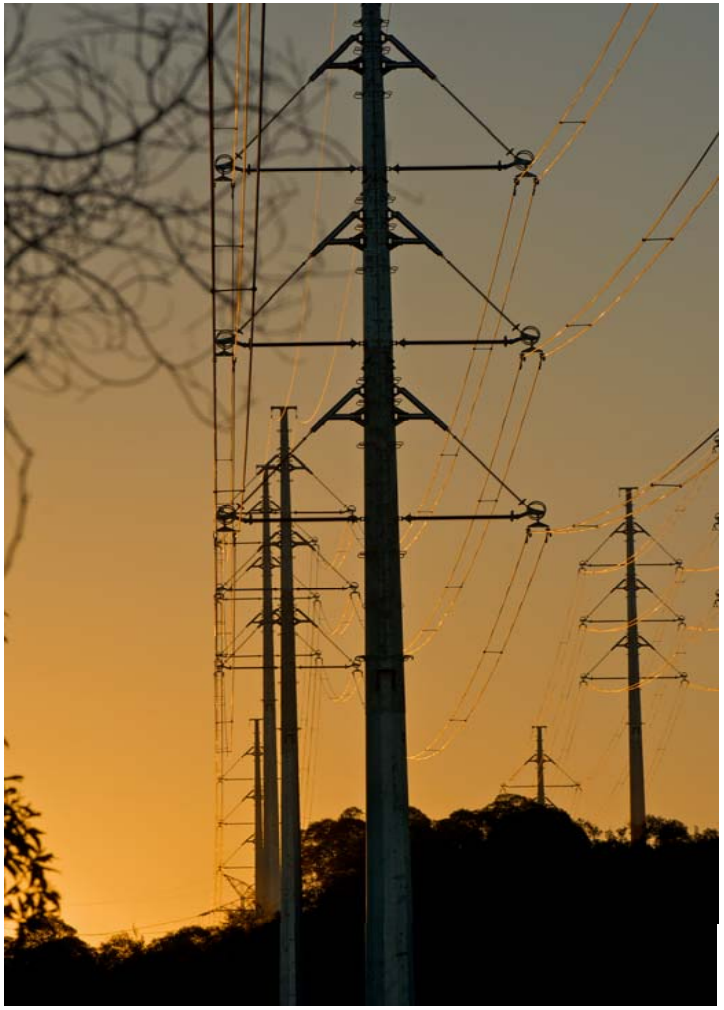
Webinar

Maintaining reliability of supply between Clare South and Townsville South

March 2019

Webinar Overview

- Welcome and overview – 5 minutes
- Presentation – 30 minutes
- Q & As – 20 minutes
- Wrap up and close – 10 minutes



Mahesh Narotam

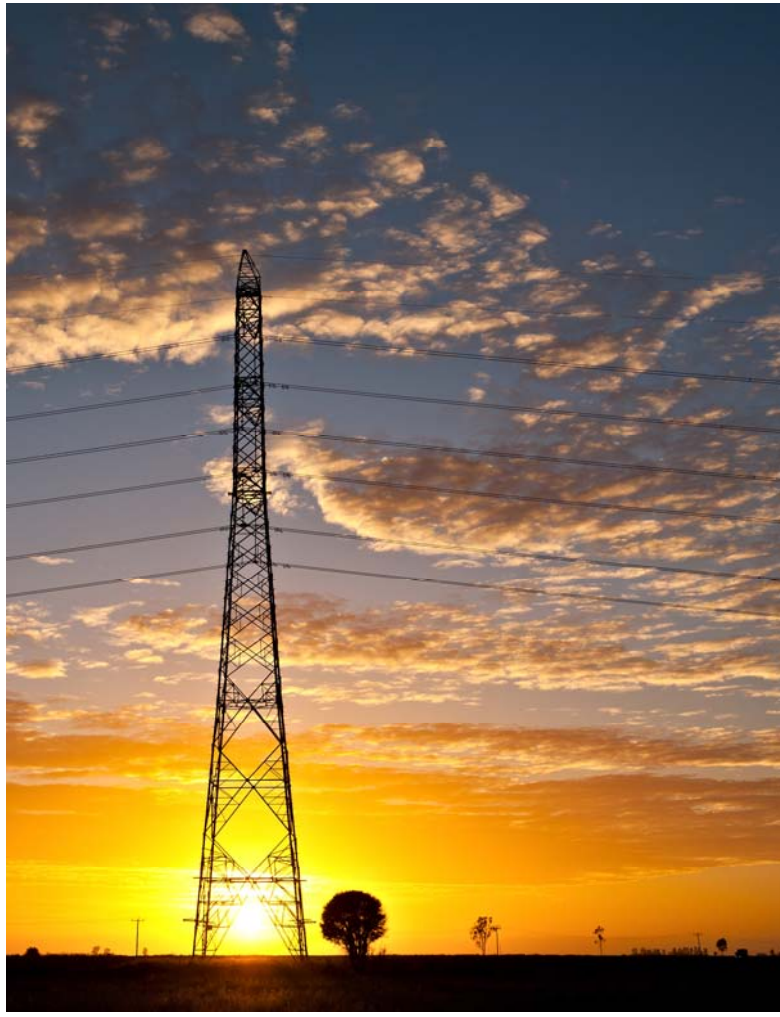
Manager Portfolio Planning
and Optimisation

