

Where has all the water gone?

Reflections from WRMP19
and looking ahead to WRMP24

Nick Price - Water Resources Planning Manager



Overview

1. Introduction

- Southern Water supply area

2. Supply and demand forecasts – pressures and uncertainties

- Sustainability reductions
- Resilience to drought
- Climate change
- Raw water quality
- Demand forecast

3. Approach to decision making

- Problem characterisation
- Integrated risk model
- Scenario generator model
- Real Options Analysis

4. Developing the strategy

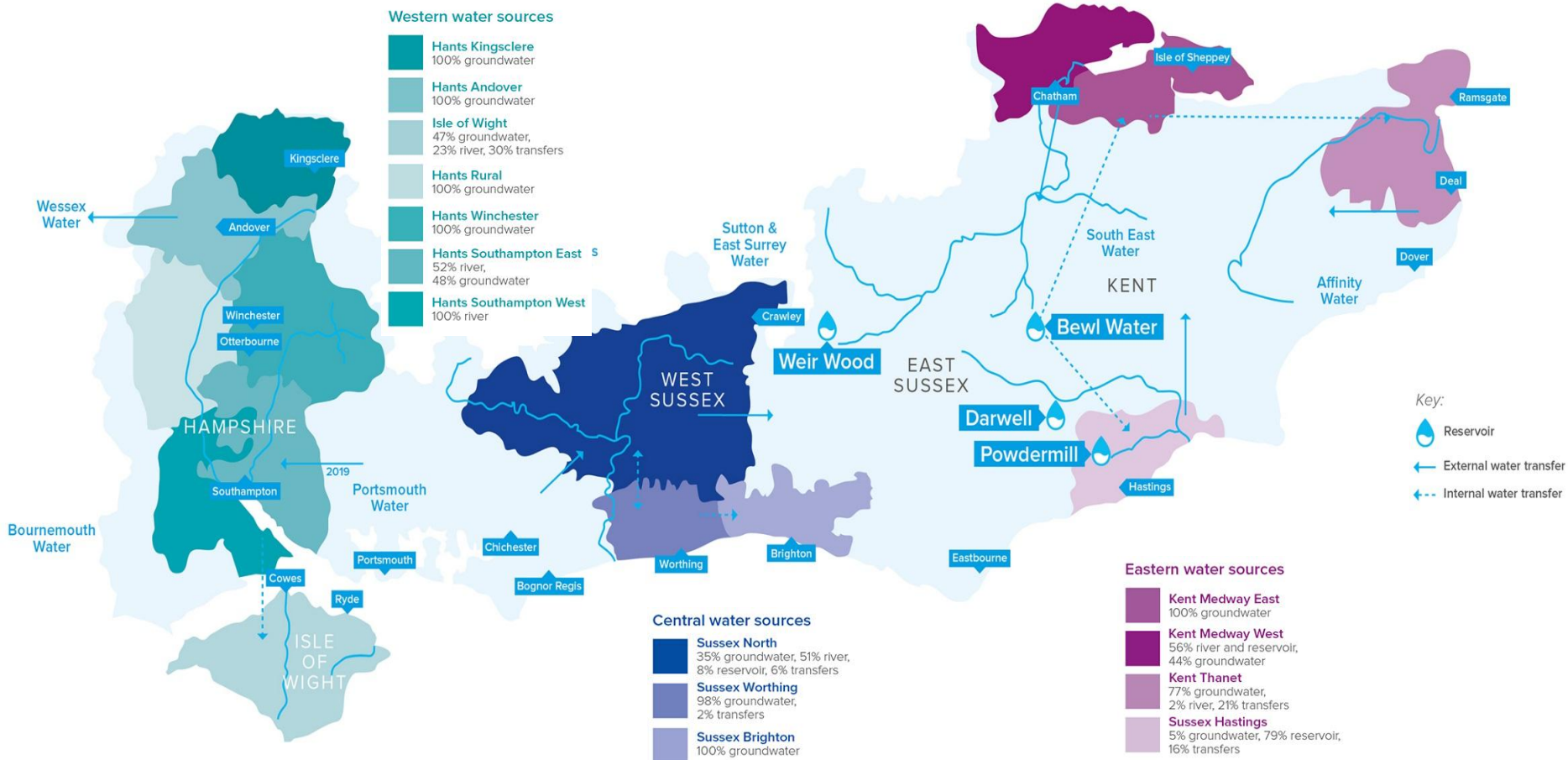
- Baseline supply-demand balance
- Solutions

5. Reflections and forward look

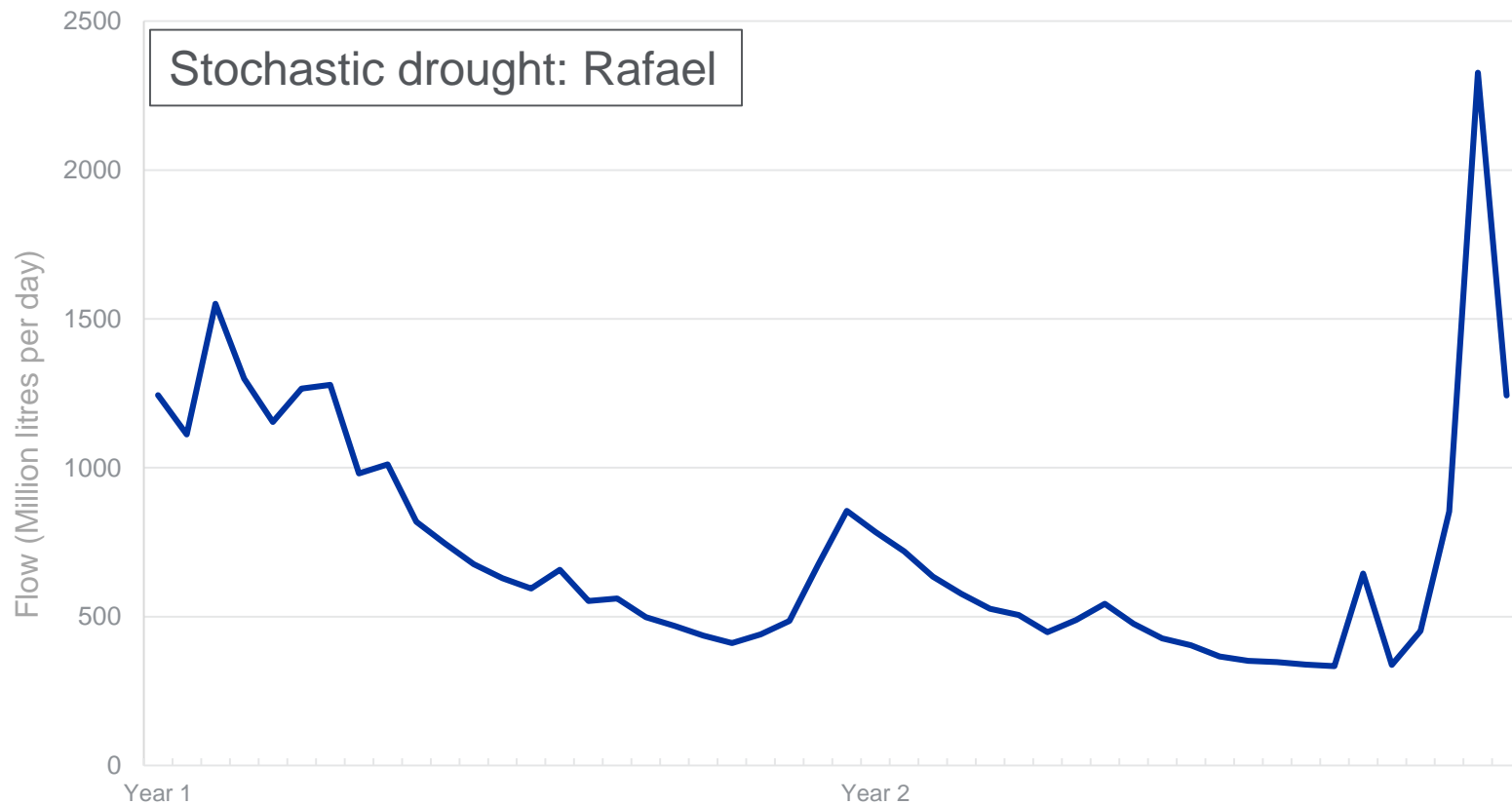
- Lessons from WRMP19
- Looking ahead to WRMP24

