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# A FLOOD TWO MONTHS IN – A WAIĀRI RESILIENCE STORY



**water**  
NEW ZEALAND  
CONFERENCE & EXPO  
17-19 OCTOBER 2023  
Tākina, Te Whanganui-a-Tara Wellington



# AGENDA

- WAIARI WATER SUPPLY SCHEME
- INTAKE SITE SELECTION
- RISKS AND THE DESIGN PROCESS
- THE FLOOD EVENTS
- IMPACTS AND EFFECTS
- EXPERIENCE AND LEARNINGS
- CONCLUSION

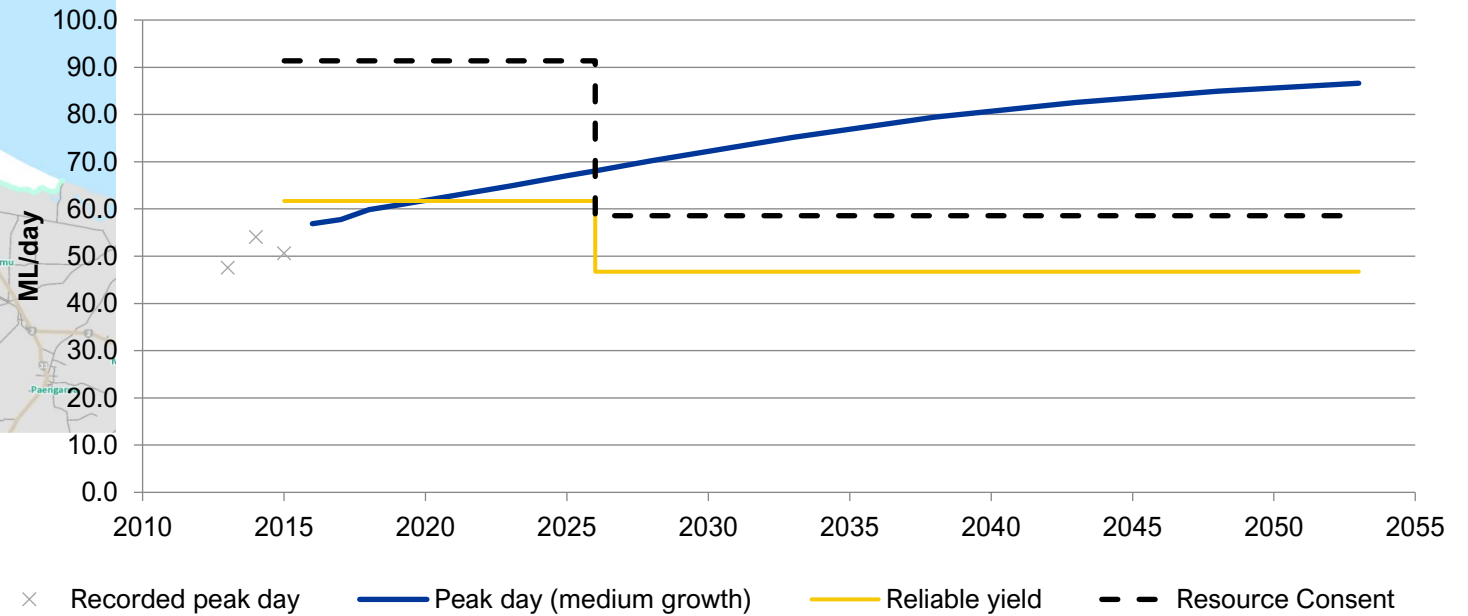




# The Supply Scheme

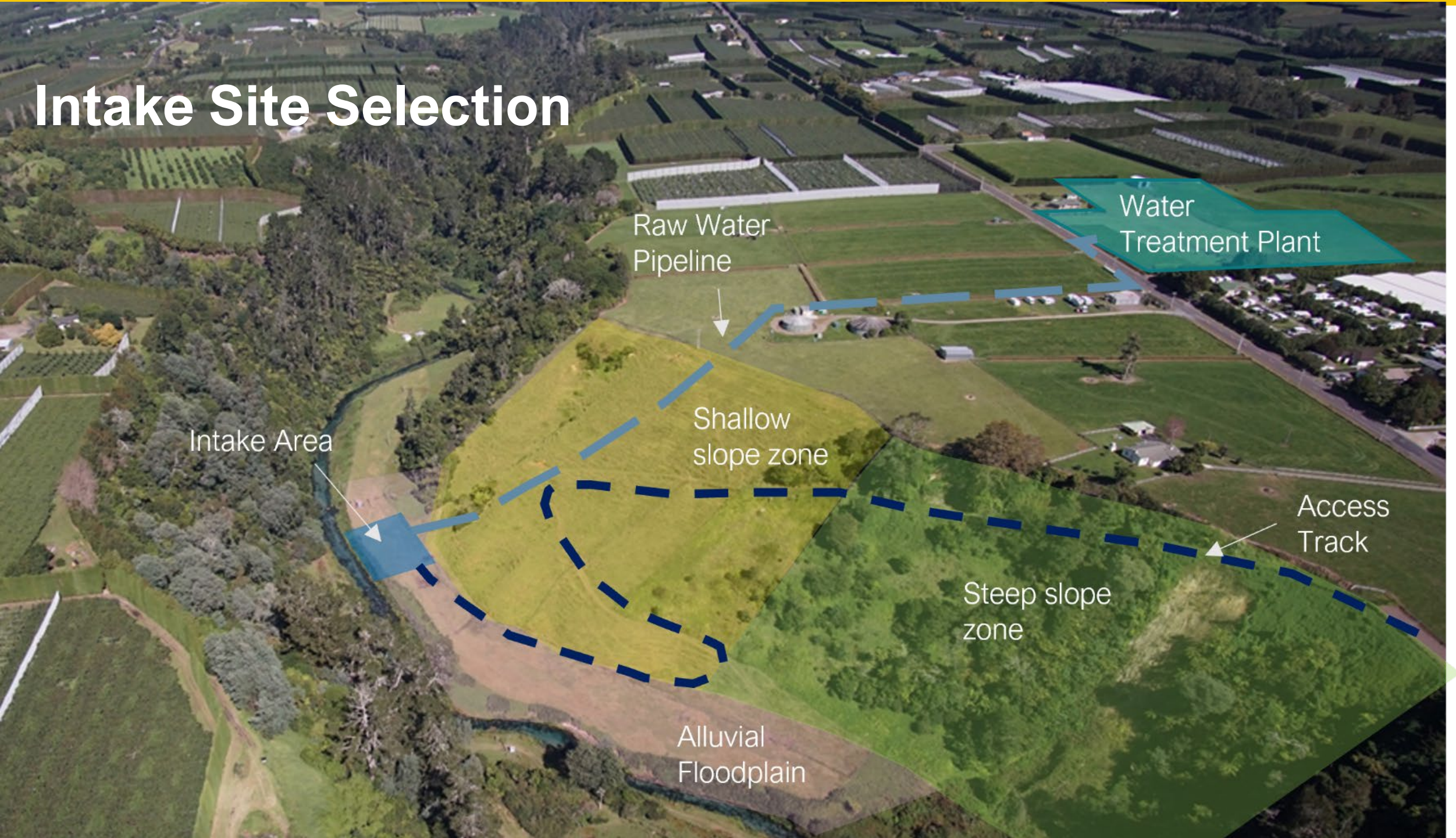


**Tauranga City supply-demand balance  
Medium growth**





# Intake Site Selection













# Risks and the Design Process

- Earthquake
- Landslide
- Flood
- Debris
- Silt



# Risks and the Design Process

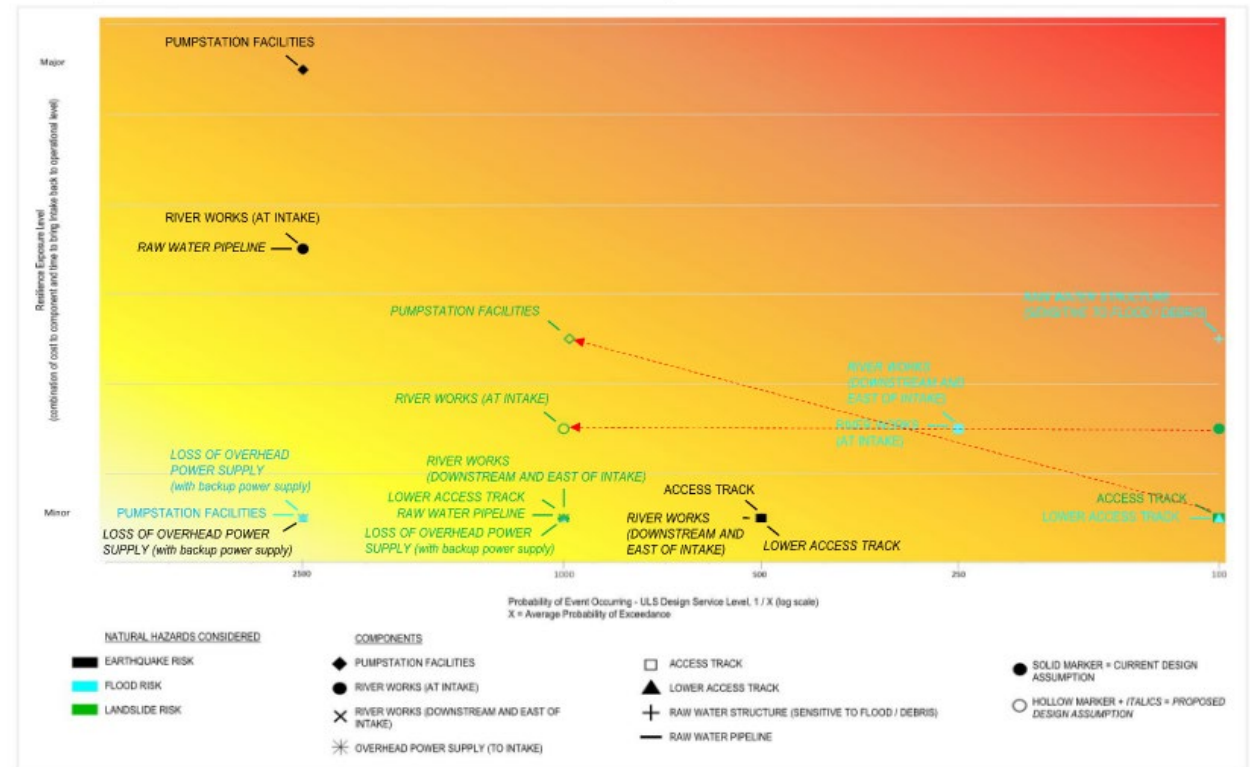
- Earthquake
- Landslide
- Flood
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Table 3: Annual