Roger Smith

Manager Network
and Alternate Solutions

Introduction

- April 2017 - North Queensland Area Forum we discussed:
  - the development of the transmission network in North Queensland
  - our planning processes
  - transmission assets reaching end of technical service life - in particular the two transmission lines between Townsville South and Clare South
- We sought input on the potential network reinvestment strategies being investigated



Previous feedback

Matters raised by attendees:

- Focus on reliability and cost – particularly if considering reconfiguration
- Importance of network resilience given the area's exposure to significant weather events
- Challenges e.g. high levels of renewable generation, potential for expanding loads and operating capability of the network in particular system security, power quality and availability

In response to this feedback, the proposed credible options focus on:

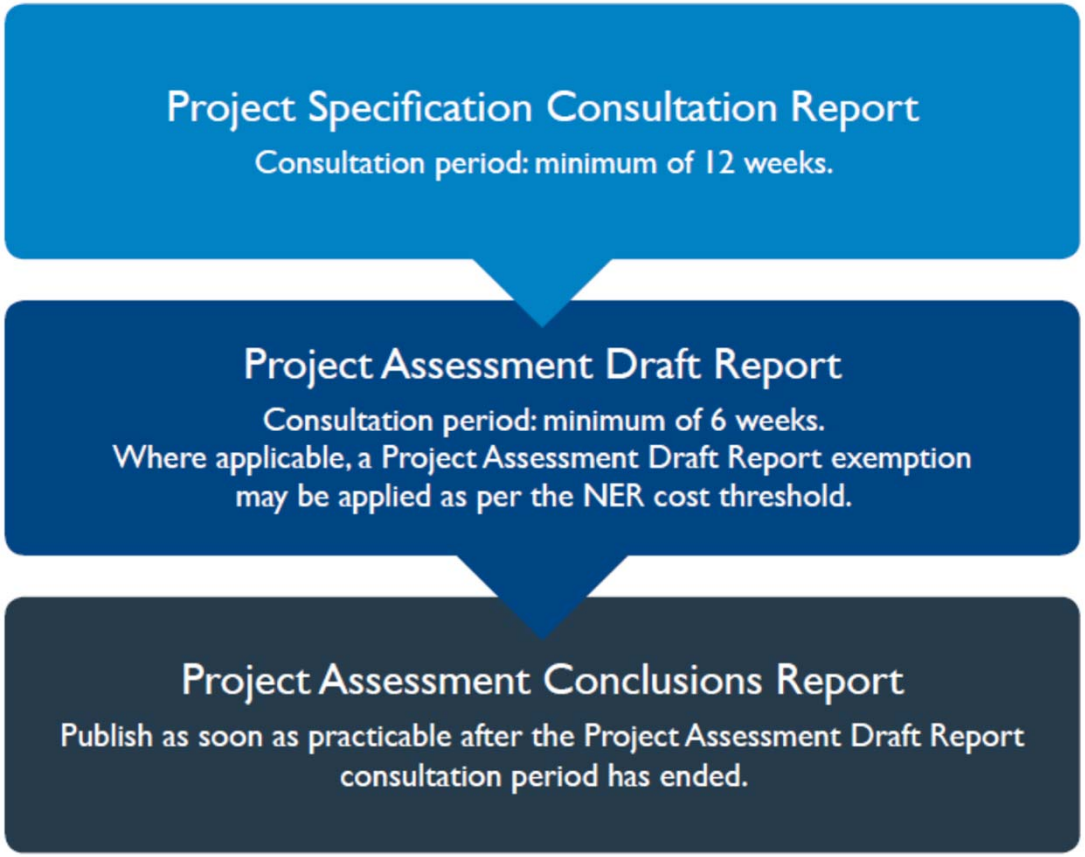
- maximising value for customers
- optimising the use of existing assets
- providing flexibility moving forward

Overview of the RIT-T process

- Regulatory Investment Test for Transmission (RIT-T)
- Purpose: “identify the credible option that maximises the present value of net economic benefit to the market”
- Involves consultation on the cost-benefit assessment, which ranks different project options – typically involving both network and non-network technologies – to identify the ‘preferred option’
- **A critical part of this process is to engage with key stakeholders, such as consumers and non-network businesses, and to call for and respond to submissions on the credible options presented**