Southern Water supply areas

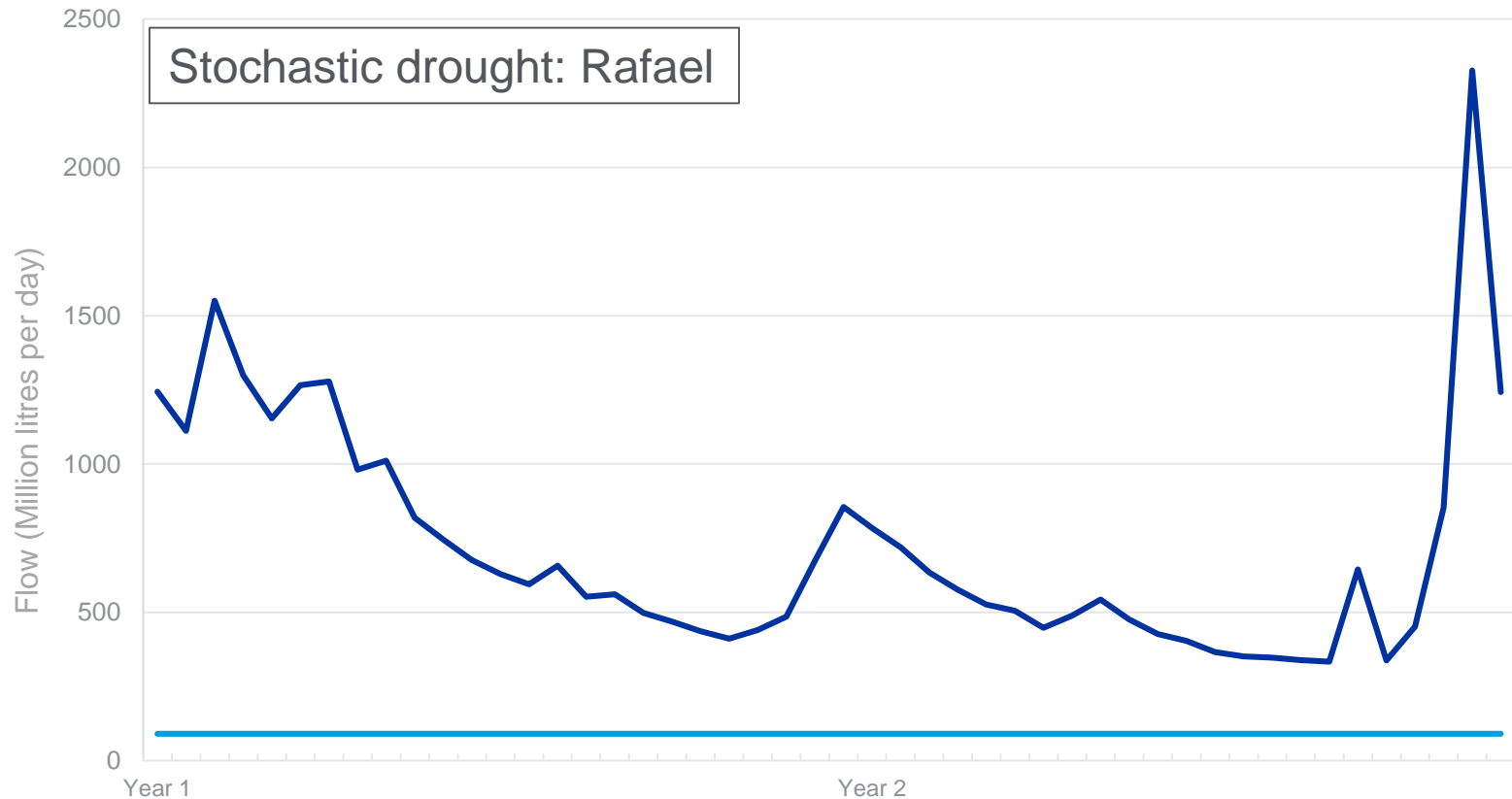
14 Water Resource Zones supplying > 2.4 million people. Typically our water comes from groundwater (70%), rivers (23%) and reservoirs (7%).



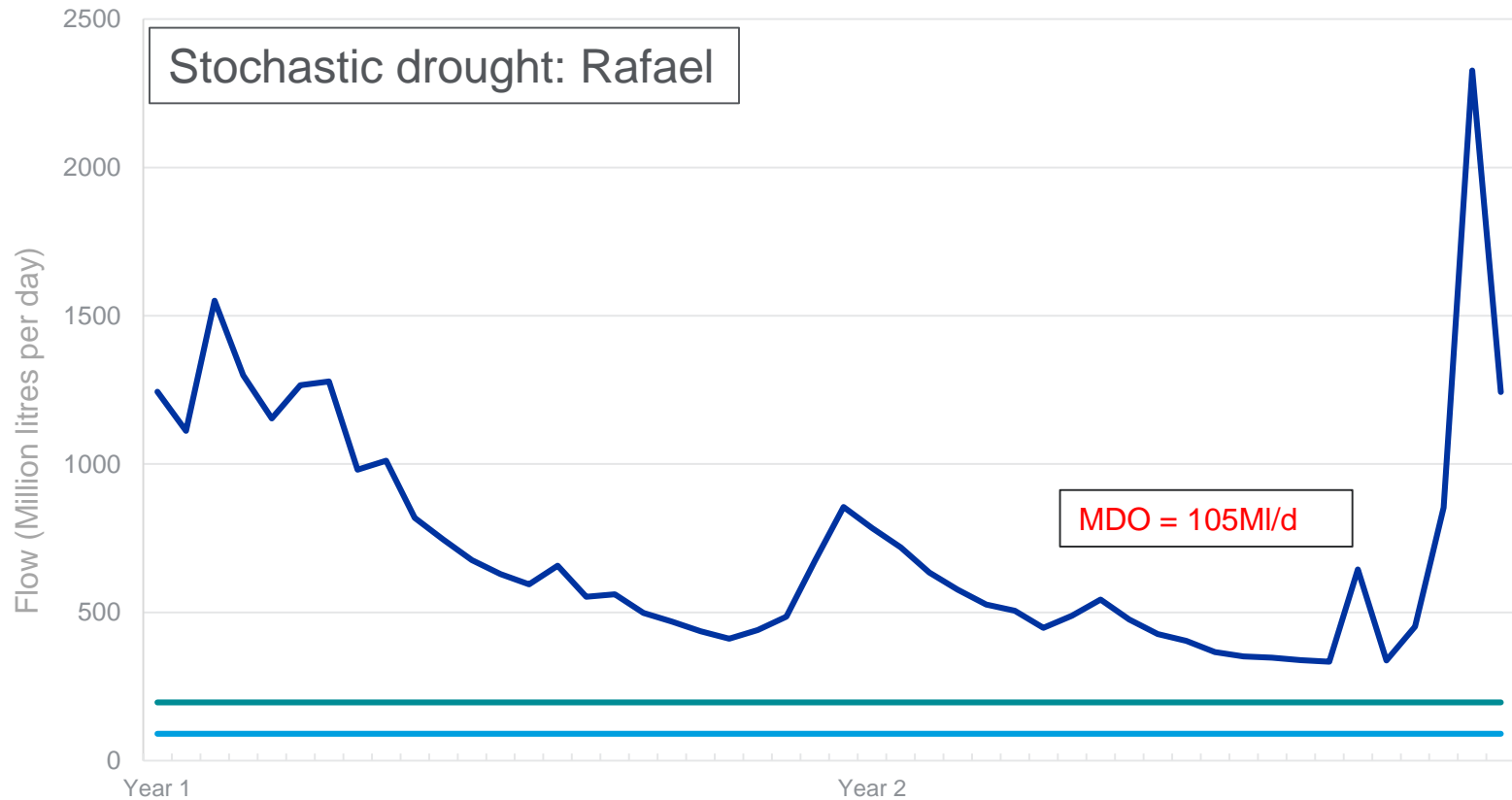
Sustainability reductions – example of impact on River Test surface water source



