REGIONAL COLLABORATION SHINES A LIGHT ON CRITICAL ASSETS

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ABSTRACT

In late 2019, three Queensland Regional Councils and ***qldwater*** decided to collaborate on the development of a Statewide Network Asset Criticality Guideline. Councils know that they need to take a risk-based approach in managing their assets, but resource constraints often mean that starting this journey is daunting and often cost prohibitive, particularly for small Councils. Leveraging off industry expertise, the three Councils agreed that they needed a consistent framework that was not overly complicated and could be aligned to each organisation's risk appetite and their relative size. Fraser Coast Regional Council, Mackay Regional Council and Whitsunday Regional Council in partnership with ***qldwater*** engaged Clear Idea to help develop a methodology, framework, and guideline for water and wastewater network infrastructure asset criticality with the intention of making it relevant for as many Queensland Water Service Providers as possible.

Having a consistent approach and application across the State will allow ***qldwater*** to further refine the work already undertaken through the Queensland Water Regional Alliance Program on assessing the impact of the Infrastructure Cliff (Queensland's Ageing Water and Sewerage Assets and Cost implications for in-ground assets).

Over the course of 2020 the guideline was developed through collaboration among the three Councils and testing of the proposed methodology.

The guideline will support Water Service Providers in Queensland to understand asset criticality of individual network assets and facilities (at a high level) allowing them to improve decision making by:

- Optimising operational, maintenance and renewal decisions and aligning these to corporate objectives and asset management policies.
- Managing and mitigating operational and business risks to maintain customer level of service
- Improving resource utilisation aligned to addressing risk, rather than tasks
- Maintaining asset performance and reliability by using a risk-based approach to optimise whole of life value of infrastructure.

Asset criticality is driven by the following risk factors:

- Financial
- Reputational
- Customer Service Disruption
- Compliance
- Environment
- Health and Safety
- Business Continuity
- Strategic Value

This project has demonstrated how regional collaboration can result in knowledge sharing and combining ideas which suit large and small utilities to understand their risk associated with owning, operating, and maintaining water and wastewater infrastructure.

SHORT PRESENTER BIOGRAPHY

Moira Zeilinga
A strategic thinking executive leader with twenty-seven years' engineering and leadership experience gained in Local Government, large Water Utilities, and the private sector with a focus on customer, community and stakeholder engagement. Moira is an Asset Management Specialist and Director of Clear Idea. She is passionate about the water industry and helping regional Queensland have access to a culture of safety, innovation, and collaboration by leveraging off diversity.

John Mann
An experienced Water and Sewerage Infrastructure Planner with twenty-eight years' experience in the public Sector gained in the Northern Territory and Regional Queensland. John is the Manager of Planning at the Fraser Coast Regional Council.

INTRODUCTION

In late 2019, three Queensland Regional Councils and ***qldwater*** decided to collaborate on the development of a Statewide Network Asset Criticality Guideline. Councils know that they need to take a risk-based approach in managing their assets, but resource constraints often mean that starting this journey is daunting and often cost prohibitive, particularly for small Councils. Leveraging off industry expertise, the three Councils agreed that they needed a consistent framework that was not overly complicated and could be aligned to each organisation's risk appetite and their relative size. Fraser Coast Regional Council, Mackay Regional Council and Whitsunday Regional Council in partnership with ***qldwater*** engaged Clear Idea to help develop a methodology, framework, and guideline for water and wastewater network infrastructure asset criticality with the intention of making it relevant for as many Queensland Water Service Providers as possible.

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DISCUSSION

The project officially kicked off in mid-March 2020.

A number of challenges were overcome during the development of this framework and guideline, including:

a) Agreeing on an equitable funding model between ***qldwater*** and the three participating Councils
b) Ensuring that everyone agreed on the meaning of terms such as "criticality"
c) Aligning to Corporate Risk Frameworks
d) Agreeing on what was meant by assets versus facilities
e) due to COVID-19, all workshops were held via zoom and no face-to-face workshops were held
f) developing a common understanding of how to apply the framework
g) agreeing on how the framework can apply to both large and small entities
h) reliance on honest feedback from all stakeholders to ensure any blind-spots were addressed
i) Visual Basic Programming in EXCEL

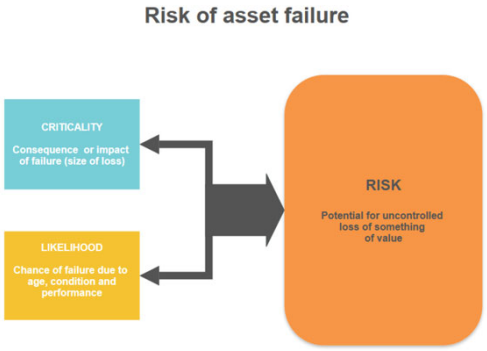

Figure 1. Asset Criticality is a measure of the consequence of an asset failure

Notwithstanding these challenges, once an outline and terms were agreed upon over the course of 6 months and twelve workshops, the framework had to be tested.