Service Level	Extent of Effect	Earthquake IL:3 Design Life:100 years (Intake Building, River Works at Intake, Raw Water Pipeline)	Earthquake (Lower Access Track, River Works Downstream + East side of Intake)					
				(scour protection)	Structure (sensitive to flooding/debris)*			
SLS1	Adopted	1/25	1/25	-	1/25	-	-	1/10
	Final	1/25	1/25	-	1/25	-	-	1/20
SLS2	Adopted	-	-	-	-	-	-	-
	Final	1/250	1/250	-	1/50	1/50	1/50	1/100
ULS	Adopted	1/2500	-	1/250	-	1/2500	1/100	1/100
	Final	1/2500	1/500	1/250	1/100	1/2500	1/100	1/1000

Note: \* The design criteria for the raw water structure (non-sensitive to flooding/debris) adopted for the Intake Preliminary Design = 1 : 10 year flood event

NATURAL HAZARD RISK ASSESSMENT - PROPOSED DETAILED DESIGN ASSUMPTIONS





# The Flood Events

## Waiāri Flow



29 JANUARY 2023

# The Flood Events

- 23 May 2023





# Impacts and Effects





# Pump room inundation





# Silt





# Debris





# Damage





# Experience and Learnings





# Flood Level



# Experience and Learnings

- Silt in the wet wells
- Using screened raw water for seal water was no longer possible
- Pumps inundated in silt
- Local expertise and sourcing of vertical turbine pumps
- Develop well-documented strategies for disaster recovery
- The show must go on





# In stream sediment load





# Silt clean-up





# Conclusion

- Identifying and discussing risks does not necessarily prepare one for the practicalities associated with their occurring.
- It is sometimes those small initiatives that will make practical impacts on site.
- Provided the basics are present, by continuing to work together we can strengthen resilience
- No better way to test your resilience and processes then booking in a few massive storms two months in!







# Thank you!



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