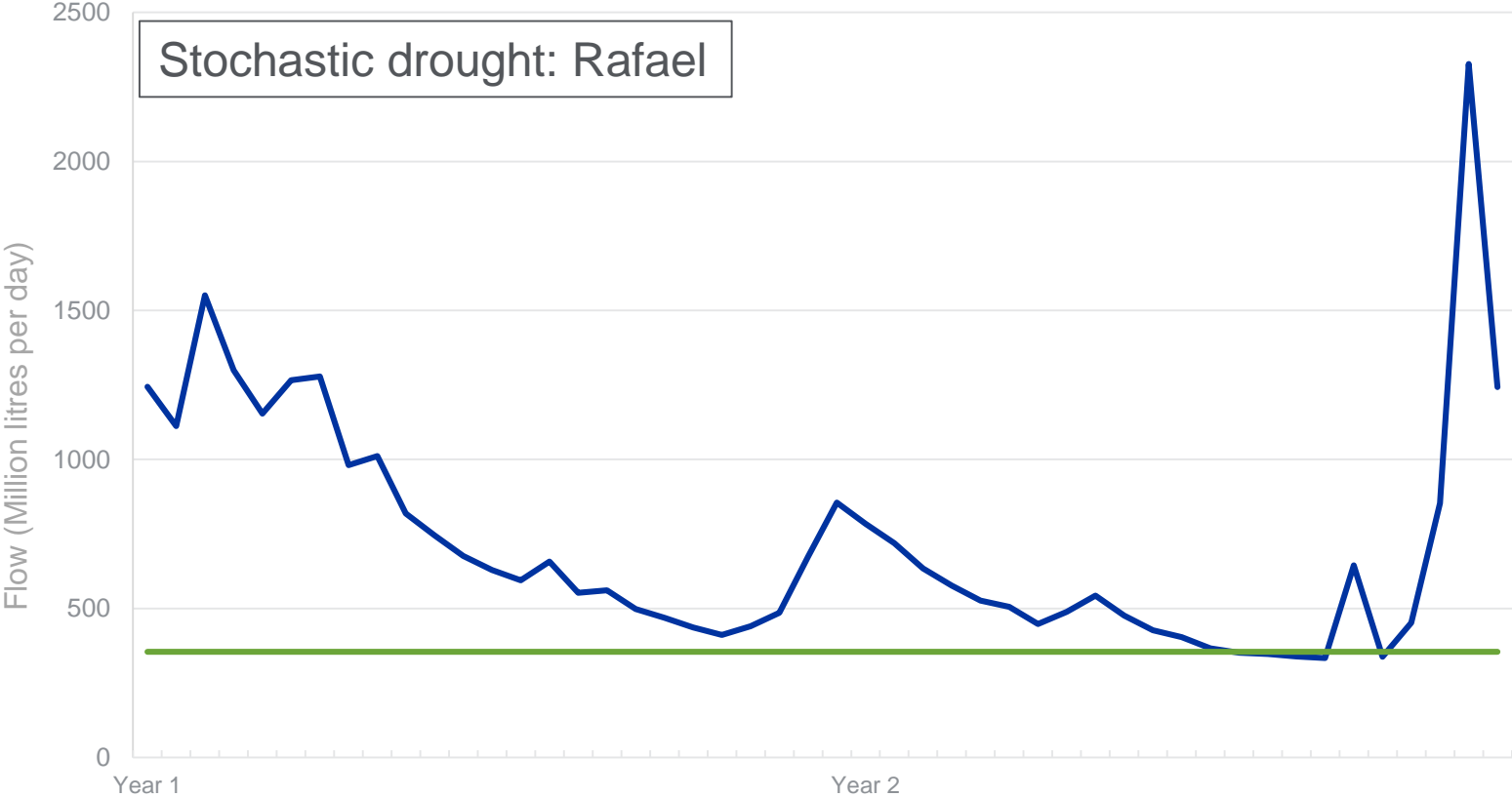
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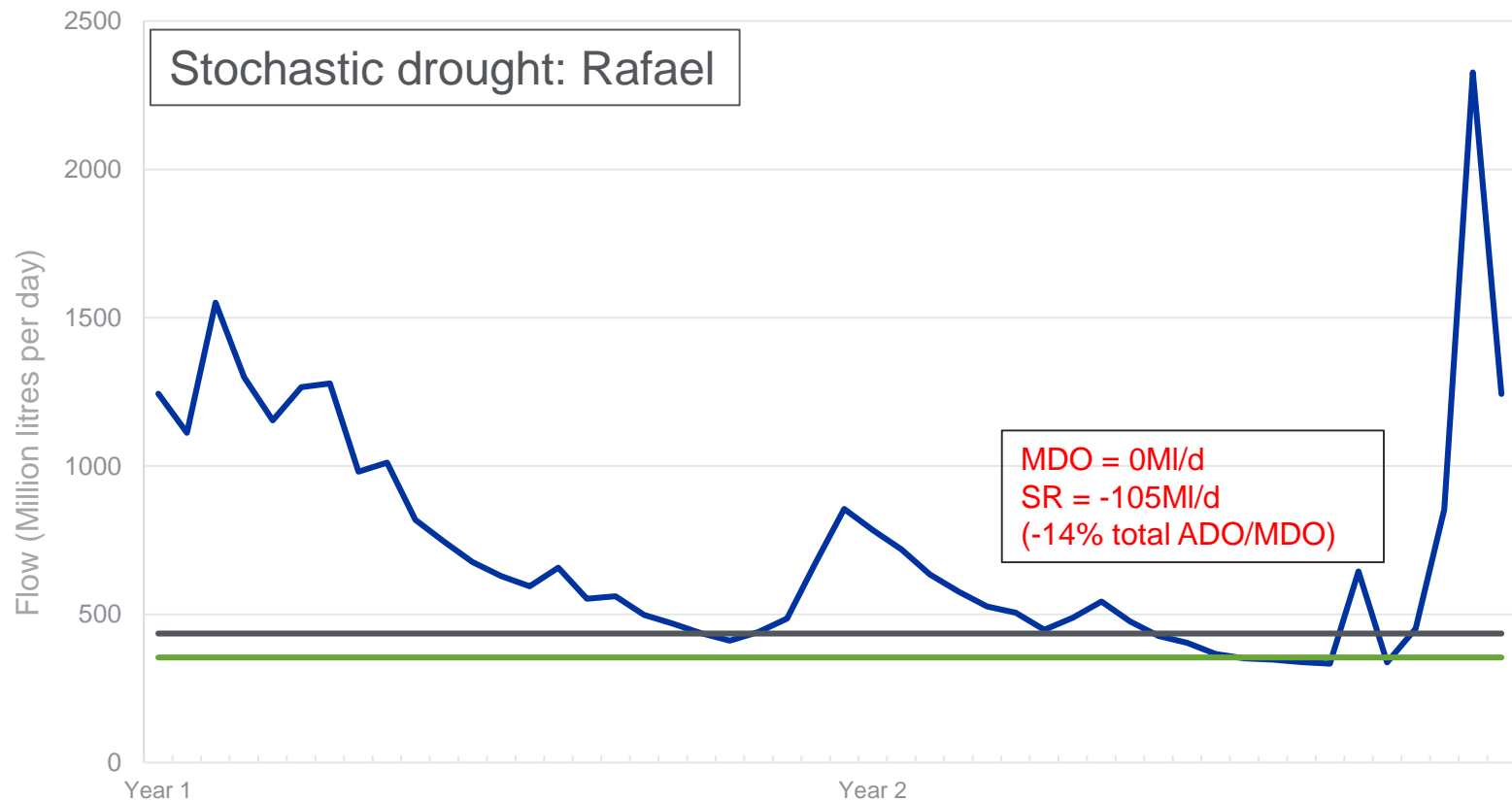
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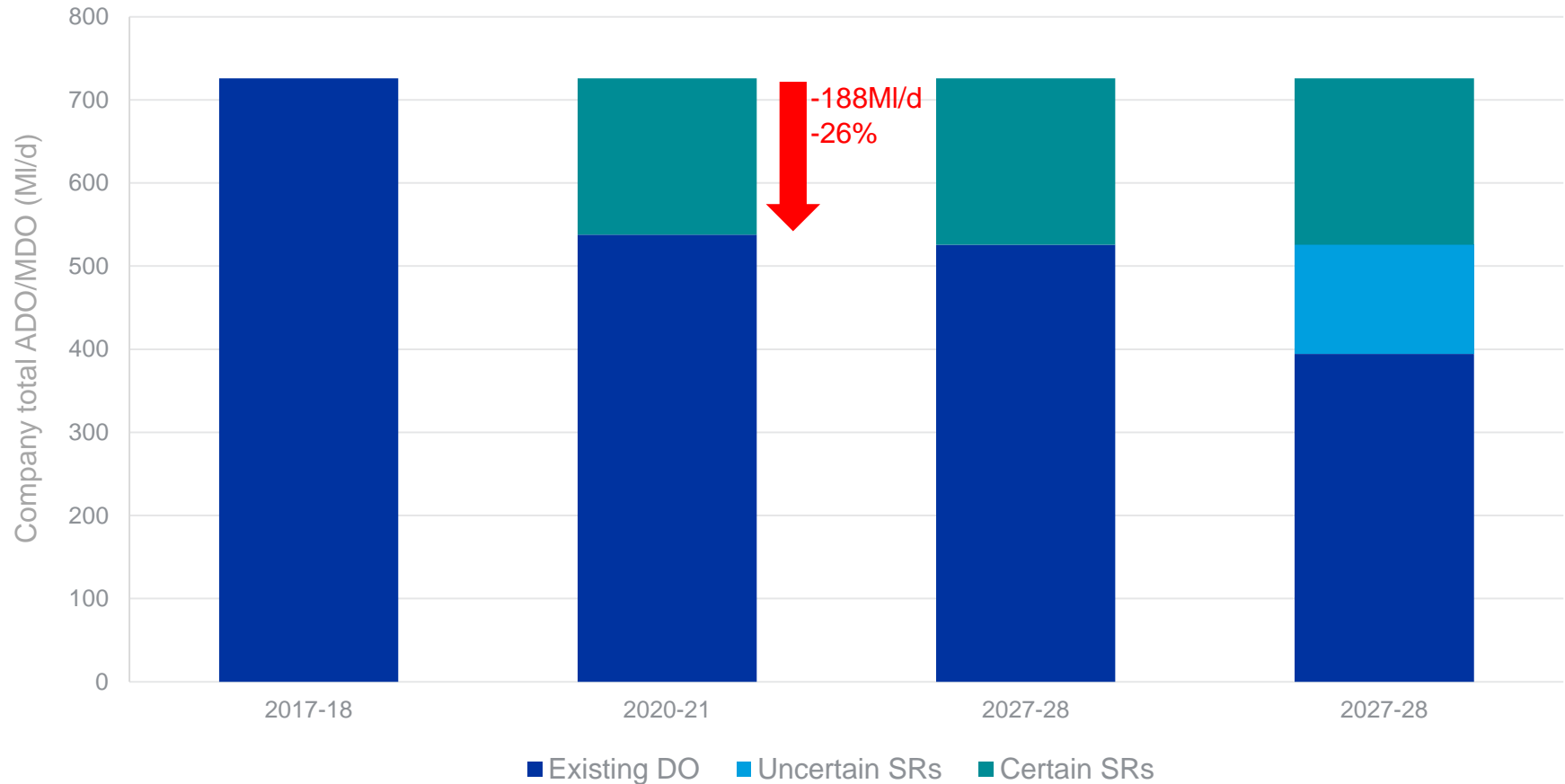


