North East Water Urban Water Strategy

7 October 2026





We respectfully acknowledge the Traditional Owners and custodians of the lands and waters on which we meet today. We pay our respects to their Elders past, present, and emerging, and recognise their ongoing connection and enduring care for Country.

Water supplies in north-east Victoria





Water supplies in north-east Victoria





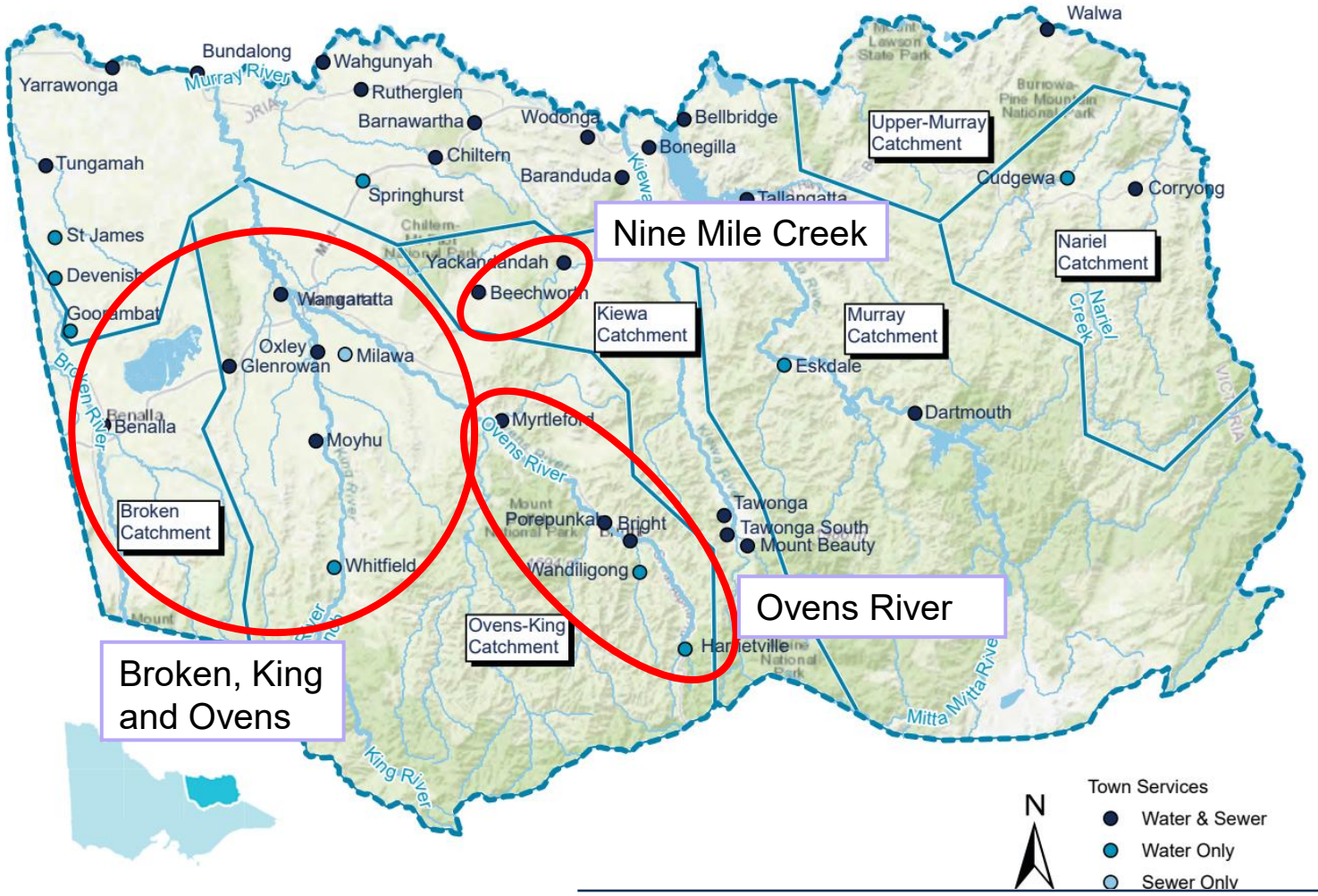
Our current water security challenges

- Population growth, housing targets and impacts of tourism
- Uncertain industrial demand e.g. data centres
- Affordability and levels of service
- Climate change, including extreme events, droughts, bushfires, storms and floods
- Decision-making in a complex and uncertain environment



Photos: Lake Buffalo (top) and Ovens River (bottom) during the Millenium Drought (1997 – 2009).
Credit: Alison Pouliot

Long-term water security planning



Several of our towns are forecast to have water shortage by 2040

The forecast demand exceeds water available through local rivers

We're updating our 50-year Urban Water Strategy

Using a different method with OneBasin Cooperative Research Centre

NEW-One Basin partnership

Federal government grant through One Basin Cooperative Research Centre to improve the Murray Darling Basin:

'*Putting People at the centre of climate risk assessment*'

Benefits:

- Real life academia / industry case study; allows for blue sky thinking
- Align research to real life scenarios
- Positive working relationship; collaborative approach to problem solving
- Value of the work >$400k in FTE across both agencies



Why use a new approach to assessing future water supply?

Motivation

Future climate and demand conditions are uncertain

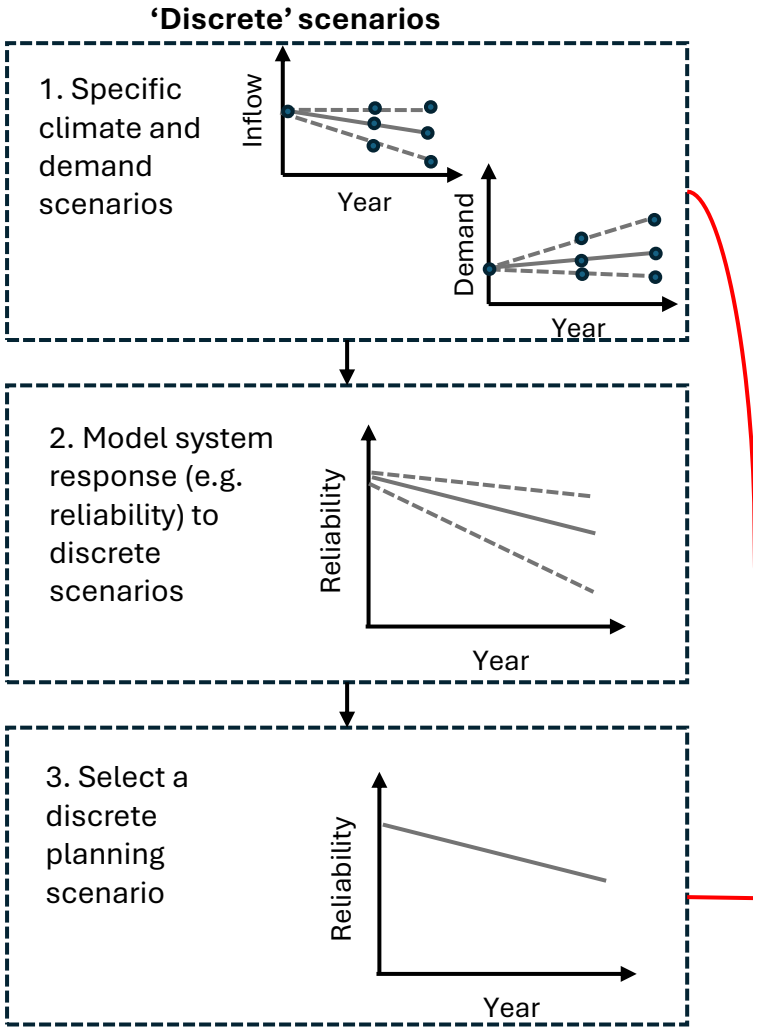
- *Bright demand increased 50% 2021 to 2026*
- *Myrtleford modelled supply decreased by 25% 2021 to 2026*
- *Ovens supply projections for streamflow range from -1 to -17% per °C warming*

How do we identify vulnerabilities across a wider range of potential futures?

