ASSET LIFECYCLE OPTIMISATION

The Challenge

A major passenger rail operator with significant reliance on State Government funding was facing increasing pressure to reduce maintenance expenditure. Infrastructure assets varied significantly in nature ranging from track, bridges signalling, telecommunications and station buildings to name a few. Identifying and prioritising the capital funding requirements was a complex and lengthy process involving significant use of spreadsheets to bring together all of the relevant condition, age, cost and risk data required from each asset class manager to justify expenditure.

Degradation modelling was being carried out to enable forecasting of capital replacement requirements for some assets which helped gain a longer-term view of funding needs, with a criticality methodology was also in place that enabled forecasting of risk at various funding levels.

The budgeting process was involved identification of programs of work that totaled the annual 'Recurrent' funding levels determined by Treasury. Funding constrained scenarios were then run based on Treasury guidance and the preferred option selected based on available state funding and balancing of all State Government funded entities' needs.

⟫⟫ Complication

Approximately 100 programs of work were managed by various subject matter experts consisting of up to 80 individual interventions across various locations of the network, each with different drivers such as reliability improvement and condition-based replacement. This made it difficult to carry out a high-level assessment of programs to assess what impact budget constraints would have on customer outcomes across the network.

Several infrastructure projects managed outside of the agency impacting the network were managed with no direct processes in place to understand interdependencies these projects had with other works across the network. This made it difficult to optimize track access opportunities and maximise efficiencies of deliverable packages of work.

⟫⟫ First Steps

An initial gap assessment was carried out against Quarterbac's data centric planning methodology tailored to the rail environment. Identified gaps were documented along with a strategy to manage the change from the as-is processes to the desired to-be state for the annual planning cycle.

This process didn't seek to establish an effective baseline level of funding and was considered too inefficient with poor visibility of the effect on outcomes at the line level when constraining funding and poor visibility of opportunities to gain efficiencies in the delivery of the program.

Quarterbac was engaged to propose a data driven methodology supported with enabling technology to significantly improve the value derived from the annual planning process. This methodology was to be supported with a change strategy to transform the way strategic planning processes are carried out through the organisation.
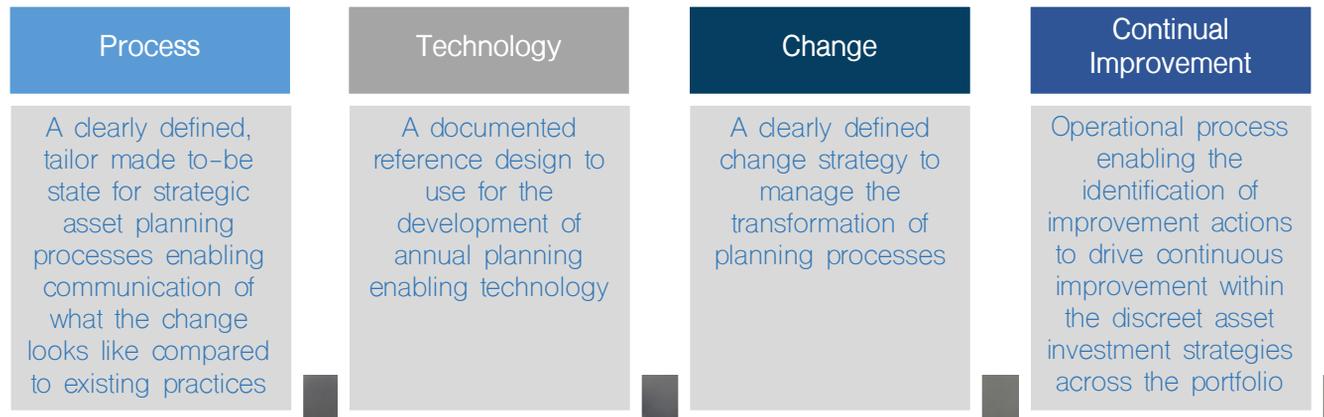
Process Definition

Relevant planning documentation and outputs were reviewed with a view to formulate the desired to-be state for strategic planning processes. This review looked included:

- Budgeting cycle process description

- Asset criticality methodology

- Various planning data and planning repositories and underlying methodologies

- Treasury requirements for planning documentation

A to-be state process description document was developed in consultation with the client providing a high-level description of the to-be strategic asset management planning process. The document was intended to help people who support this process to understand what the to-be state looked like, what changes may need to occur to move toward the newly defined process and how they might contribute to the process.

This description document referenced other underlying documents that the organization used to support the strategic asset management planning process and identified where new documents needed to be developed.

Enabling Technology

The continual improvement component of Quarterbac's planning methodology involves the assessment of the maturity of data and processes use to determine interventions and optimize their timing. A baseline exercise was carried out involving the collection of information relating to data sources and quality used for determining optimized interventions. This was enabled through the development of a digital platform tailored specifically for the client's environment.

Subject matter experts responded to a structured questionnaire about each program they were responsible for, focusing on assessing the maturity of each program based on the evidence and approach that underpins asset strategy settings, data sources, risk management and cost build up.

This register stored on SharePoint was connected to PowerBI reporting to enable easy analysis across the programs and improvements without having to go through each individual assessment.

A reference design was developed for a flexible digital data lake to hold all proposed interventions for the portfolio over a rolling 10-year horizon including their estimated costs, timings and access requirements. Called the 'Planning Workbank', this repository was also designed to hold relevant information around key risks, network constraints and performance information to enable connection between investment projections and risk / performance considerations.

Outcomes

Process	Technology	Change	Continual Improvement
A clearly defined, tailor made to-be state for strategic asset planning processes enabling communication of what the change looks like compared to existing practices	A documented reference design to use for the development of annual planning enabling technology	A clearly defined change strategy to manage the transformation of planning processes	Operational process enabling the identification of improvement actions to drive continuous improvement within the discreet asset investment strategies across the portfolio

Once fully implemented, the defined transformation will enable:

- Significant savings to be realised through identification of maintenance bundling efficiencies

- Improvement in asset reliability and customer satisfaction resulting from prioritising interventions that add greater value

- Repeatable outcomes over multiple planning cycles through the application of clearly defined decision criteria