Total		Contract Values					Reason for Change / Processes in Place to Minimise the Risk of occurrence (Funding Request)	Arcadis Review Outcomes		
Sub-Item	Original Contract (Funding Request)	Original Approval (Funding Request)	Updated Estimate (Funding Request)	Final Cost (WBS Element Report)		Action		Percentage Allowance	Reimbursed Estimate (\$)	Comment
Original Fees	32,300,000									
Prefeasibility (Approved - 24/01/2012)	555,000	\$ 555,000	\$ 555,000	\$ 554,000	\$ 553,619	3 additional MP licenses (value \$1.287m) provided by GE to Aurizon at no cost in 2015 per variation #3 to ISD970	Approve - Final Cost	100%	\$ 553,619	
		\$ 8,850,000	\$ 8,850,000	\$ 8,850,000	\$ 8,850,000	As part of the original approval, WIRP contributed \$5m to the project (i.e. costs transferred from Pluto to WIRP).	Approve - Final Cost	100%	\$ 8,850,000	
Licensing & Implementation (Approved - 15/11/2012)	21,295,000									
		\$ -	\$ -	\$ -	\$ -	WIRP contribution to Licence Fee	Approve - Final Cost	100%	\$ -	WIRP funding for licencing (Reduction of \$5Million) in licencing fees
		\$ 2,790,000	\$ 10,643,000	\$ -	\$ -	Schedule delay requiring project to run longer	Approve - Original	100%	\$ 11,454,468	Ongoing issues documented state issues have been attributed to the Principal Contractor (see: 'Additional Funds/Change of Scope Approval Request'). Additional scope required covered through vendor scope contingency.
		\$ -	\$ -	\$ -	\$ -	Additional team members i.e. Platform Lead, Downstream Tester, Analysts, and Scheduler identified during detailed planning	No action	0%	\$ -	Additional GE team should be GE responsibility under initial contract. Additional staff required would be required to further develop product, but this would fall under the commercial agreement that GE & AN entered into in terms of future product sales.
		\$ -	\$ -	\$ -	\$ -	Transfer of User Training and UAT responsibilities from GE to Aurizon Network (per variation #4 to ISD970)	No action	0%	\$ -	No documentation of project savings to AN due to transfer of responsibilities to AN from GE.
		\$ 12,998,000	\$ -	\$ -	\$ -	Transfer of User Training and UAT responsibilities from GE to Aurizon Network (per variation #4 to ISD970)	Approve - Final Cost	100%	\$ 19,584,427	\$12.67m original contracted services value
		\$ 2,200,000	\$ -	\$ -	\$ -	\$2.2m Ph1.1 product enhancement	Approve - Final Cost	100%	\$ 19,584,427	
Aurizon Costs	5,150,000									
		\$ 326,000	\$ 1,680,000	\$ 1,079,642	\$ 1,079,642	Higher number of business resources requiring to support the project in Brisbane	Approve - Final Cost	100%	\$ 791,825	
		\$ 630,000	\$ 525,000	\$ 621,764	\$ 621,764	Schedule delay requiring project to run longer	Approve - Final Cost	100%	\$ 12,677,958	
		\$ -	\$ 3,320,000	\$ 2,300,000	\$ 8,065,384	Increase number of business resources to support scoping and test activities as determined during detailed planning	Approve - Final Cost	100%	\$ -	
		\$ -	\$ -	\$ -	\$ -	Transfer of Change Management responsibilities from GE to Aurizon Network (per variation #4 to ISD970)	Approve - Final Cost	100%	\$ -	
		\$ 3,800,000	\$ 4,693,103	\$ -	\$ -	Increasing loaded cost rate for internal resources	Approve - Final Cost	100%	\$ -	
		\$ 2,000,000	\$ 2,071,203	\$ -	\$ -	\$3.8m IT platform and Fujitsu services	Approve - Final Cost	100%	\$ 4,693,103	Adjusted value due to extended delays and multiple releases required. The initial budget allocation should have expected IT costs such as hardware, set up and management of the roll out tasks by AN (or its IT infrastructure provider). The delays and multiple releases will have added to the costs.
		\$ 3,100,000	\$ 70,985	\$ -	\$ -	\$2.0m integration (Web Methods resources)	Approve - Final Cost	100%	\$ 2,071,203	Originally part of GE deliverable - no documented savings from transfer of ownership/responsibility
		\$ 1,000,000	\$ 613	\$ -	\$ -	\$3.1m Business Intelligence	Approve - Final Cost	100%	\$ 70,985	Originally part of GE deliverable - no documented savings from transfer of ownership/responsibility
		\$ 800,000	\$ -	\$ -	\$ -	\$1.0m OTIS/UTC integration	Approve - Final Cost	100%	\$ 613	
		\$ 780,000	\$ 396,588	\$ -	\$ -	\$0.8m Web Portal	No action	0%	\$ -	Not a stand-alone item within final financial information. Fee is included within the IT platform and Fujitsu services item.
		\$ 326,000	\$ 1,680,000	\$ 1,079,642	\$ 1,079,642	\$0.2 to 0.3m (each) test automation, VizRail changes, SAP test, master data	Approve - Final Cost	100%	\$ 396,588	
		\$ 630,000	\$ 525,000	\$ 621,764	\$ 621,764	Schedule delay requiring project to run longer	Approve - Final Cost	100%	\$ 1,079,642	
		\$ -	\$ -	\$ -	\$ -	Control Room fit out, independent reviews (4PL, EY), stationery, legal, telco	Approve - Final Cost	100%	\$ 621,764	
		\$ -	\$ -	\$ -	\$ -	\$2.4m schedule contingency (6 month team run time)	No action	0%	\$ -	Should be already included within the internal labour category.
		\$ -	\$ 3,320,000	\$ 2,300,000	\$ 8,065,384	\$2.3m vendor scope contingency	Adjusted Claim - Approve Final Cost	-	\$ 4,937,000	Adjusted claim based upon scope changes for UTS requirements. Section 2.12 of Project Completion Report states the actual value of additional scope execution being \$4,937,000.
		\$ -	\$ -	\$ -	\$ -	\$1.9m Ph1.1 Extension of Time contingency	No action	0%	\$ -	
		\$ -	\$ -	\$ -	\$ -	\$1.0m Aurizon work package contingency	No action	0%	\$ -	Insufficient details to determine what was covered under this item.
		\$ 5,300,000	\$ -	\$ -	\$ 457,269	\$1.0m Aurizon work package contingency	Reject Claim	0%	\$ -	Maintenance and support cost for a product that has not been completely implemented. This is also a capital claim, in which ongoing support and maintenance is classified as OPEX.
Software Maintenance & Support (Approved - 31/10/2012)	5,300,000									
		\$ 32,300,000	\$ 32,300,000	\$ -	\$ -		Total Claim	\$ -		
							QCA Paid - Movement Planner (FY16 & FY17 Capex Claims) *	\$ 15,875,171		
							Final Claim	\$ -		

* value gained from file "20211011 - Project Pluto - Capex_IDC_Adjustments_QCA_Final"

IMPROVING QUALITY OF LIFE.