Aim to prioritise investments based on **vulnerability**

- *Includes exposure (change in inputs) and sensitivity (response)*

Discrete and ‘continuous’ scenarios



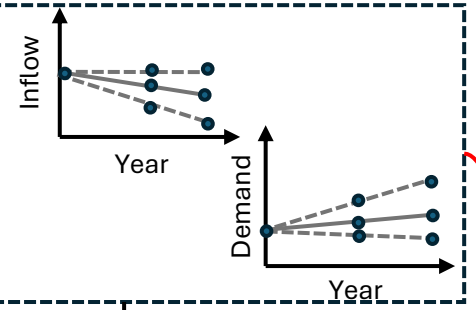
Risks:

- Risk tolerance perspective glossed over
- Behaviour outside of assumptions uncertain
- Action plan may be locked to assumptions

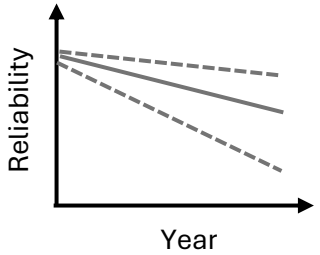
Discrete and ‘continuous’ scenarios

‘Discrete’ scenarios

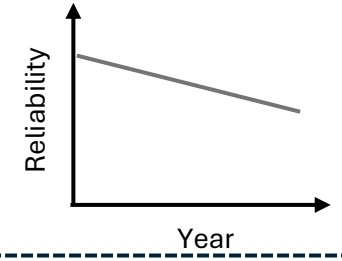
1. Specific climate and demand scenarios



2. Model system response (e.g. reliability) to discrete scenarios

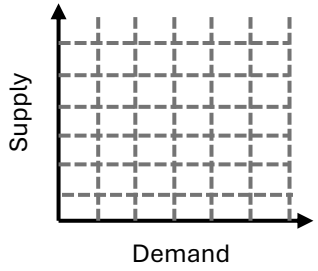


3. Select a discrete planning scenario



‘Continuous’ scenarios

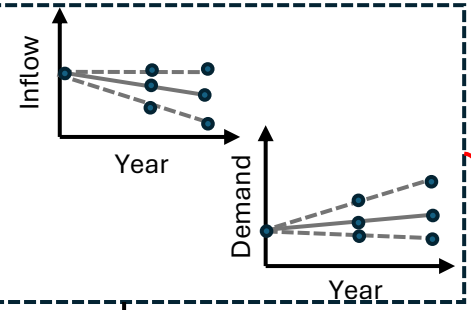
1. Identify key system drivers (e.g. supply and demand) and range of plausible changes to create a scenario ‘continuum’



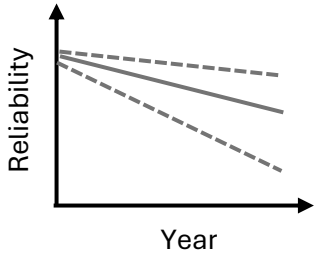
Discrete and ‘continuous’ scenarios

‘Discrete’ scenarios

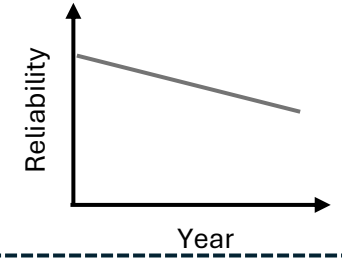
1. Specific climate and demand scenarios



2. Model system response (e.g. reliability) to discrete scenarios

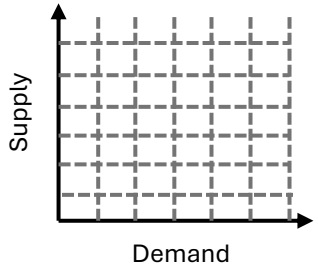


3. Select a discrete planning scenario

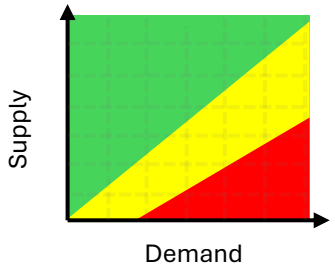


‘Continuous’ scenarios

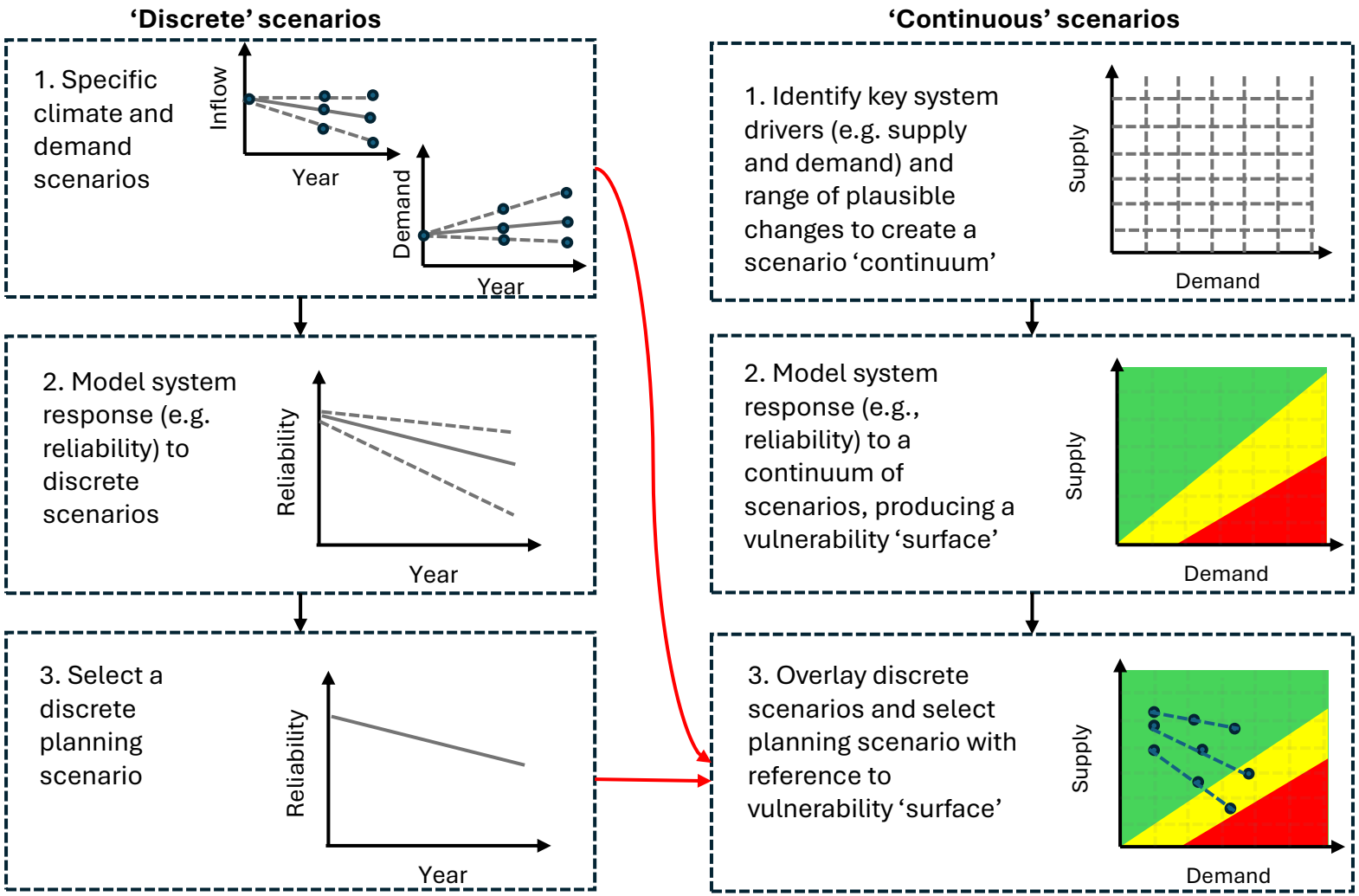
1. Identify key system drivers (e.g. supply and demand) and range of plausible changes to create a scenario ‘continuum’