Steps in the RIT-T process

We are here

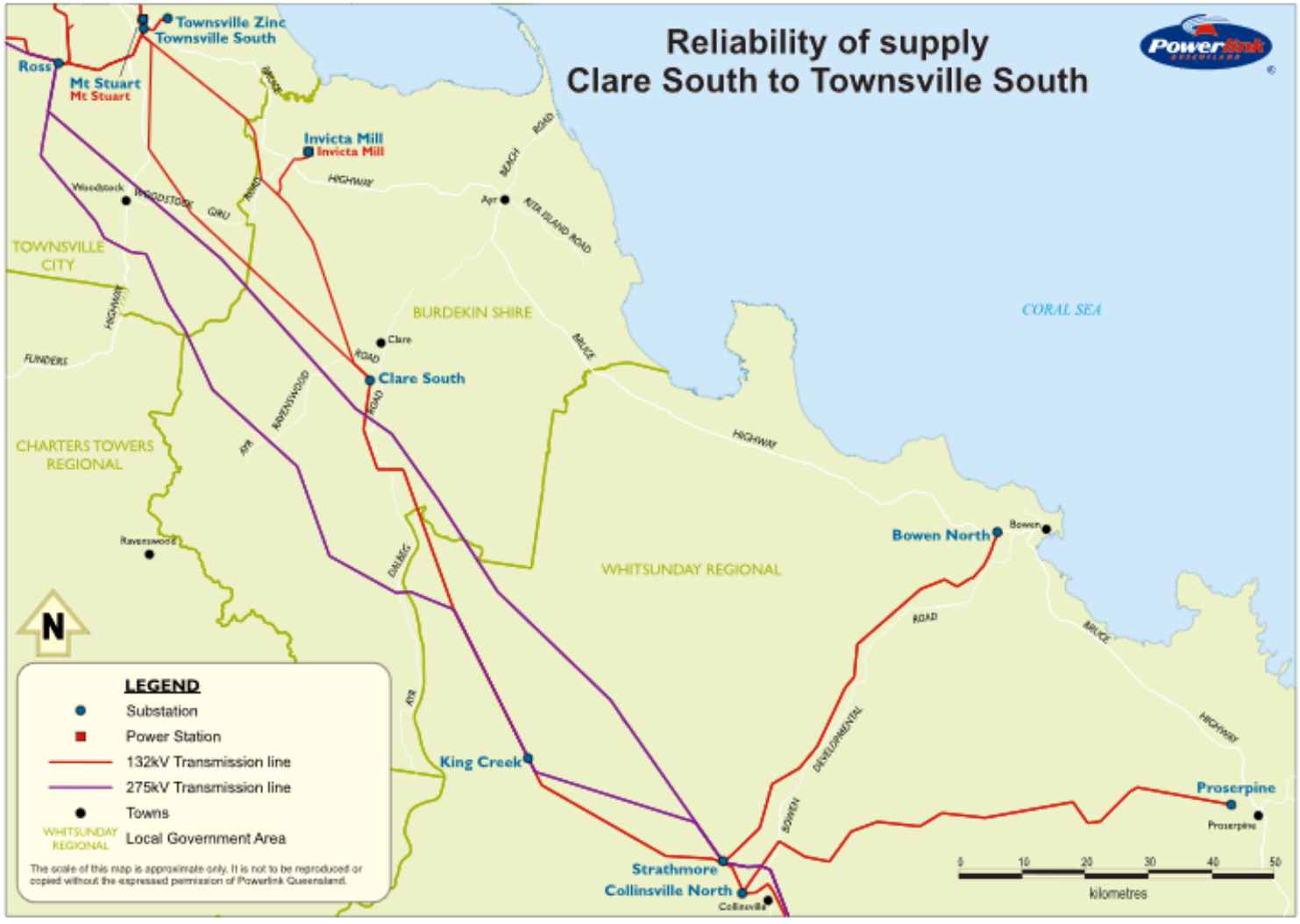


Where we are now

- The Regulatory Investment Test for Transmission (RIT-T) consultation process has commenced to address the risks arising from the condition of these transmission lines
- Project Specification Consultation Report (PSCR) was published in November 2018
- The RIT-T process will identify the preferred option for implementation
- Powerlink encourages ongoing customer input throughout the RIT-T process