Sustainability reductions – example of impact on River Test surface water source



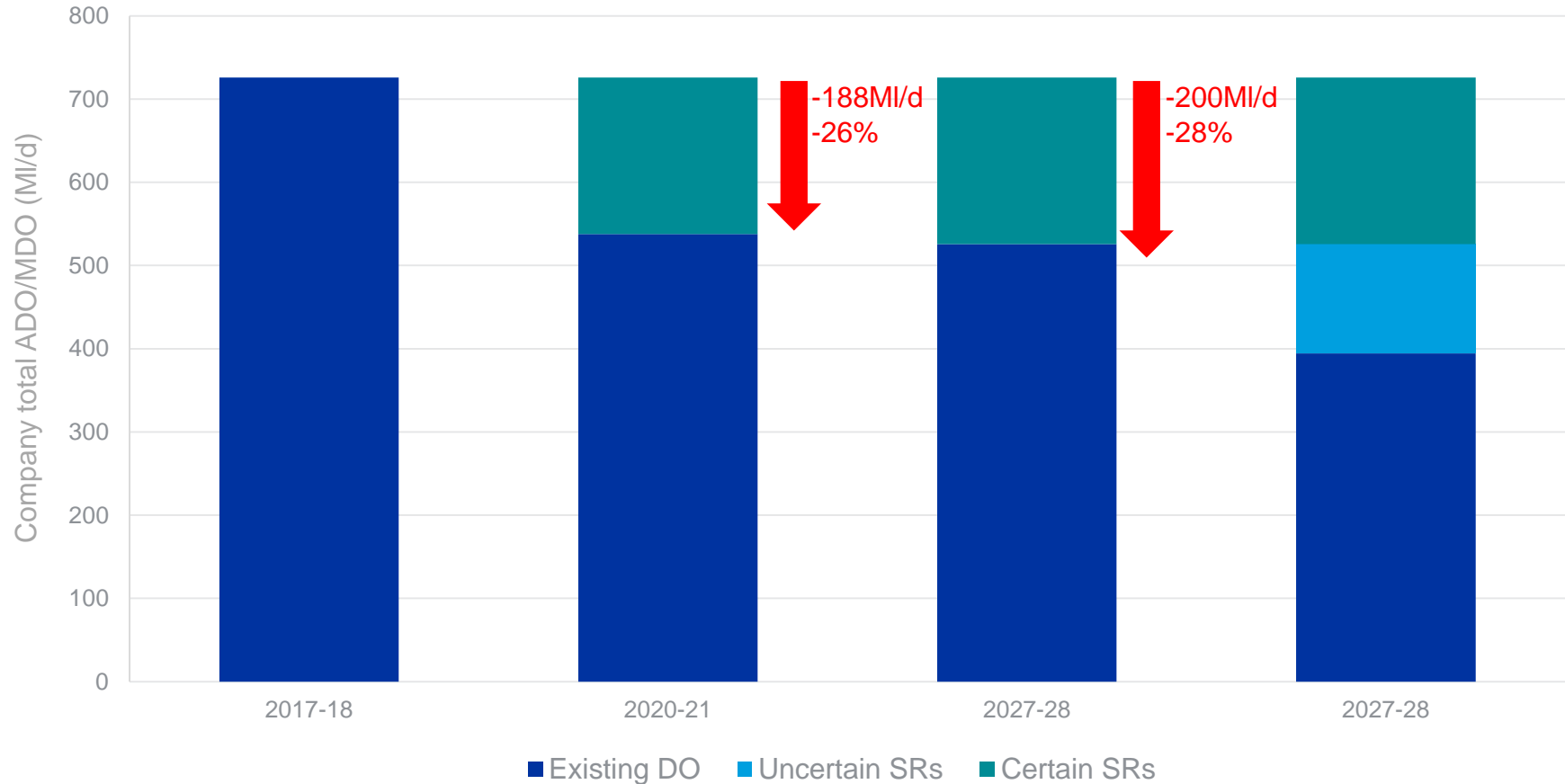
Impact of certain and potential sustainability reductions on available supplies by 2027-28

Dry Year Annual Average / Minimum Deployable Output planning scenario
(company level)



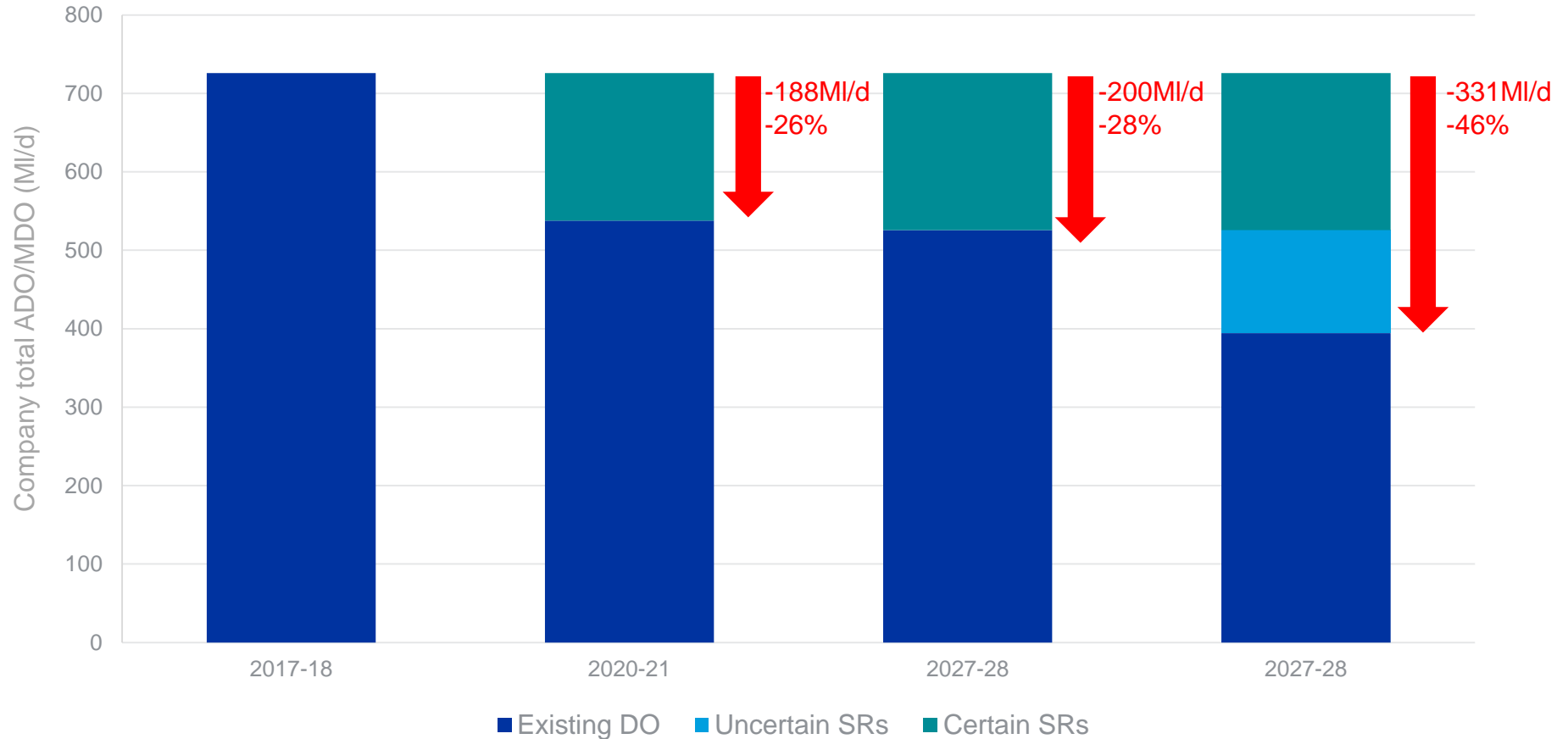
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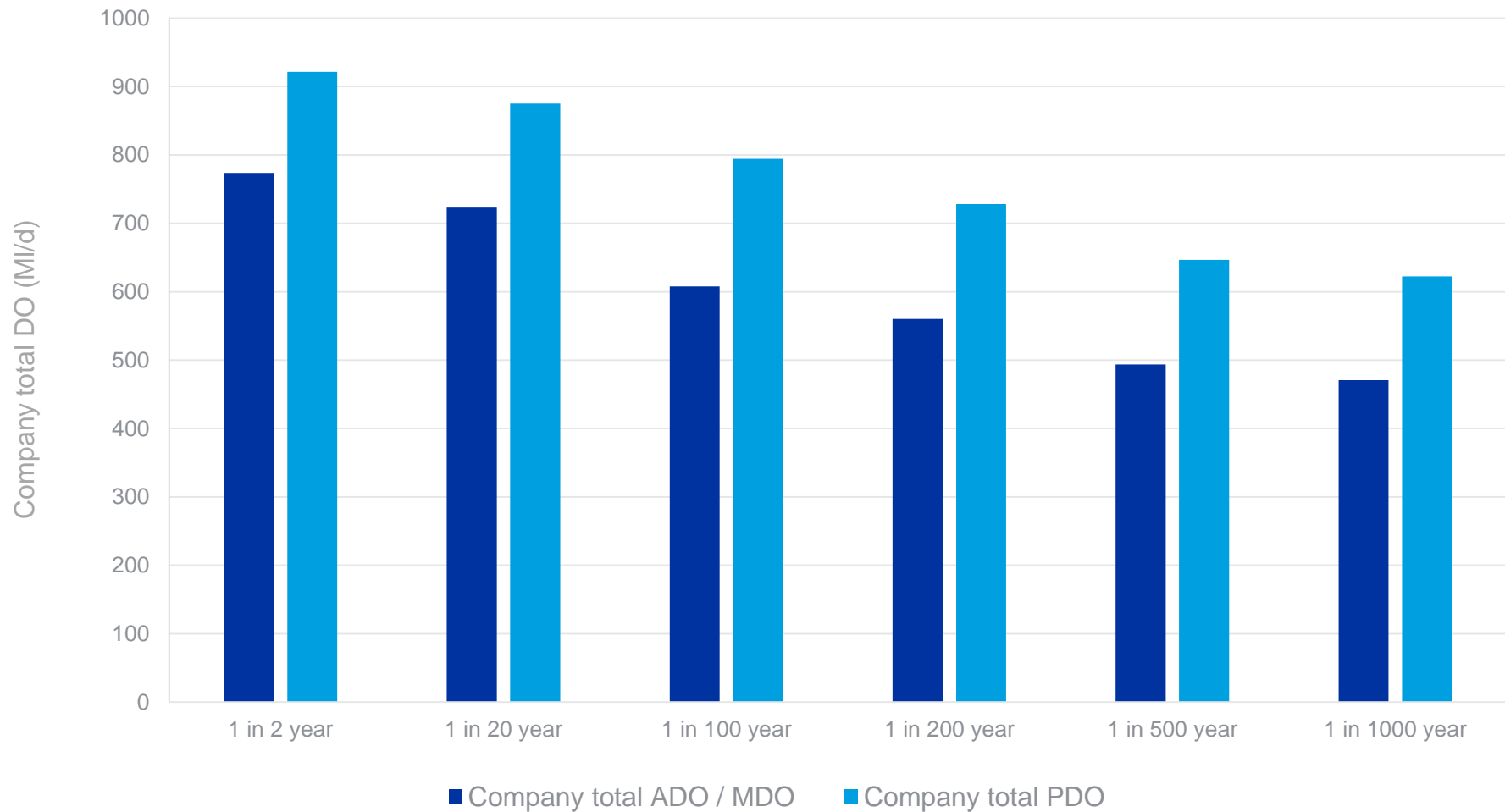