2. Model system response (e.g., reliability) to a continuum of scenarios, producing a vulnerability ‘surface’

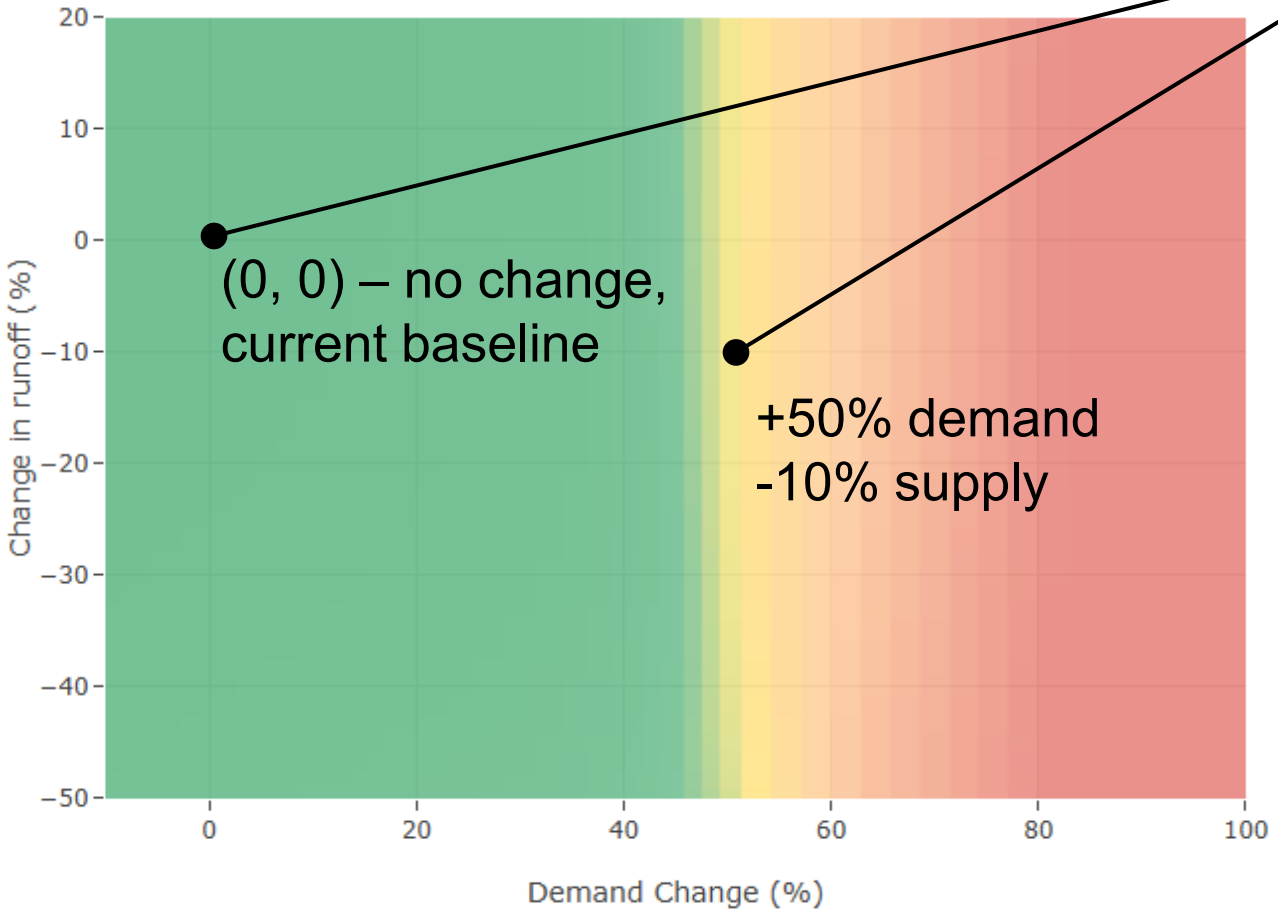


Discrete and ‘continuous’ scenarios



What this looks like

Colours show responses at combination of changes



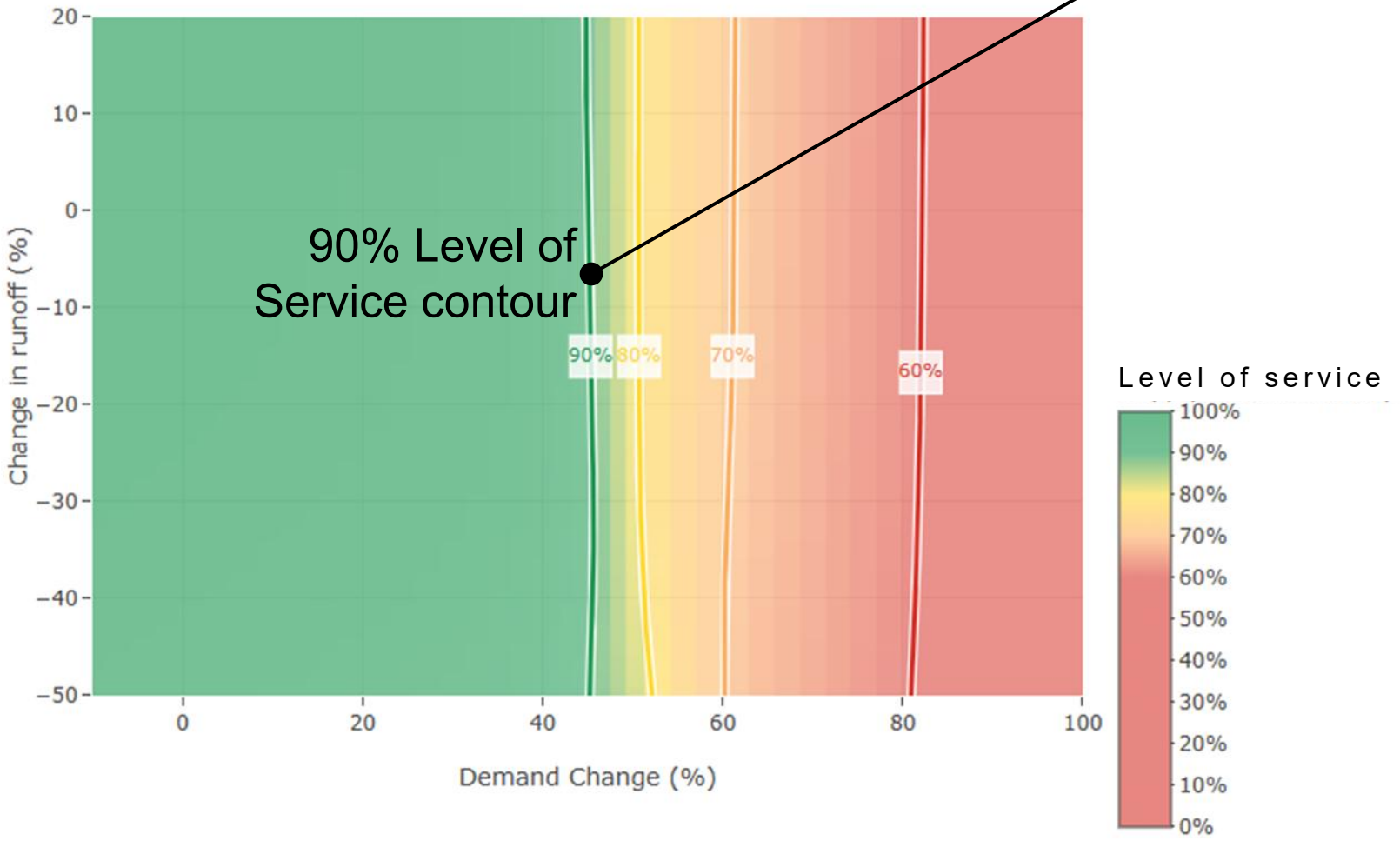
Shape of the surface shows sensitivity

Flat in one direction = not sensitive