North Queensland Network Development

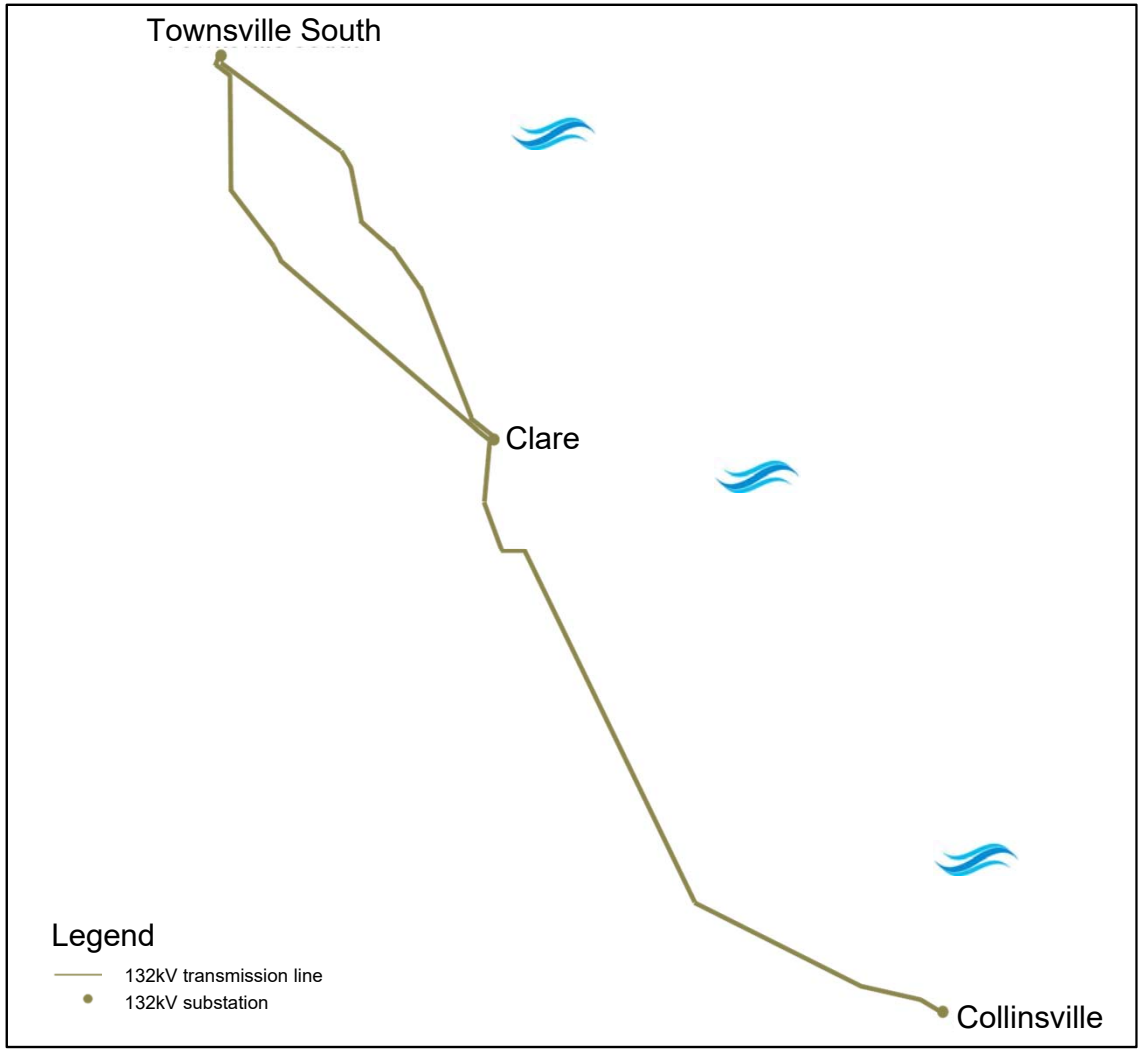
Geographic overview



Southern Ross zone – network development

1960s

132kV lines from Collinsville power station to Townsville

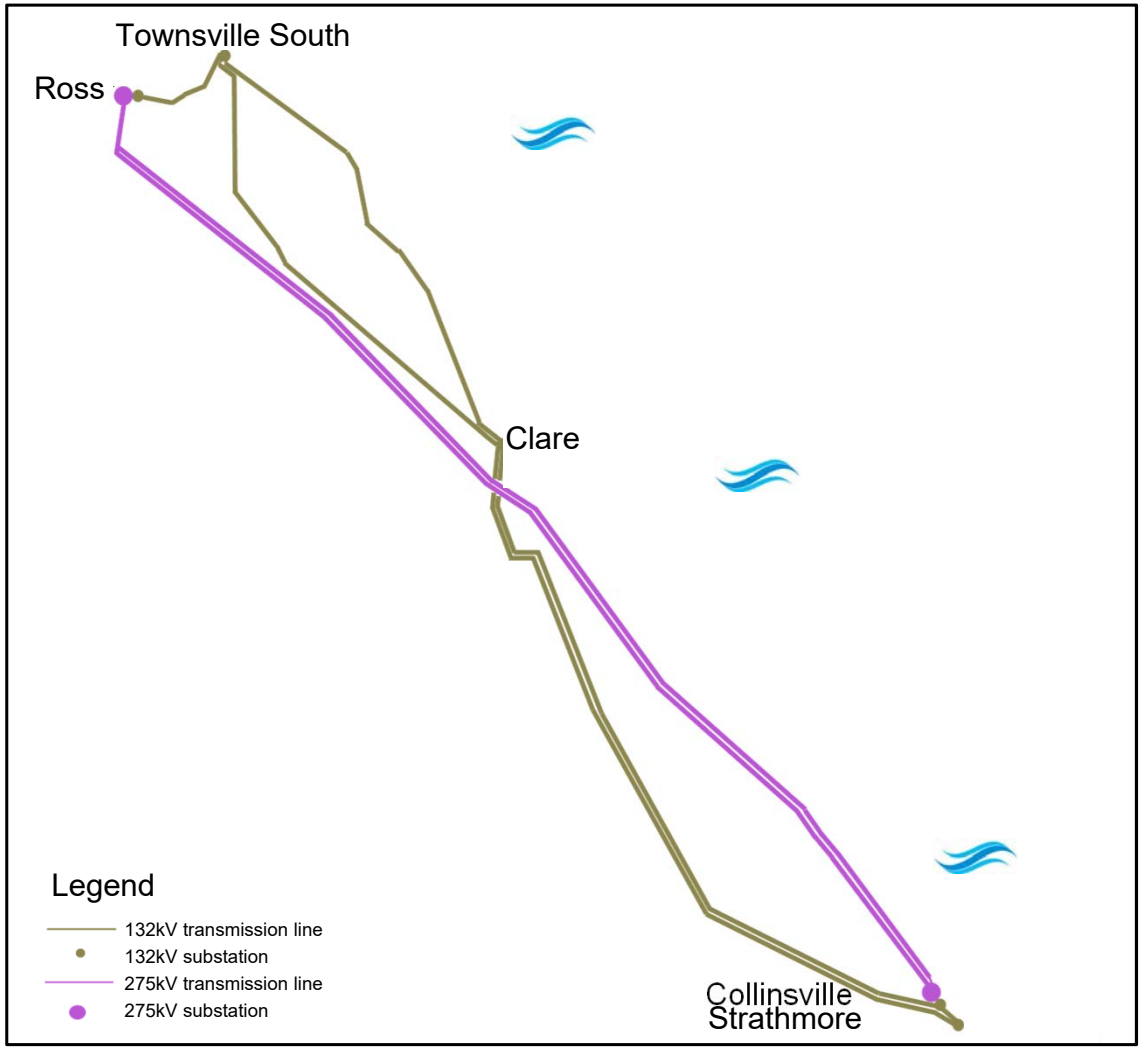


Southern Ross zone – network development

1970s-1980s

275kV single circuit lines established between Collinsville and Ross

Ross 275/132kV substation established with one transformer initially (there are now three)