A common goal of all entities was that the framework needed to be:

- easy to understand
- able to be applied to a single asset as easily as to bulk uploads for asset groups
- be repeatable, regardless of who was applying the framework

The benefits of regional collaboration during the development of this framework and guideline was highlighted through

- gaining insights into different organisation needs and different individuals experience and views
- knowledge sharing
- improvement through user-testing
- bringing innovation into the development and application processes
- consistent approach that can be shared across Queensland
- developing a coming understanding of criticality.

Early in the development of the framework it was agreed that an EXCEL tool would be beneficial so it could be used for a single asset and contain all the criteria which could be applied by a GIS specialist for bulk asset assessments.

The framework uses risk scores which are weighted according to the entities risk appetite and can be expressed mathematically using the following formula:

$$f(x)_{Criticality} = \sum_{i=1}^{n} (RiskScores \times RiskWeighting)_i + \cdots + (RiskScores \times RiskWeighting)_n \times Scheme\ Weighting$$

The scores and weightings result in a 1.0 to 5.0 criticality score.

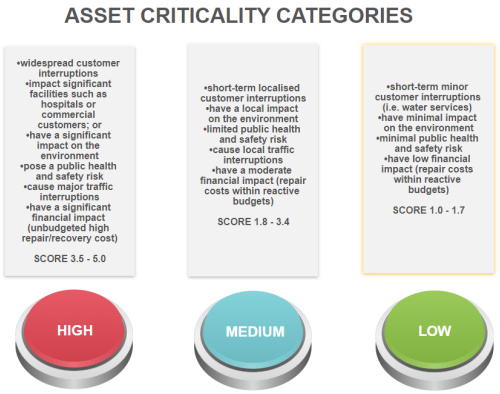

Figure 2. Asset Criticality Categories

Through user-testing and feedback, the tool has been developed so individual organisations can rank their asset criticality against their most critical asset. This meant that no subjective criteria were required to relate criticality for a small region versus a large region. Criticality was assigned using a normal distribution curve.

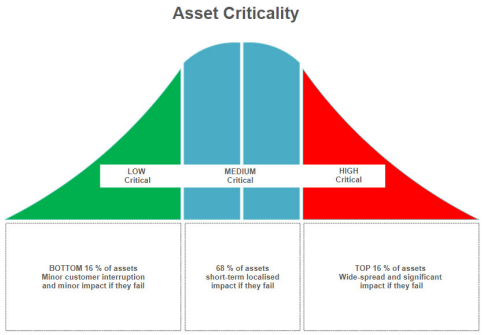

Figure 3. Normal distribution curve used to assign criticality ranges.

The stakeholders all agreed to expand the guideline and tool to individual assets within facilities as it was clear that the guideline and tool made it easy to assess asset criticality and would enable the Council's to generate a risk profile once they applied asset condition scores.

CONCLUSION

The guideline will support Water Service Providers in Queensland to understand asset criticality of individual network assets and facilities allowing them to improve decision making by:

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It was agreed by all stakeholders that asset criticality is driven by the following risk factors:

- Financial
- Reputational
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This project has demonstrated how regional collaboration can result in knowledge sharing and combining ideas which suit large and small utilities to understand their risk associated with owning, operating, and maintaining water and wastewater infrastructure.

Fraser Coast Regional Council, Mackay Regional Council and Whitsunday Regional Council in partnership with ***qldwater*** who engaged Clear Idea enabled this project to come to fruition. It demonstrates how solutions that were previously unavailable to small and regional entities due to lack of resources are now achievable by working together and using different procurement models which drives efficiency and asset management improvements across the water industry in Queensland.

REFERENCES

qldwater Network Asset Criticality Methodology Guideline Nov 20

qldwater Asset Criticality Assessment Tool Nov 20