This system is demand sensitive

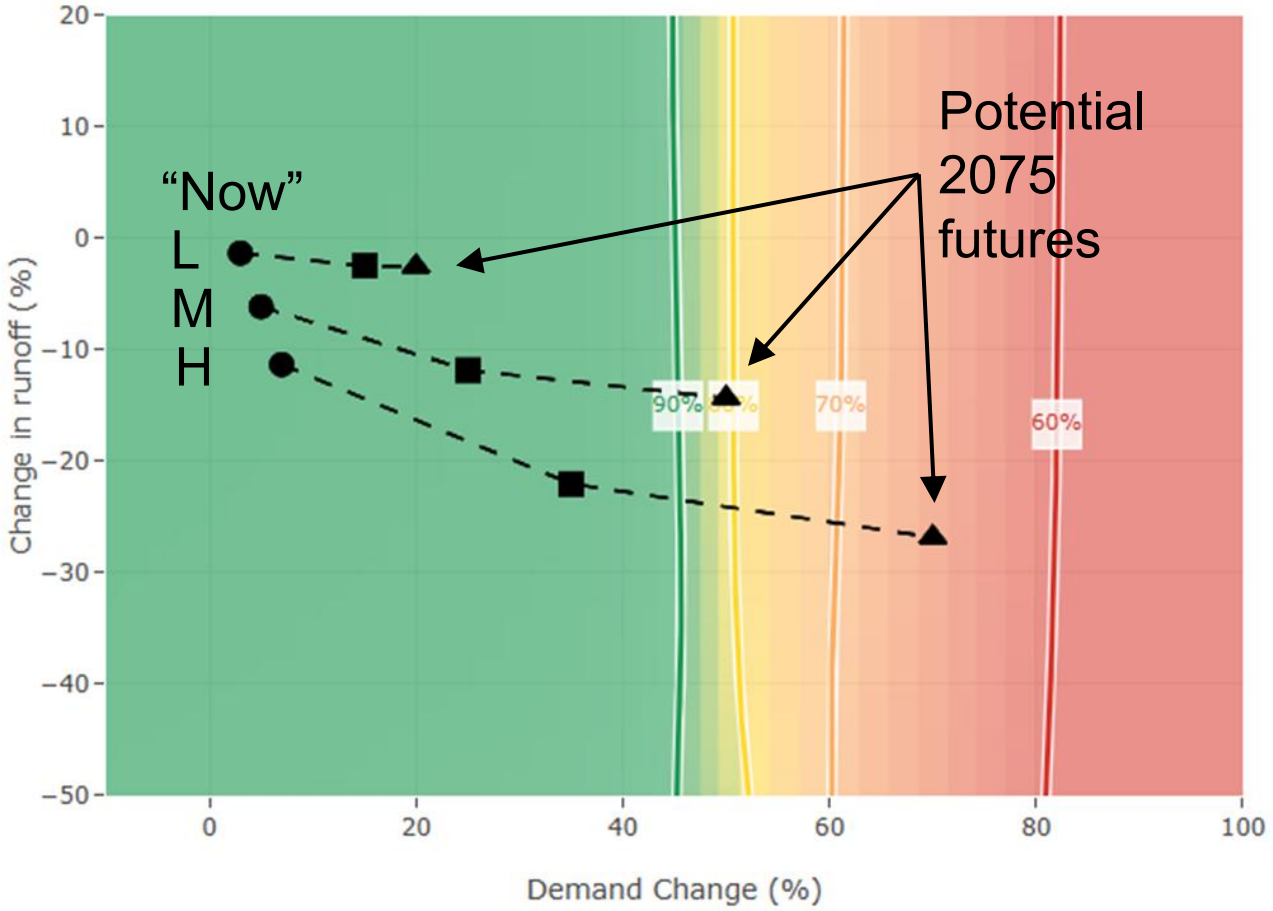
What this looks like

Contours show critical outcome levels

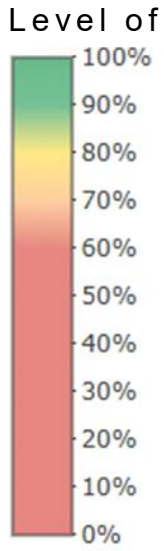


What this looks like

Scenarios show possible progression through time





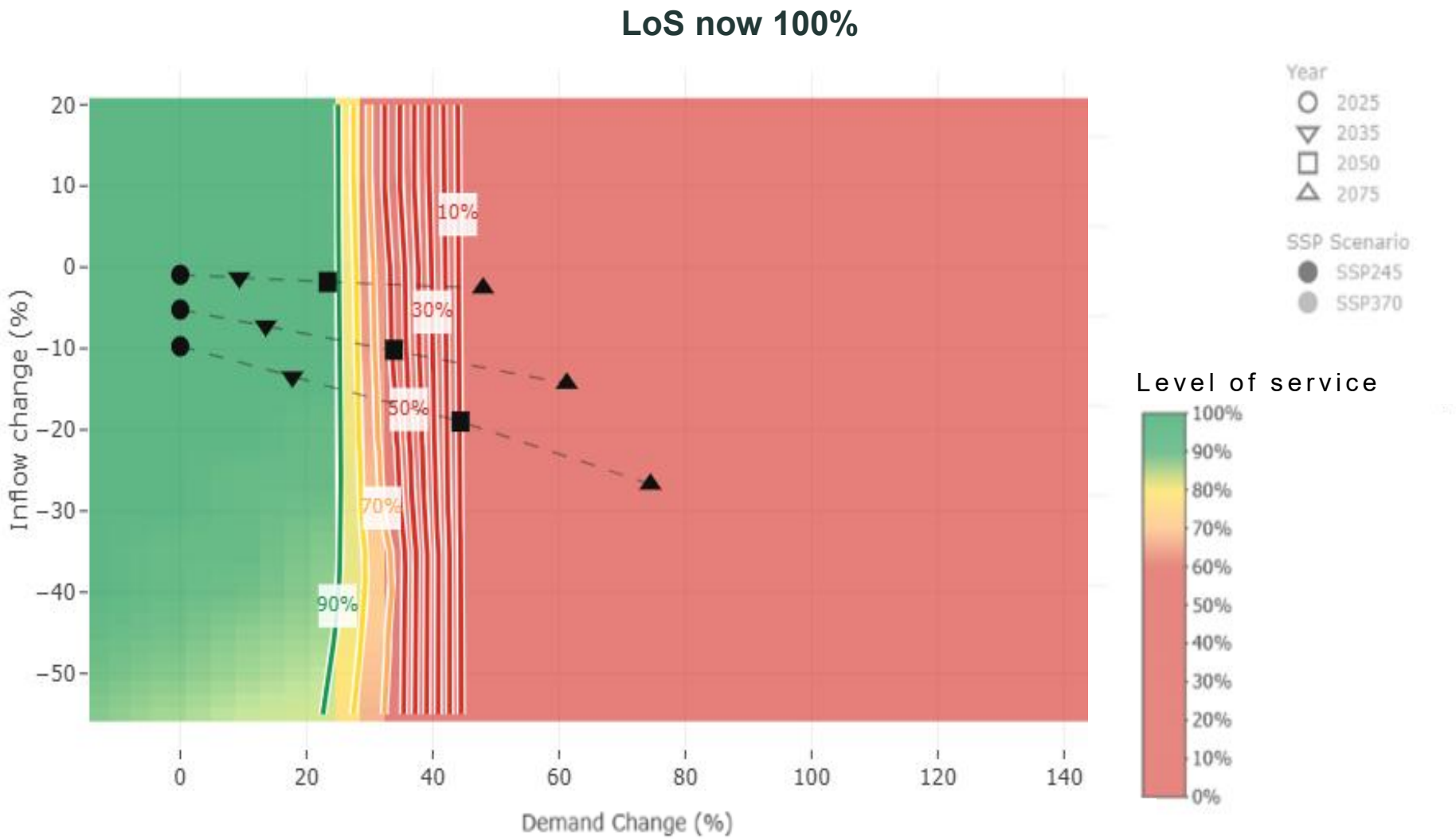


Scenarios help ground timing considerations, but the whole surface should be viewed holistically