Southern Ross zone – network development

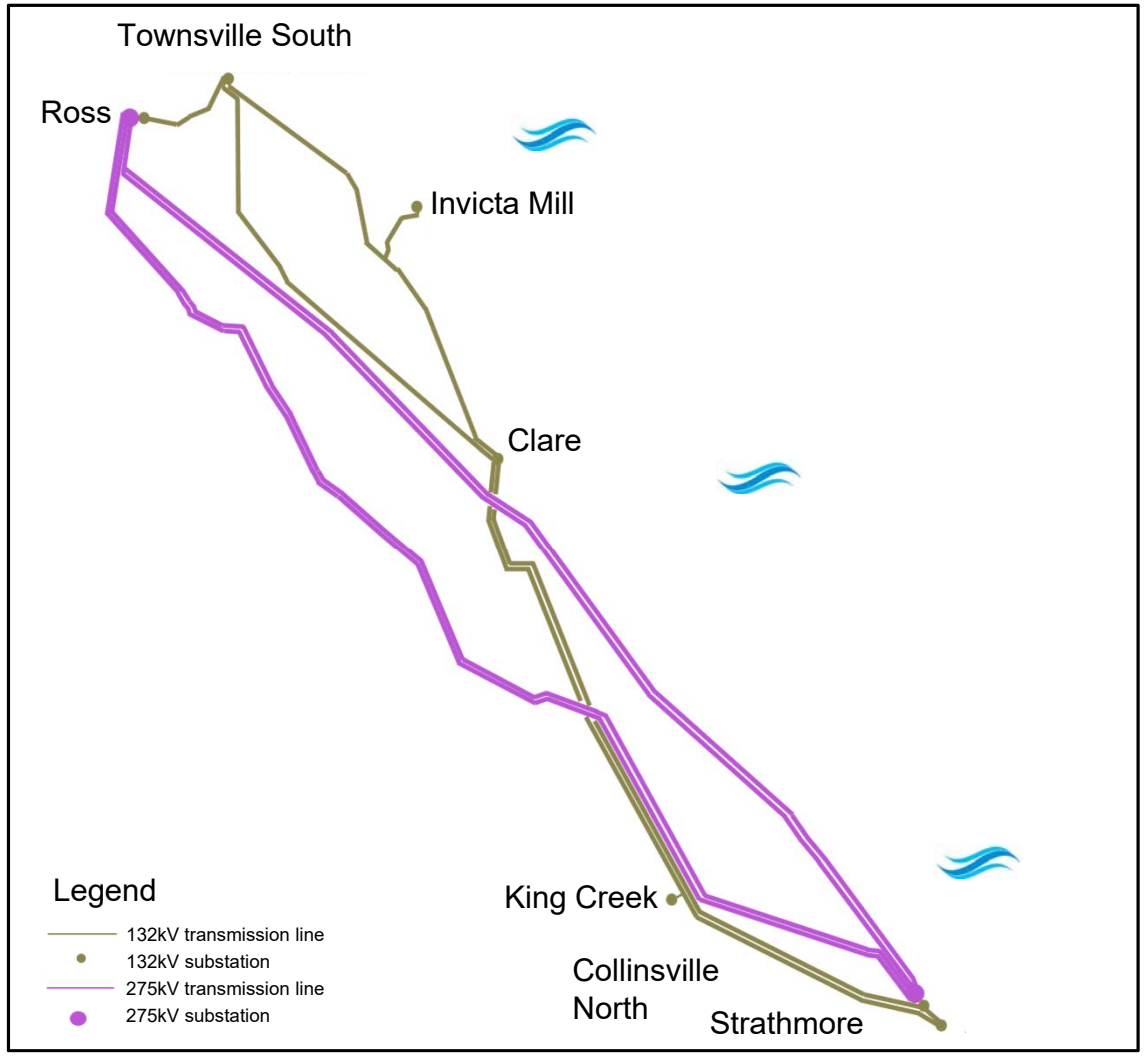
2000 onwards

275kV supply into NQ upgraded

Replacement of original substations at Clare and Collinsville at adjacent sites

Connection of major customers including renewable generators

Decommissioning of assets



Key characteristics – existing network

- The 275kV network is adequate for load transfer requirements, with minimal reliance on the 132kV transmission lines for intra-network transfers
- 132kV primarily provides connection to King Creek, Invicta Mill and Clare South substations