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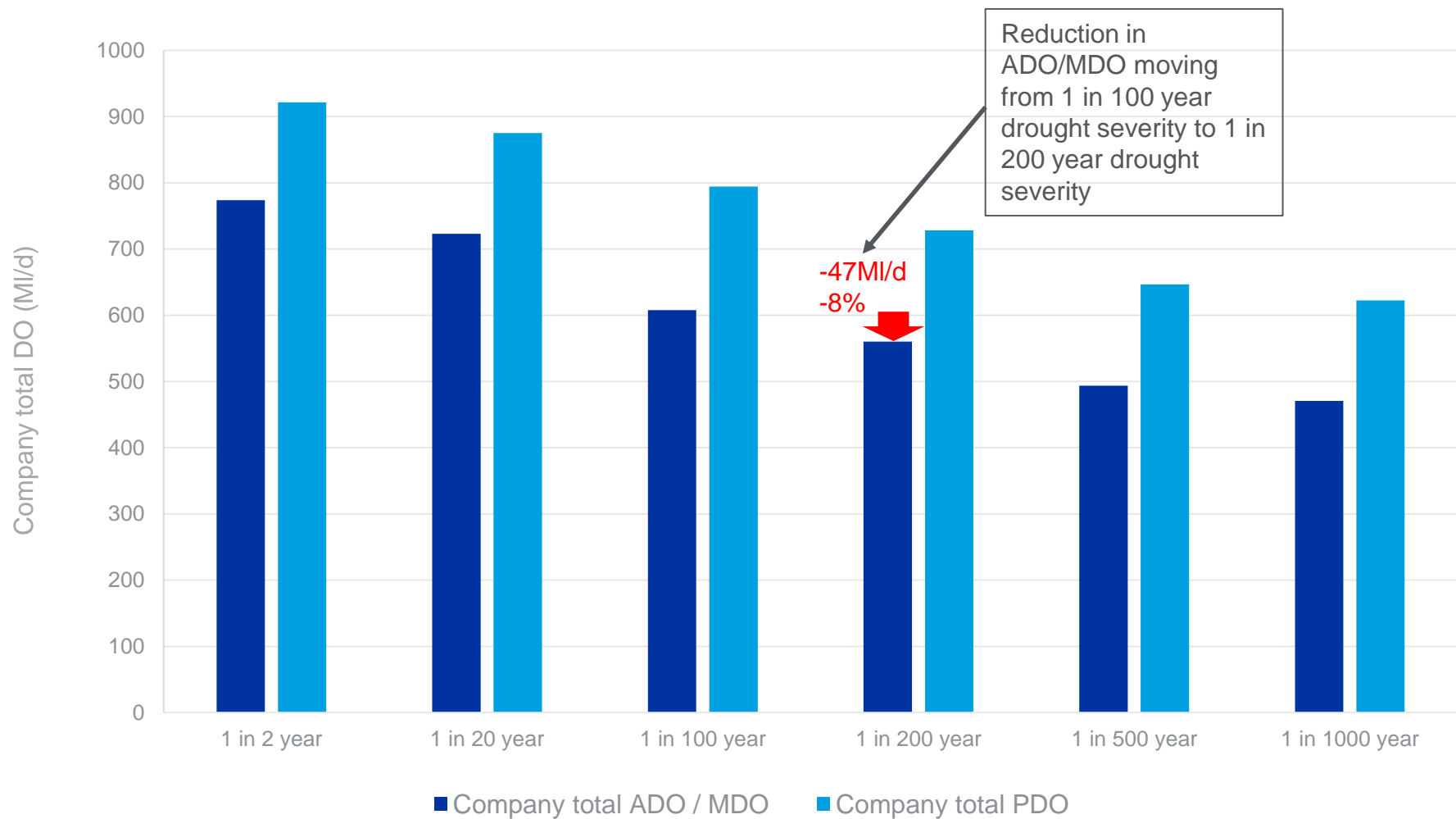
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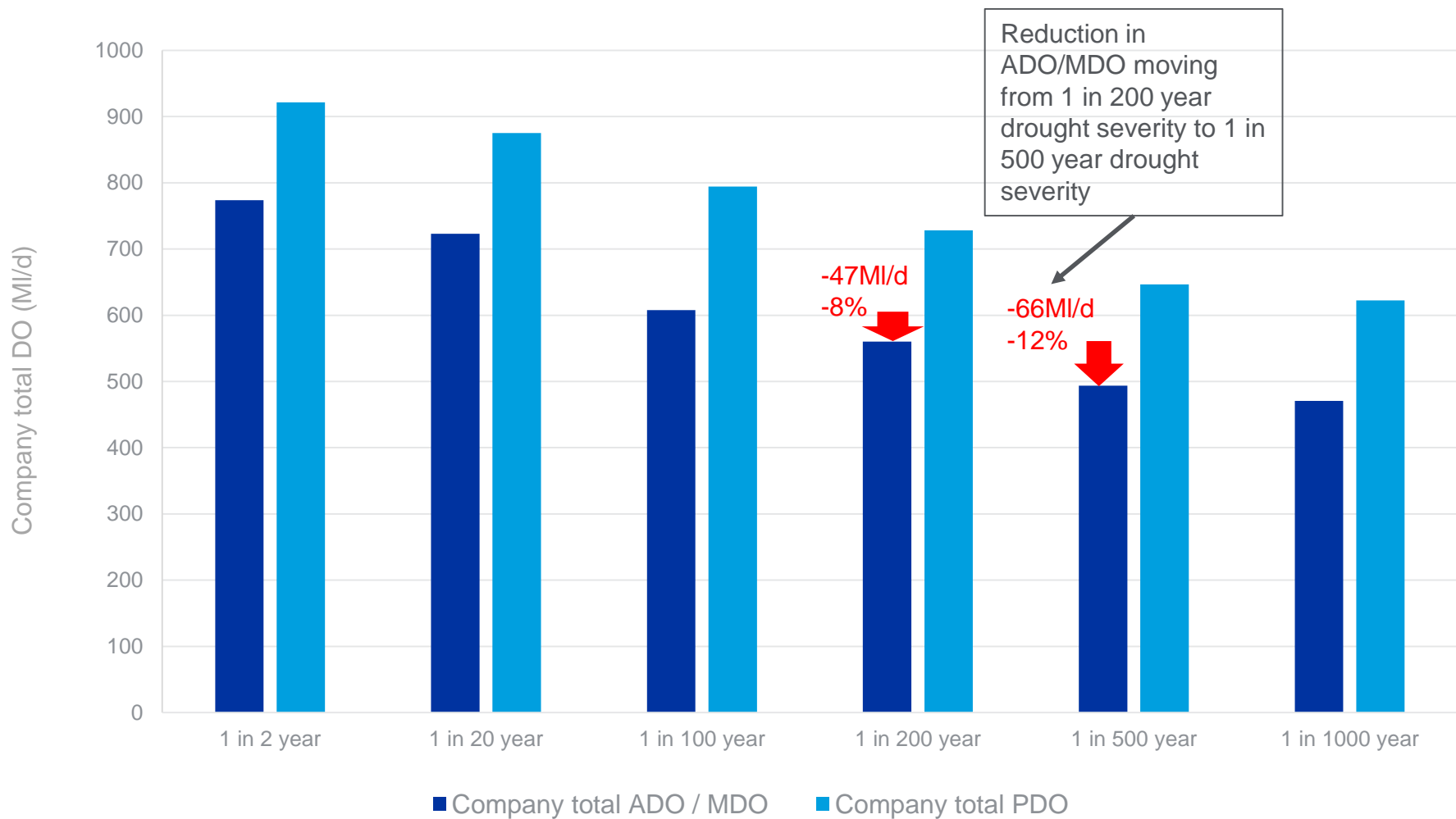
Deployable Output against different drought severities