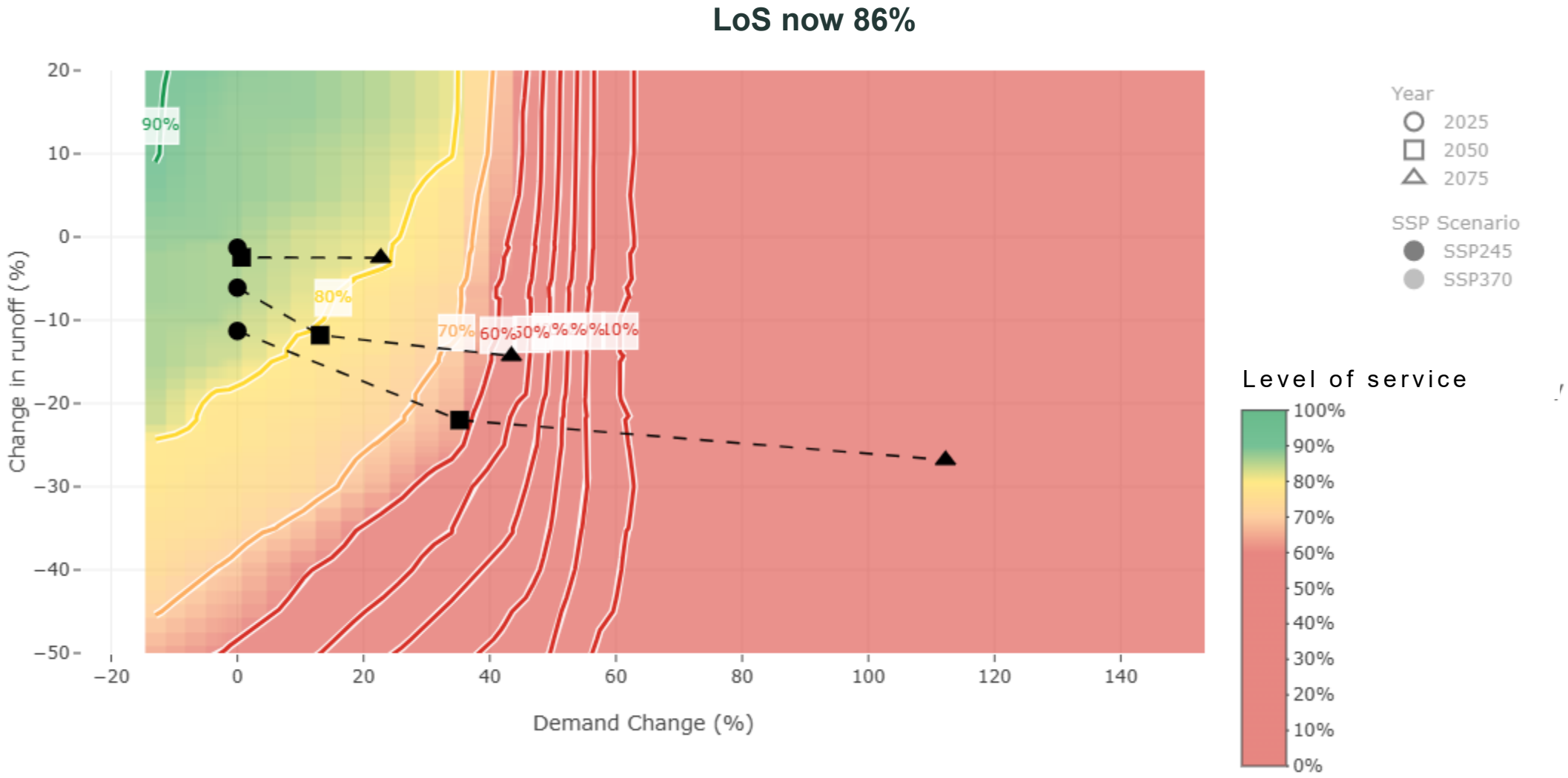


North East Water modelling results

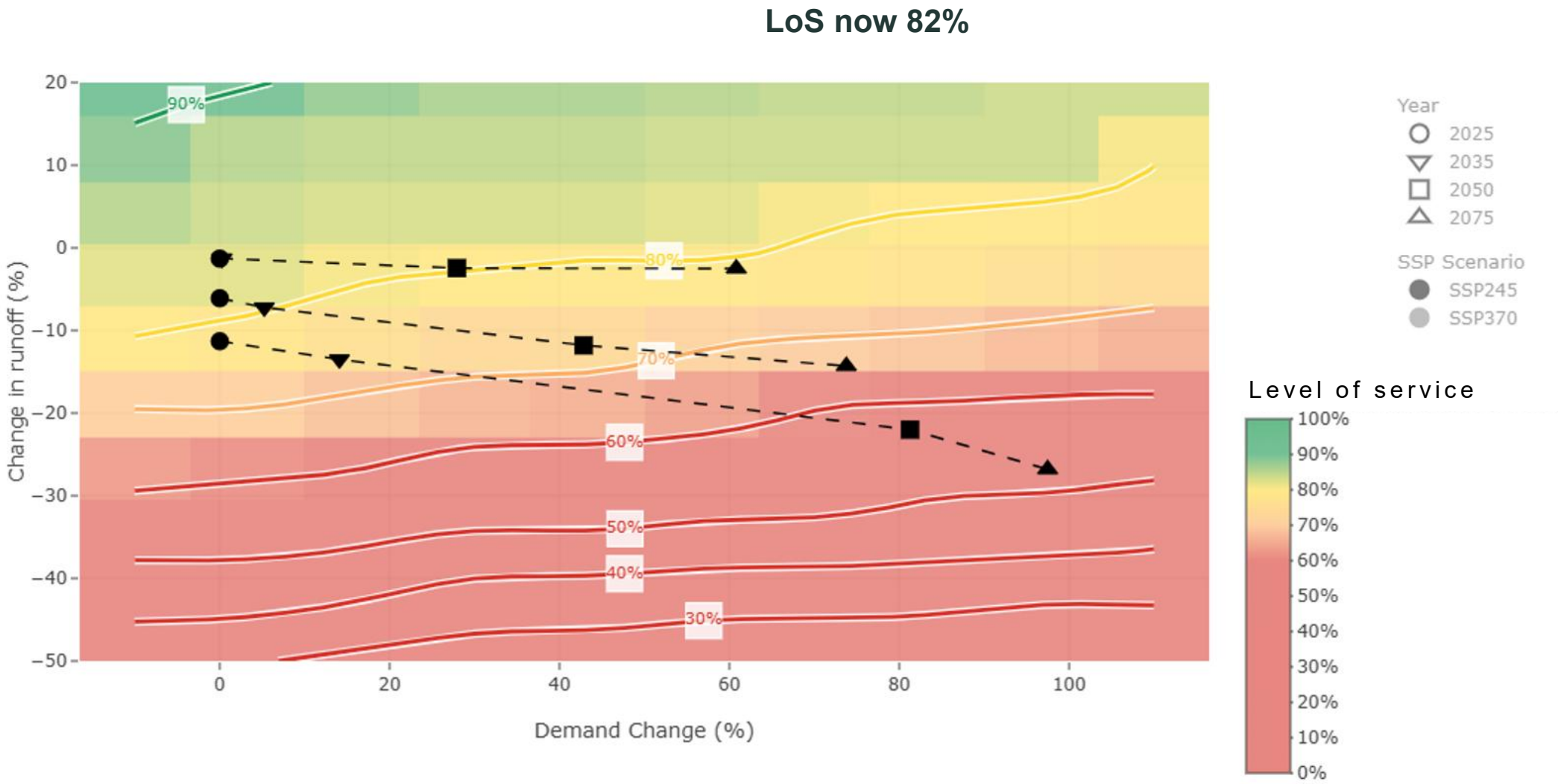
Town A: Sensitive to increase in demand



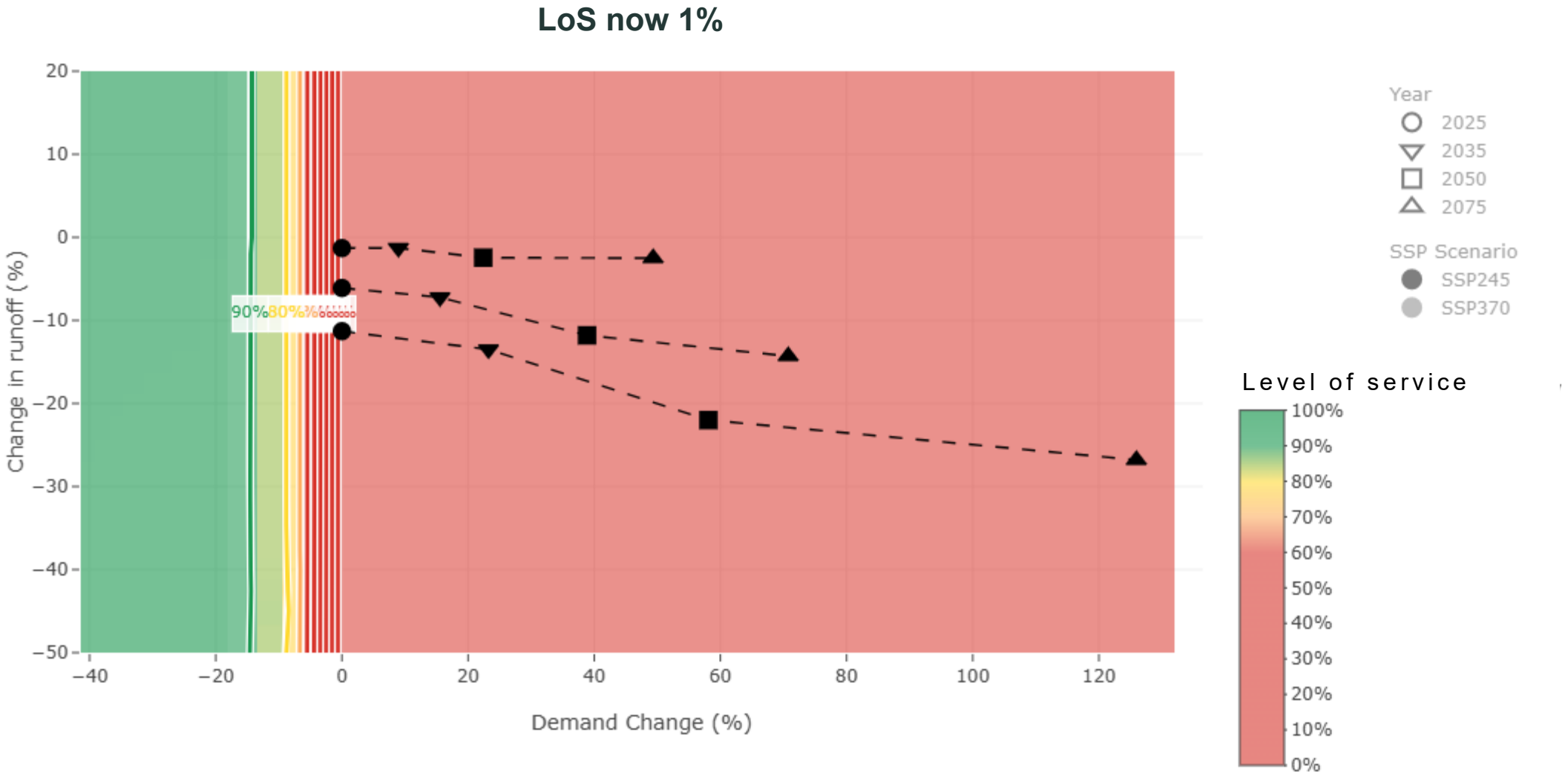
Town B: Sensitive to change in demand and supply



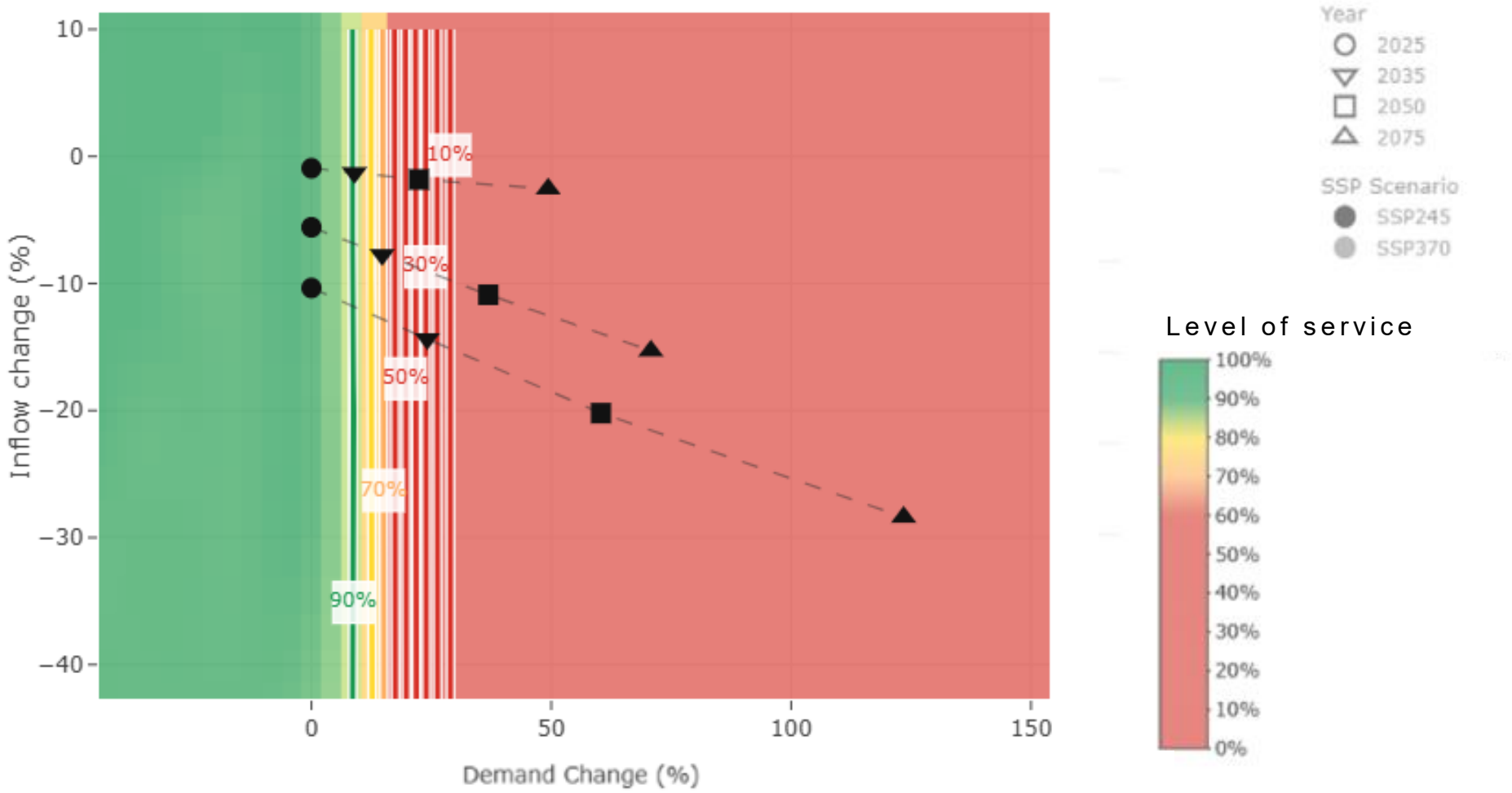
Town C: High demand scenario includes a data centre