- 132kV supports transfers in the area and provides voltage support under contingency conditions

Key characteristics – existing network

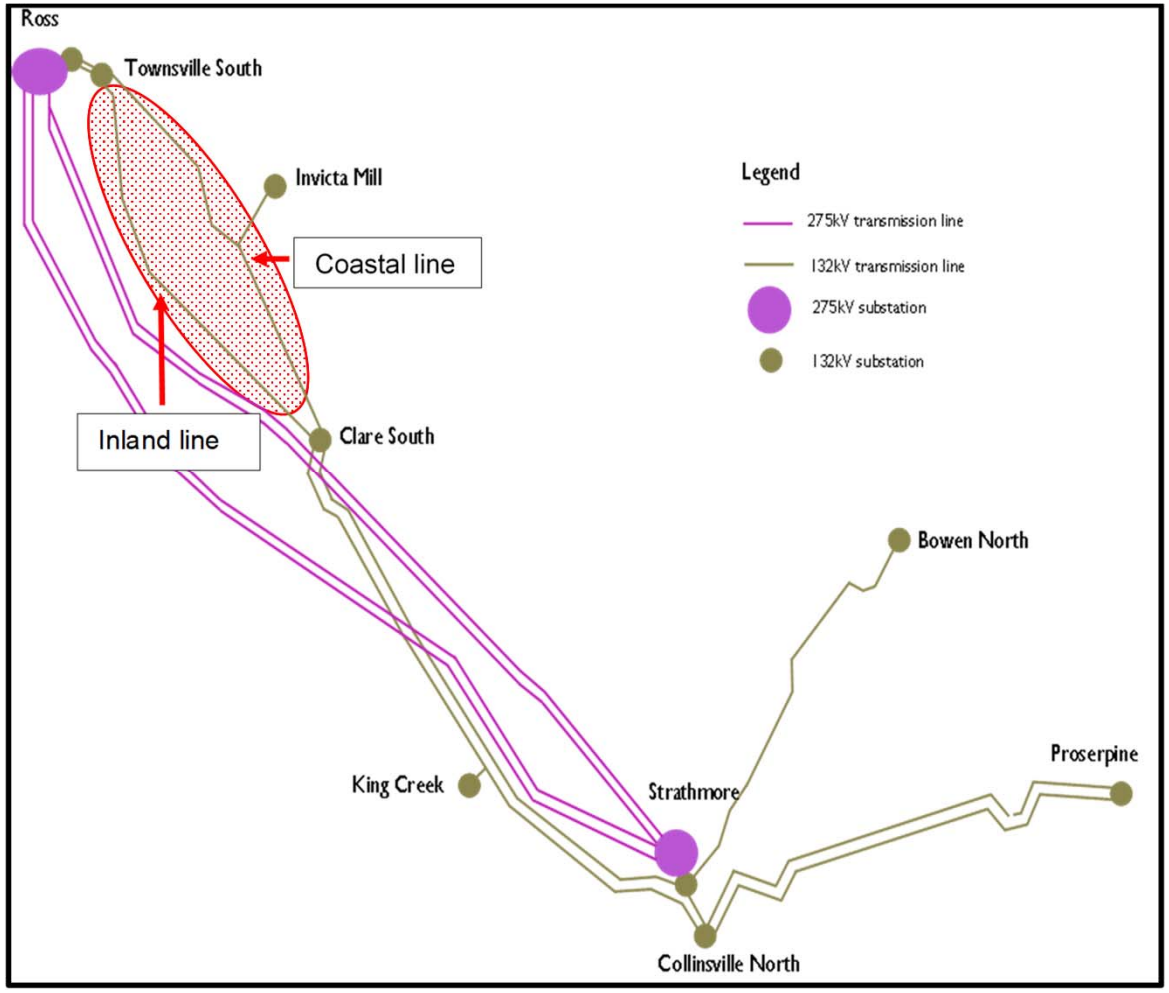
- Increasing renewable generator connections in the area
- Limited capacity of existing 132kV network to accommodate further connections
- Load increase not predictable in the area – potential for increase above forecast levels
- Low fault levels (system strength) in the Strathmore area, particularly under contingency
- Single transformer at Strathmore substation – outage constraints, system spare to be installed on site