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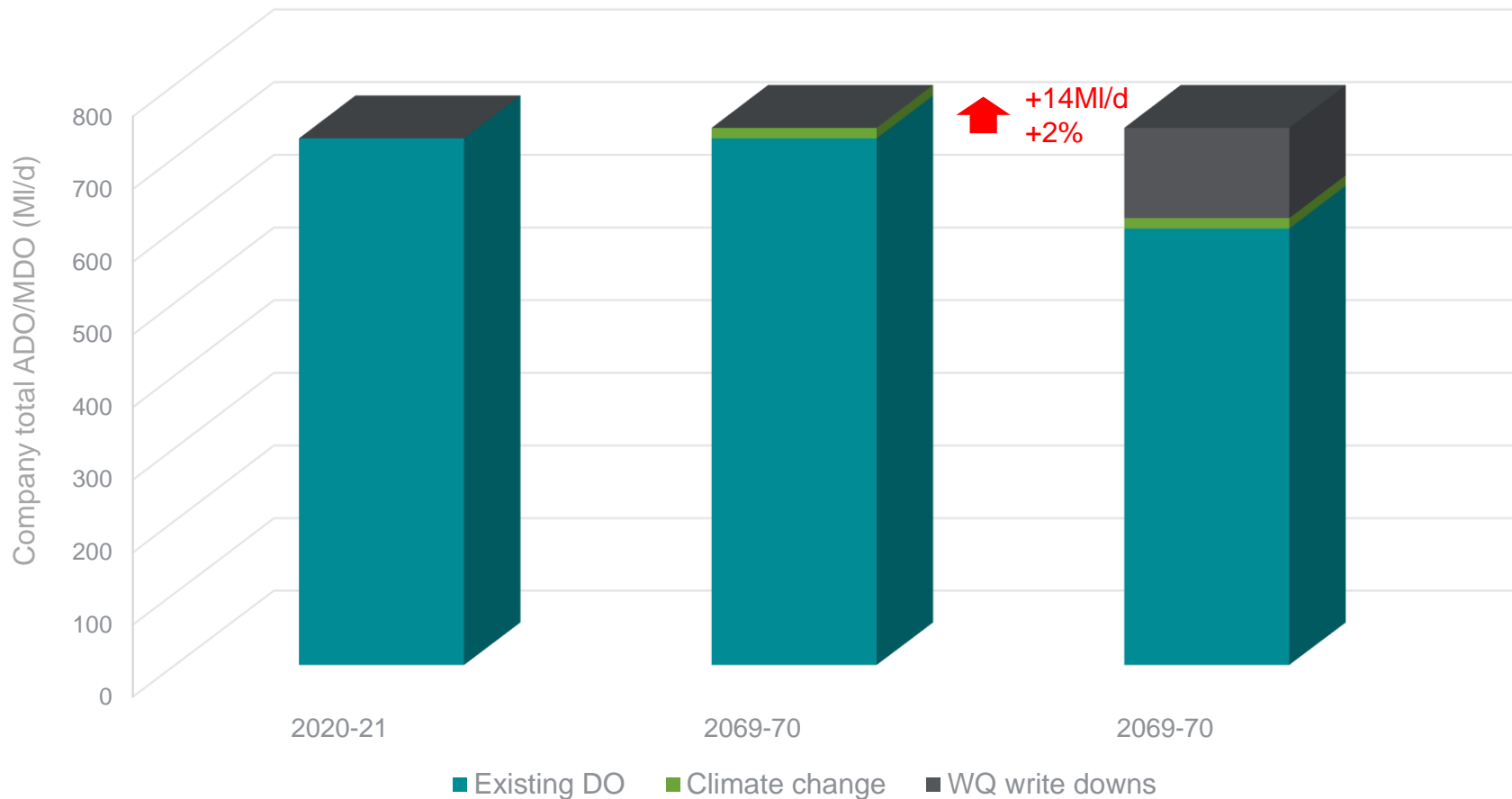


Deployable Output against different drought severities



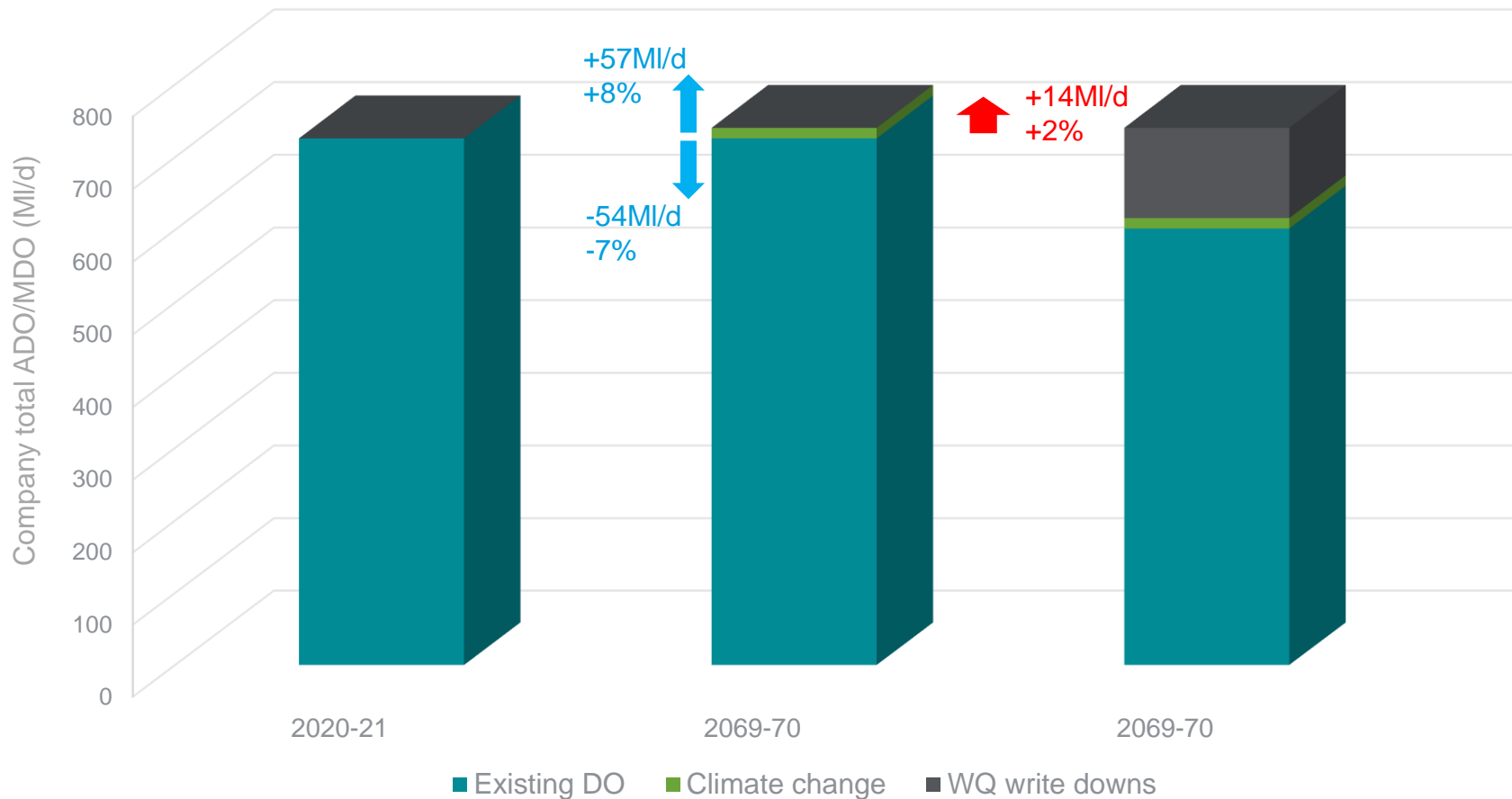
Impact of climate change and raw water quality upon baseline supply availability

Dry Year Annual Average / Minimum Deployable output planning scenario (company level)