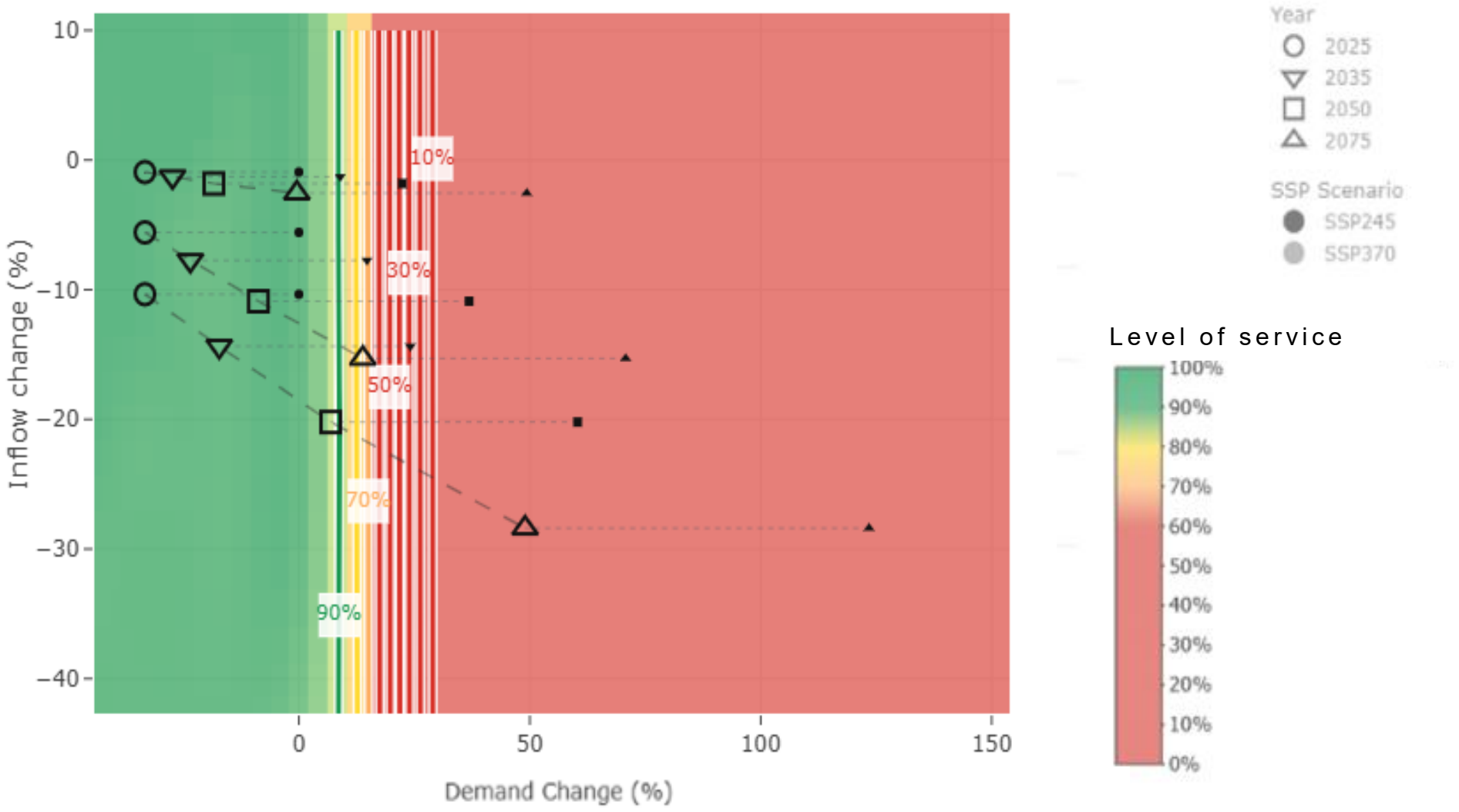
Town D: Not currently meeting level of service



Town D: After a 300ML bulk entitlement trade



Town D: After a 300ML trade and reducing water losses



Feedback from the water sector



‘This method is giving us a much better understanding of future risk and vulnerabilities’



‘We can quickly assess how effective adaptation options will be’



‘We’d like to learn how to use the tool, to inform water resource decision-making in between Urban Water Strategies.’

‘I think it's something that should be rolled out more broadly. It's such a visual, clear tool to help explain water security’