PSCR

Maintaining reliability of supply between Clare South and Townsville South

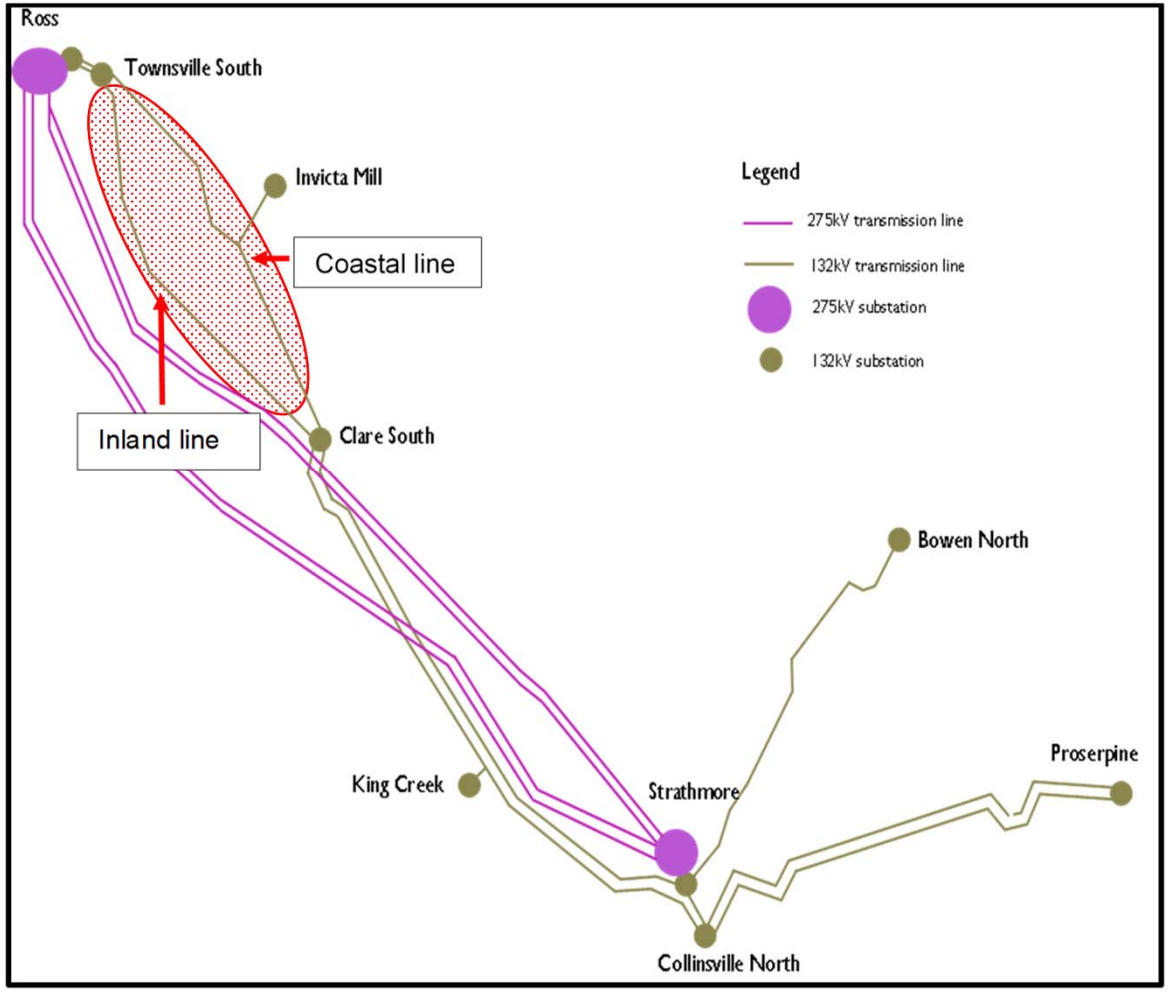
Maintaining reliability of supply

- 10 year load forecast – peak demand remaining steady
- Lines provide back up supply to Townsville and voltage support to Strathmore under contingency
- Coastal line connects to Invicta Mill as a load and generator



Identified need timing

- Lines originally commissioned in 1963 and 1967
- Need to invest is driven by network and safety risks arising from:
  - degrading above ground condition of the structures of both lines (407 towers)
  - highly corroded grillage foundations on the inland line
- Corrective action is required



Network options

Theme 1: Maintain network configuration

Retain existing lines between Clare South and Townsville South substations, with the formulation of two alternative life extension strategies. Both strategies involve renewal of the structures on each line, and the inland line also includes full repair of all grillage foundations:

- Base Option: 10 year life extensions of coastal and inland lines - $41m
- Option 1: 20 year life extension of coastal and inland lines - $55m

Network options

Theme 2: Reconfigure network

Decommissioning of the inland line and two life extension strategies of the coastal line. Removal of the inland line requires an alternative network substitution, installation of an additional transformer at Strathmore, to maintain system reliability.

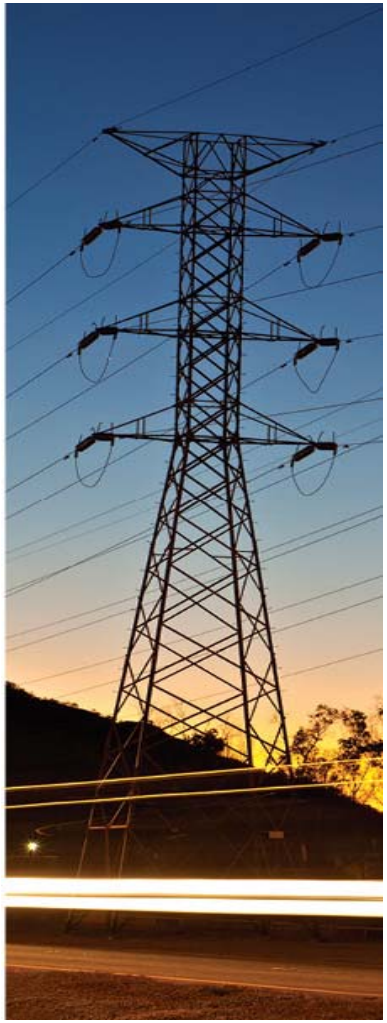
- Option 2: 10 year life extension of coastal line with network reconfiguration - $28m + $8m decommissioning
- Option 3: 20 year life extension of coastal line with network reconfiguration - $42m + $8m decommissioning

Non-network options

- The opportunity for non-network support to facilitate removal of the inland Clare South to Townsville South transmission line has been identified in the TAPR since 2015
- In lieu of a network solution, a non-network option would need to replicate the required capacity, reliability, functionality and operability on an enduring basis, and would need to:
  - Support up to 10MW in the Proserpine, Clare and Collinsville area
  - Maintain existing fault level
  - Provide voltage control

Market benefits

- Powerlink has not identified any material market benefits at the PSCR stage
- Non-network options have the potential to impact the wholesale electricity market
- Market benefits arising from any credible non-network options identified will be assessed as part of the Project Assessment Draft Report
- Powerlink encourages submissions from non-network providers to ensure the lowest long run cost solution is implemented



Next steps

- Powerlink welcomes submissions on the Project Specification Consultation Report by 18 April 2019 by emailing:

  NetworkAssessments@Powerlink.com.au

- Please contact Roger Smith 07 3860 2328 if you have any questions

- Subject to submissions received, Powerlink anticipates publication of the Project Assessment Draft Report in May 2019

- Further consultation will be undertaken

Questions