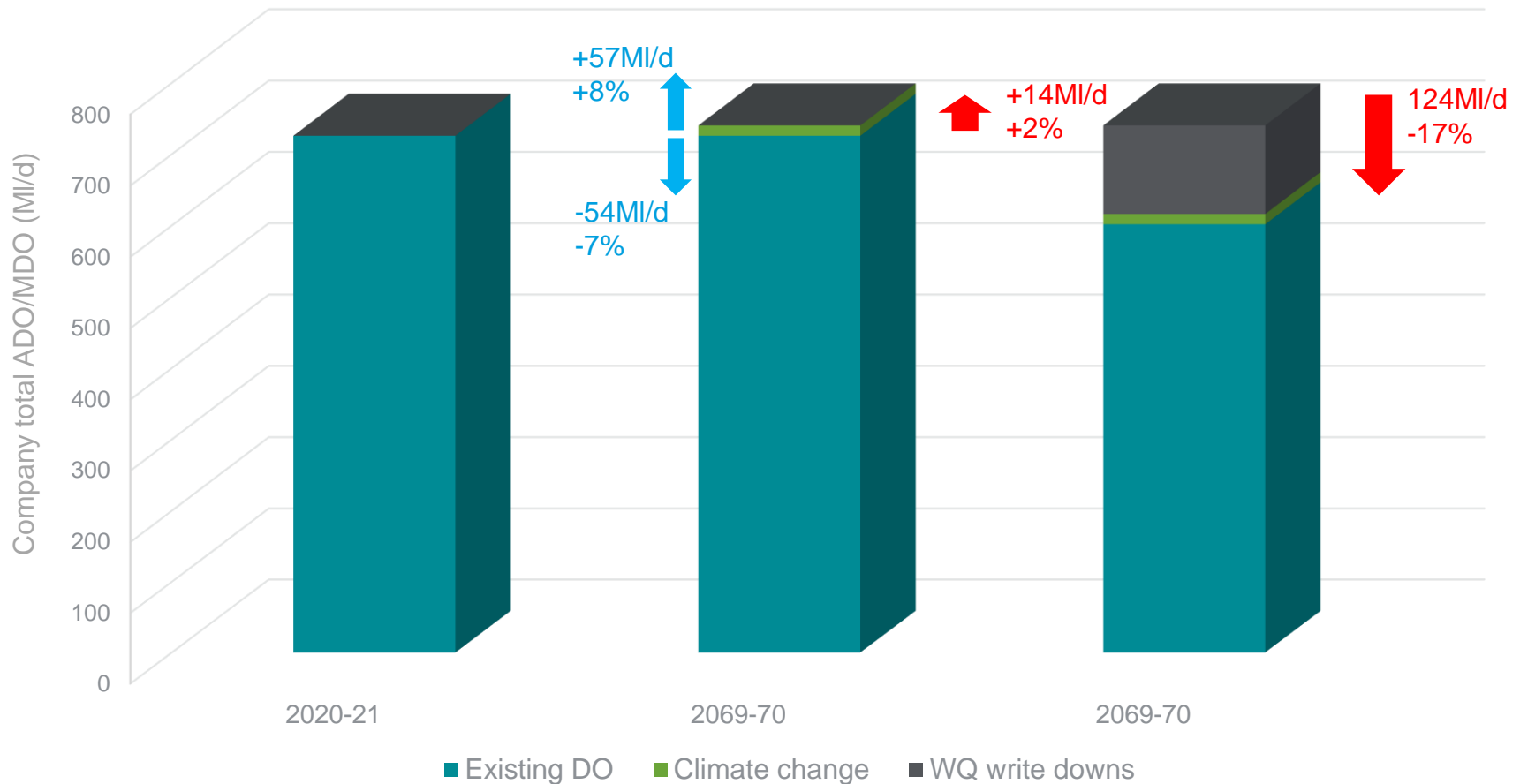
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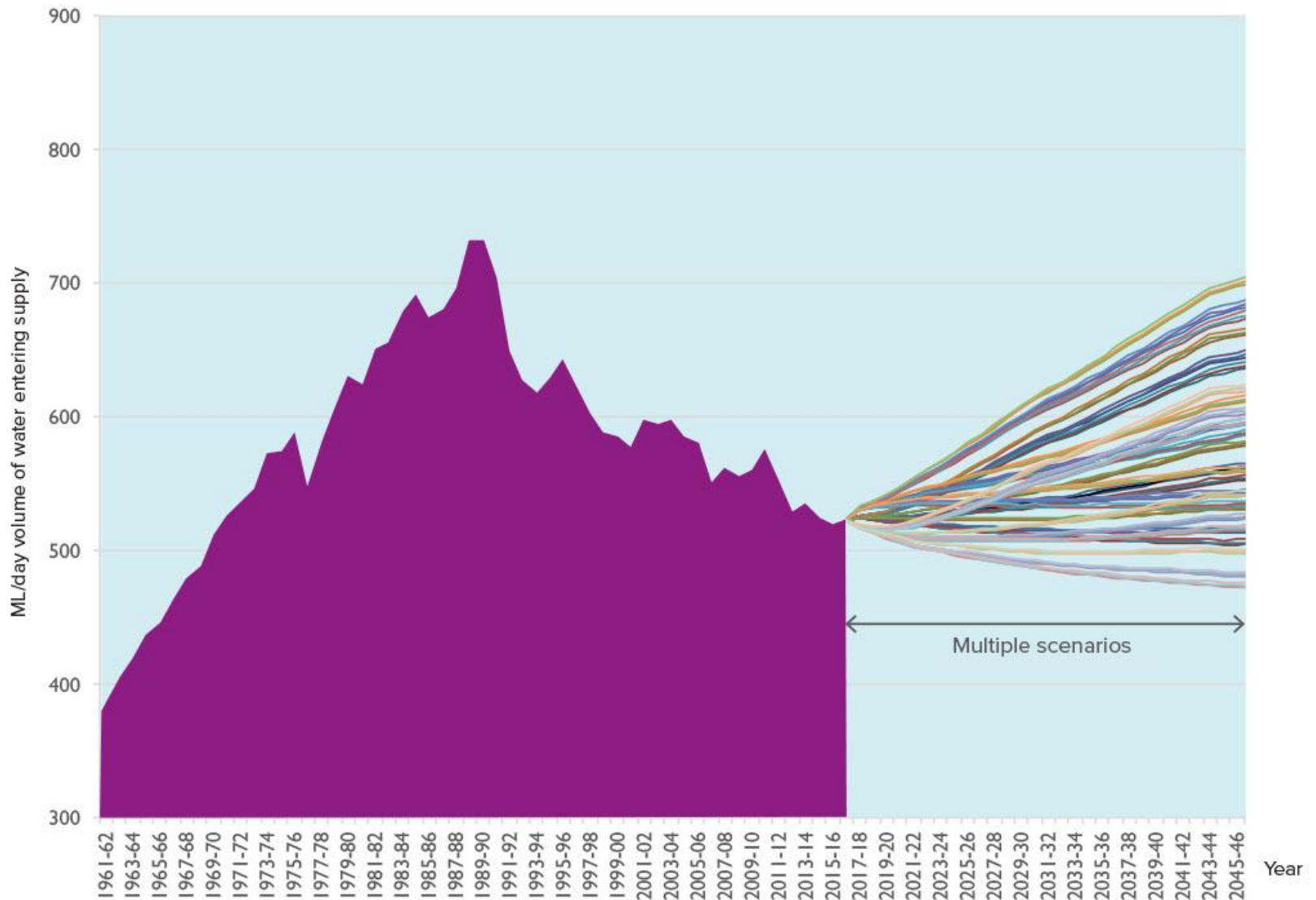


Impact of climate change and raw water quality upon baseline supply availability

Dry Year Annual Average / Minimum Deployable output planning scenario (company level)