Where to next

Adaptation pathways

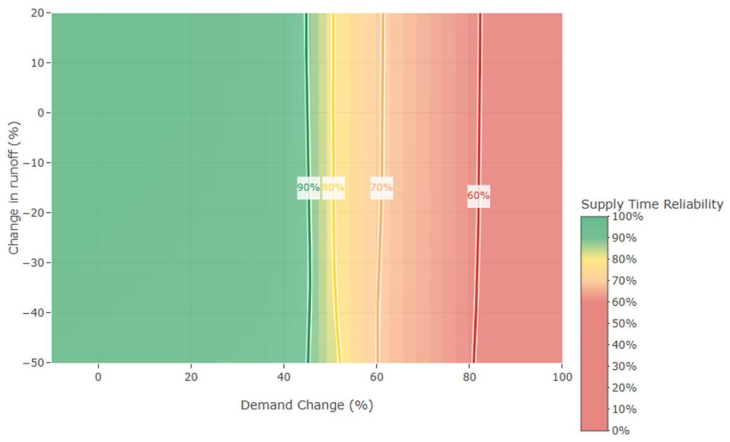
Preliminary example

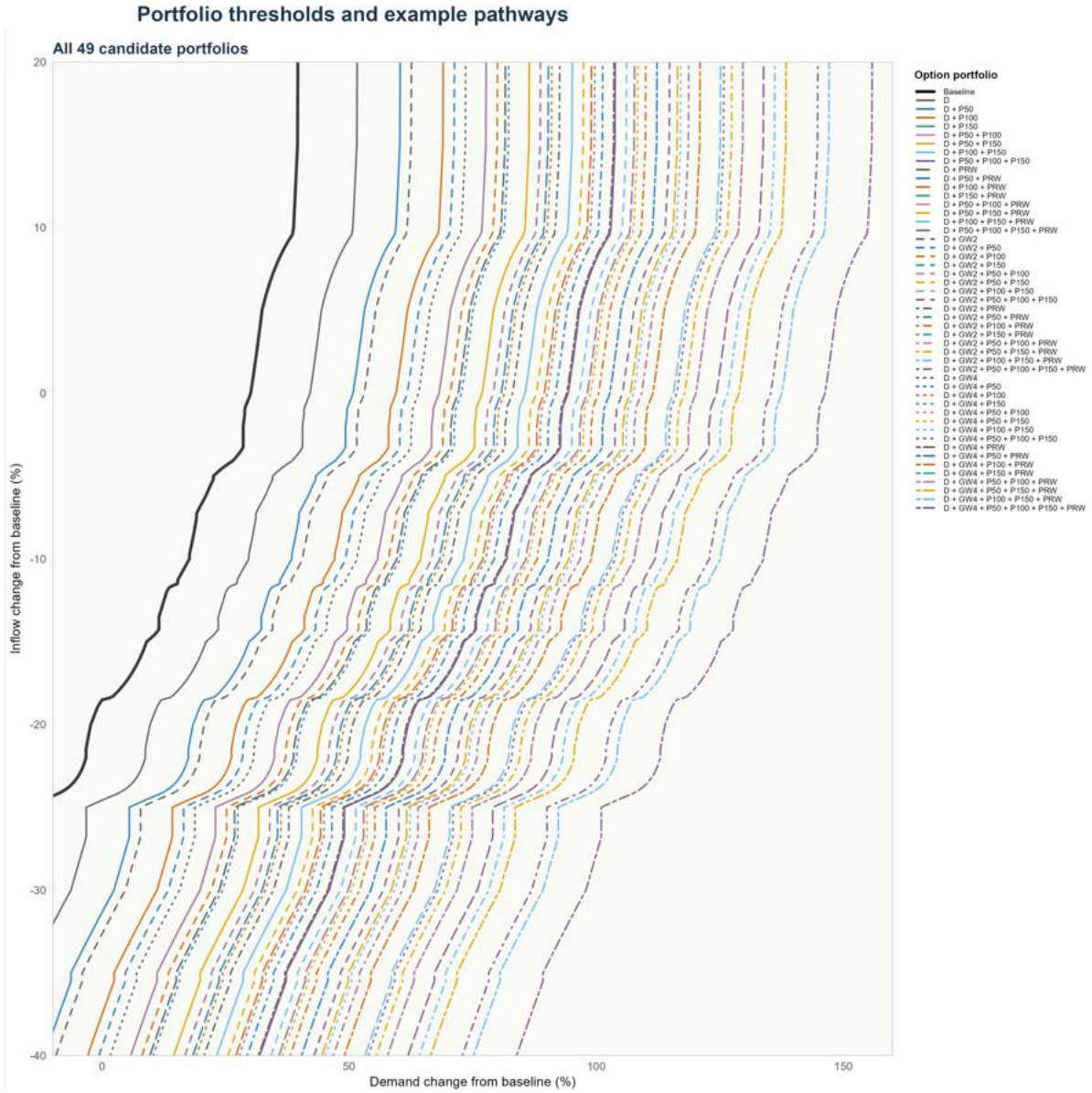
Augmentation options

- Water conservation and demand reduction
- Stormwater harvesting
- Groundwater augmentation
- Pipeline A
- Pipeline B
- Pipeline C
- Purified recycled water (direct and indirect)

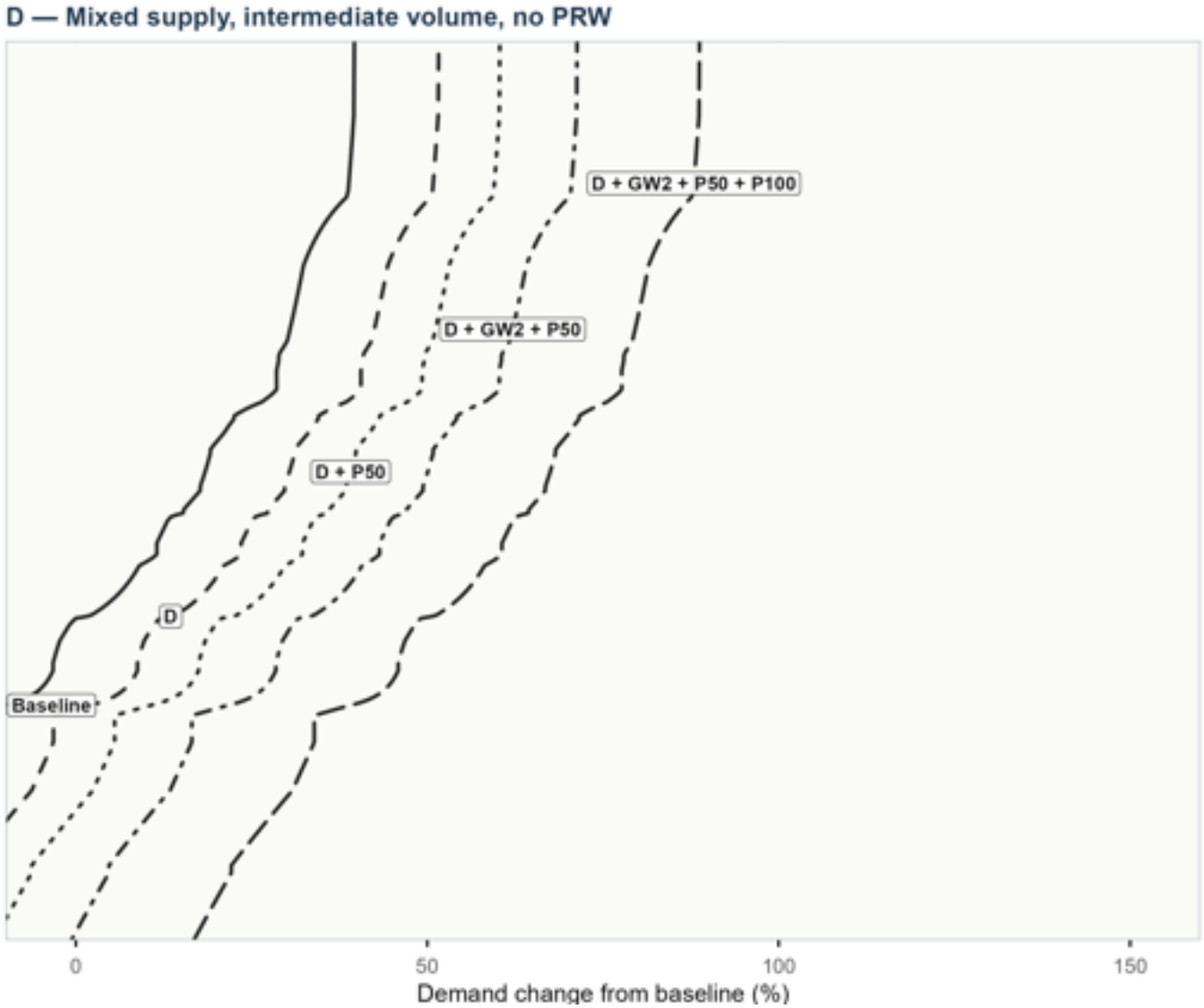
Maximum change while still achieving 90% LoS