Revised draft WRMP demand forecast

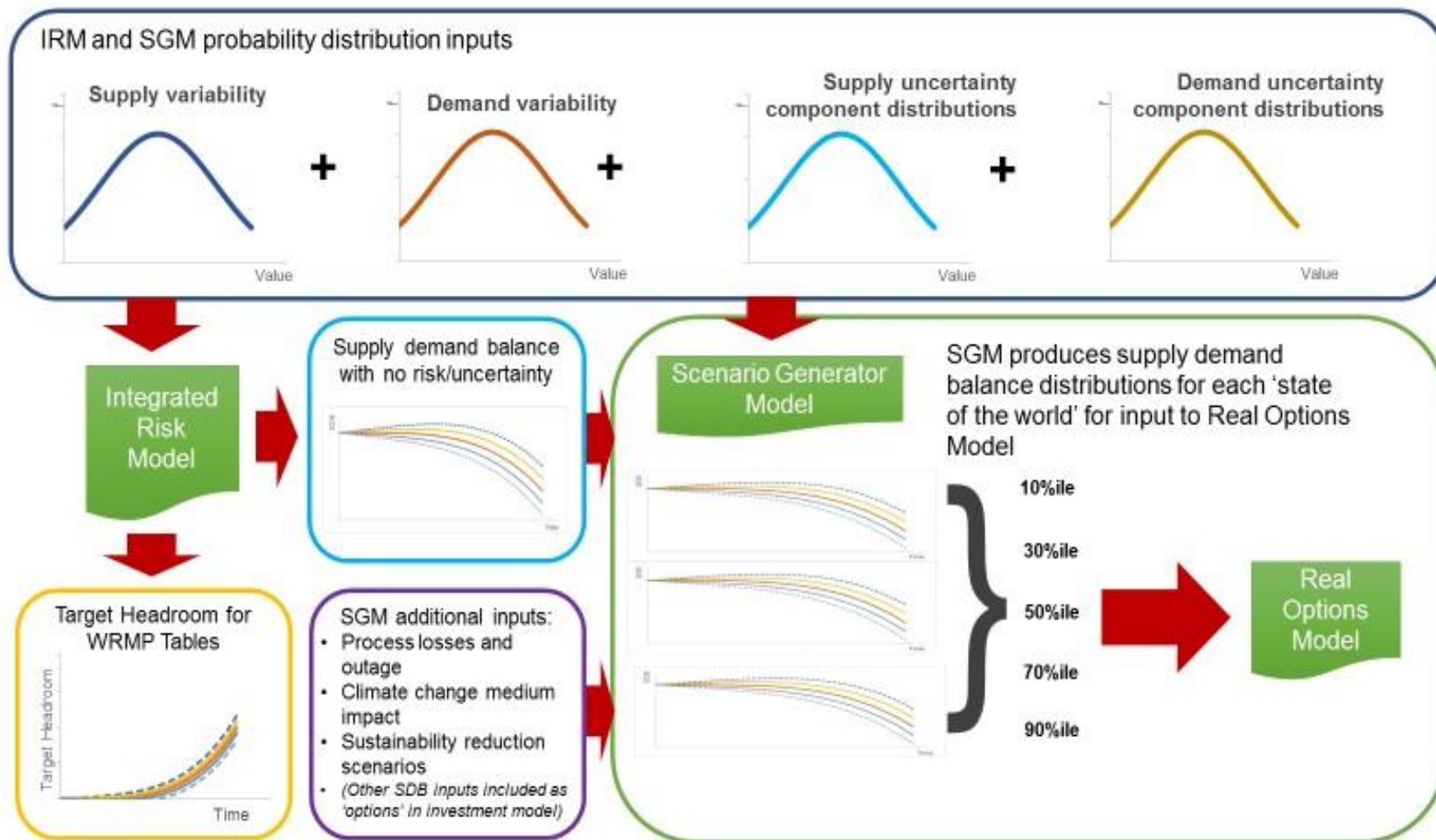


'Problem characterisation' to inform decision making approach

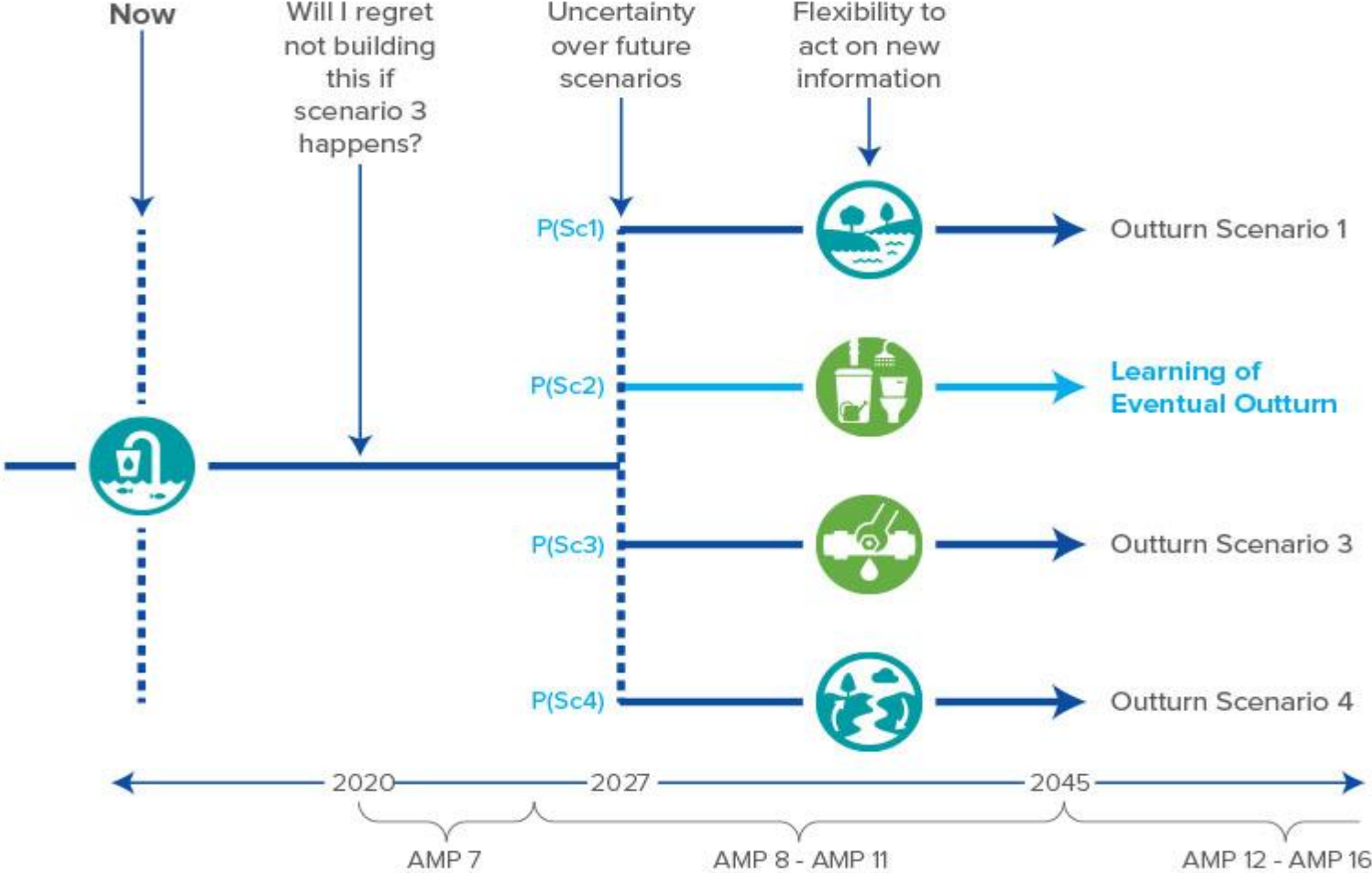
- UKWIR, 2016, WRMP 2019 Methods – Decision Making Process: Guidance, UK Water Industry Research Limited
- Used to inform the degree of modelling complexity and method
- Outcome supports adoption of more complex 'extended' decision making tools

		Strategic Needs Score ("How big is the problem?")			
		0-1 (None)	2-3 (Small)	4-5 (Medium)	6 (Large)
Complexity Factors Score ("How difficult is it to solve?")	Low (<7)	Green			Yellow
	Medium (7-11)	Green		Yellow	
	High (11+)	Green	Yellow	Purple Central Area Eastern Area Western Area Company	

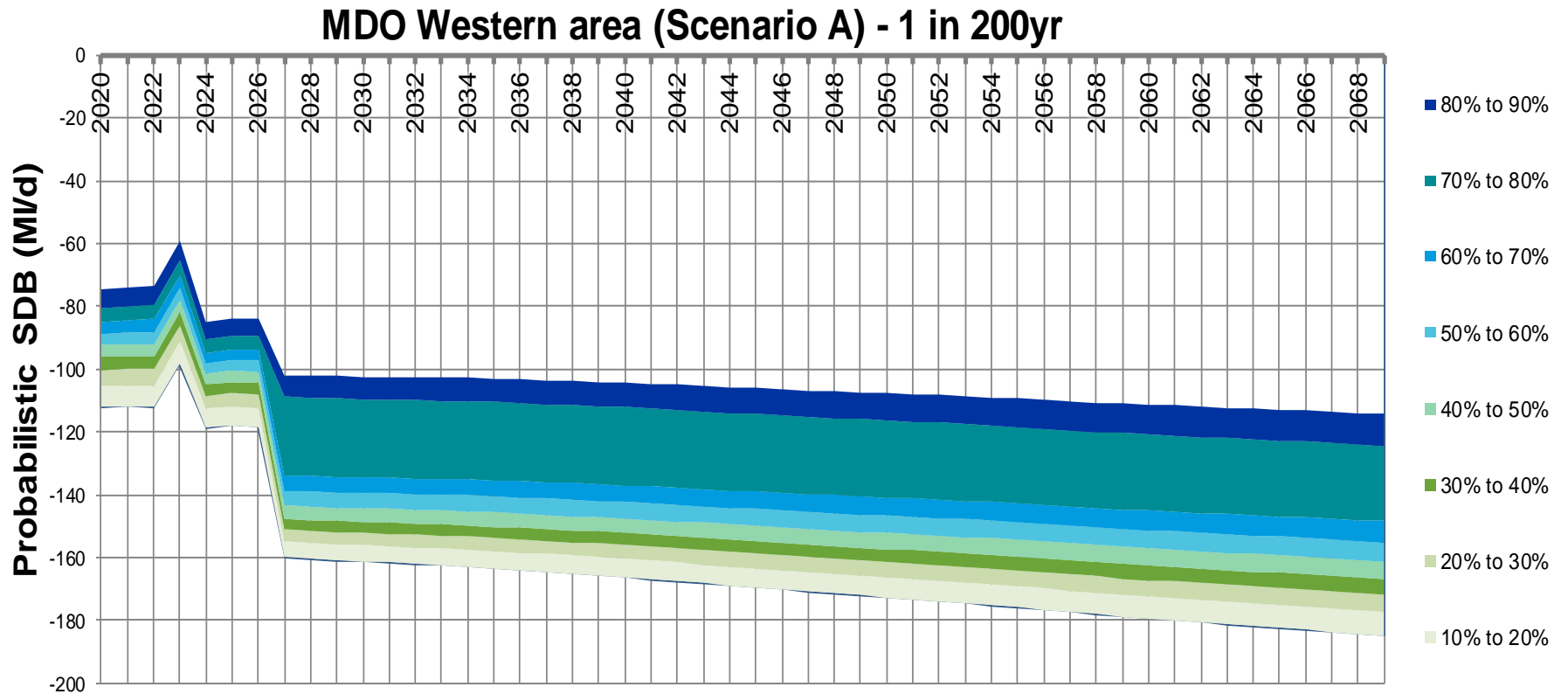
Overview of the Integrated Risk Model (IRM) and Scenario Generator Model (SGM)



Planning for a range of futures




Baseline supply-demand balance (Western area)



What's in our plan...better use of existing water

- Leakage has reduced by 63% since privatisation. We are aiming for a further 15% reduction by 2025 followed by a further 25% reduction by 2050

- **TARGET**  – reducing water use to 100 litres per person per day by 2040

- Installing more water meters – to 100% in some areas
- Sharing meter readings every month
- Catchment First – engaging with farmers and landowners to improve water quality
- New pipe networks to move water around.



What's in our plan...finding 'new' water

- Aquifer storage and recovery
- Recycling cleaned water from our wastewater treatment works
- Desalination
- Reservoirs
- Improving groundwater sources
- Trading water with neighbouring water companies:
Portsmouth Water, Bournemouth Water, South East Water



Conclusions

Reflections from WRMP19

- Significant downward pressure on current 'deployable output' - particularly from sustainability reductions
- Considerable uncertainties around our forecasts
- Problem characterisation and advanced modelling methods have helped us develop solutions
- Real Options Analysis has enabled us to develop a flexible strategy to cope with uncertainties.
- Concept well received but challenges around communicating the preferred strategy

Looking towards WRMP24

- Future uncertainty in supply availability remains a challenge
- Outcome of large Water Industry National Environment Programme is key in the short term
- Higher resilience to drought?
- Stronger regional planning influence
- Greater emphasis on integration of supply networks (and not just between companies)
- Environmental accounting to the fore to better account for wider benefits and impacts of potential solutions.
- UKCP18 climate change forecasts

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<https://www.southernwater.co.uk/water-resources-management-plan>