90% level of service contour

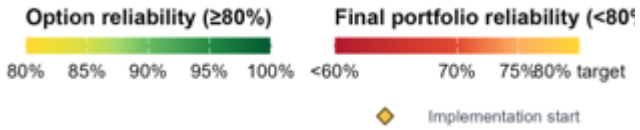


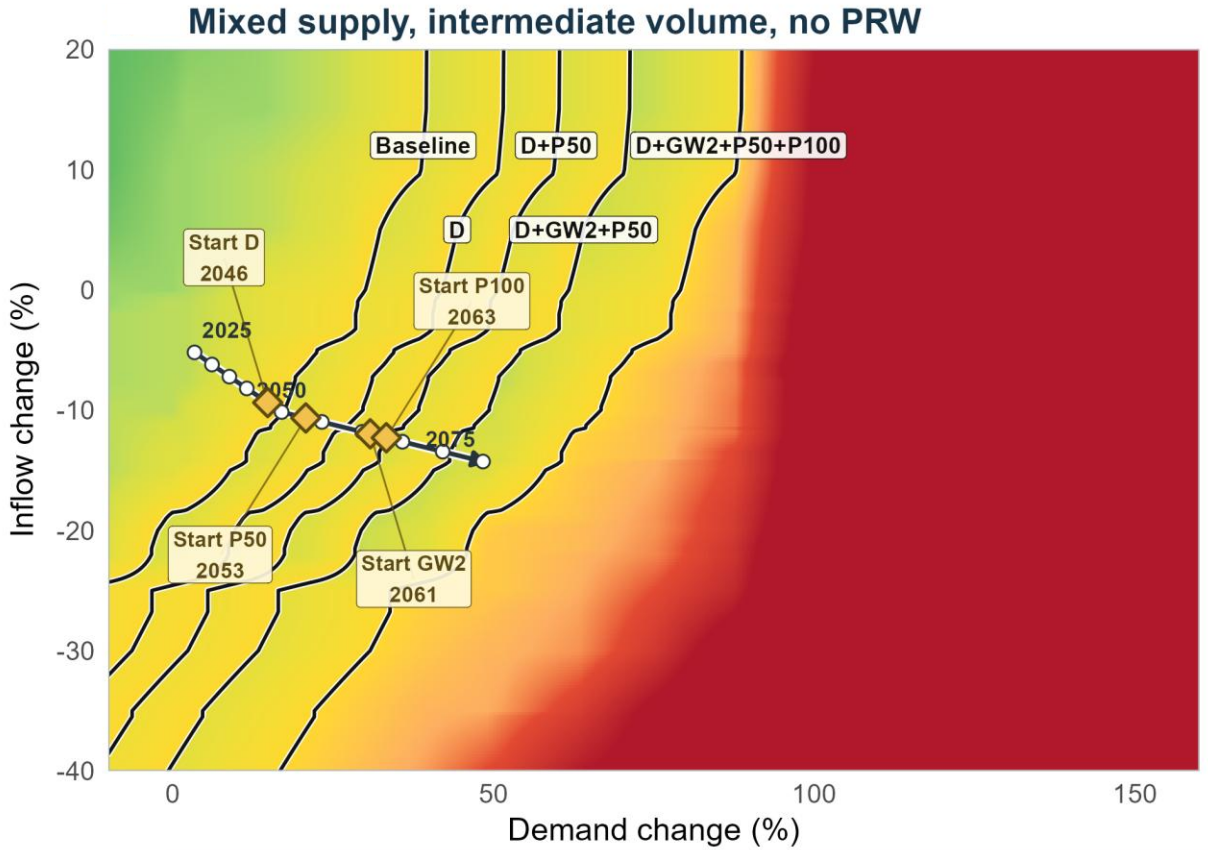


Combining actions in a pathway

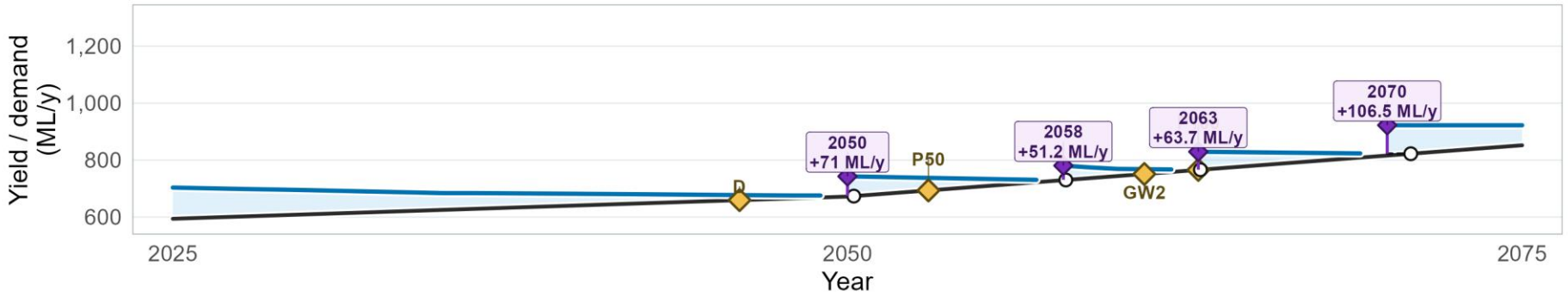


Linking to a planning scenario

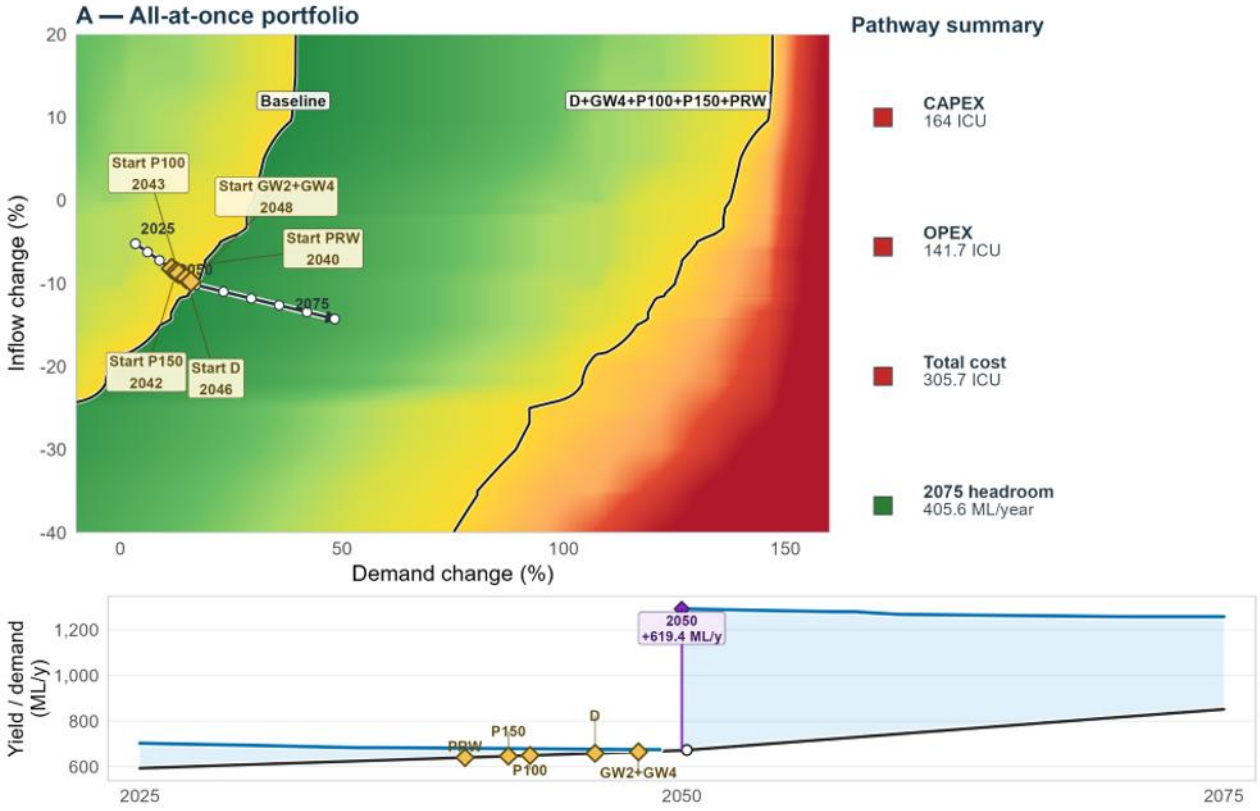


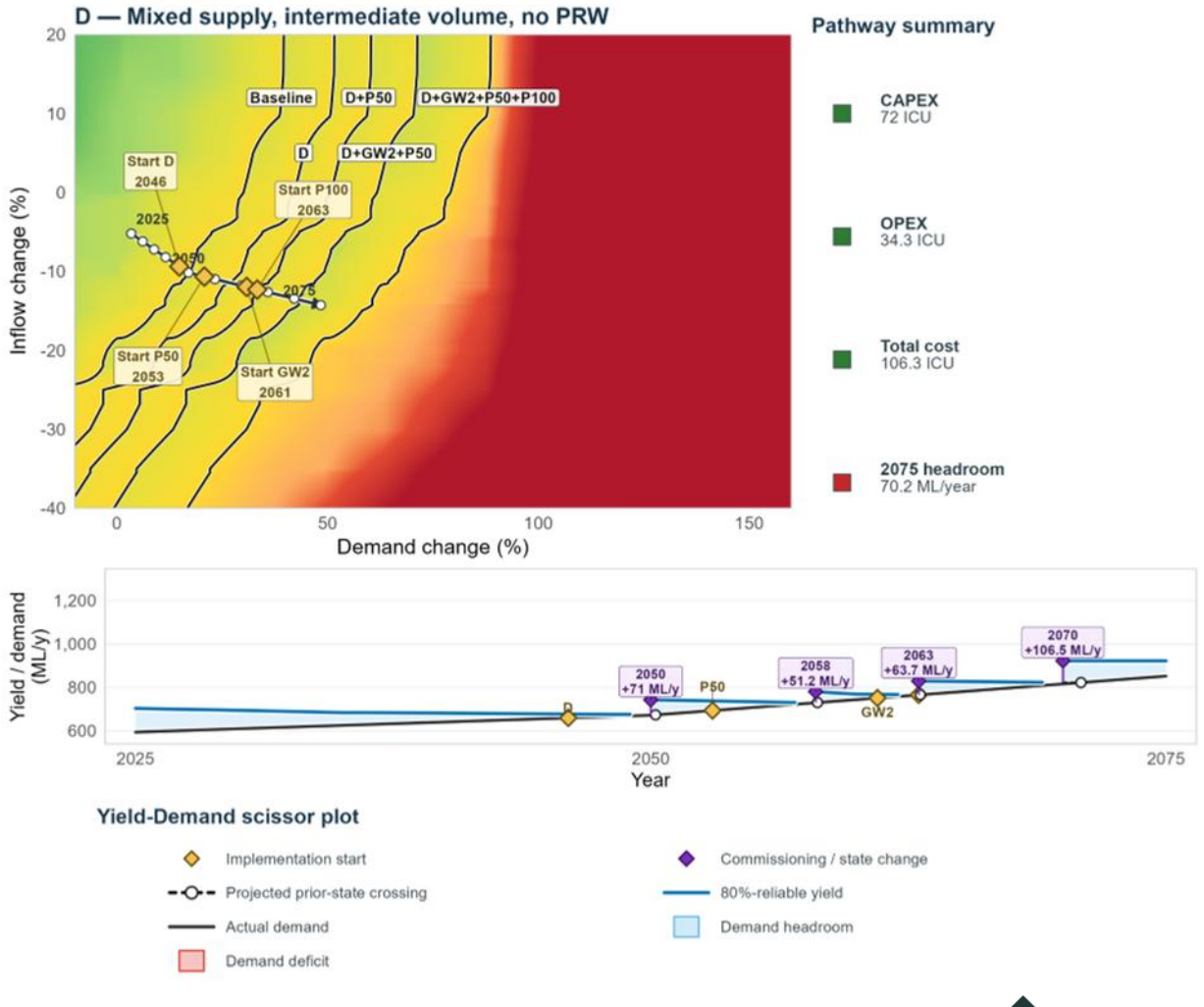






Comparing pathways





Thankyou

Professor Avril Horne, University of Melbourne
avril.horne@unimelb.edu.au

Dr Jill Fagan, North East Water
jfagan@newater.com.au

