



# Breakout Session 3: Climate Change Impact on Operations

# Icebreaker

Find your herd



**PIG**

**OINK!**

**COW**

**MOO!**

**HORSE**

**NEIGH!**

**CHICKEN**

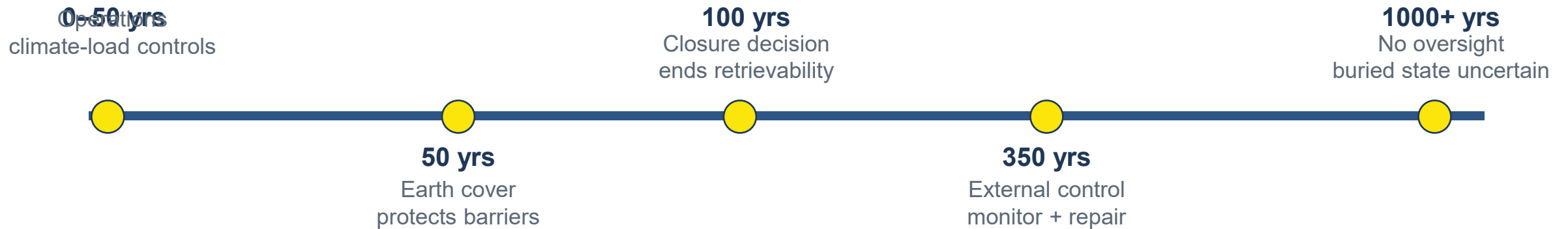
**CLUCK!**



**Rule: no talking — only your animal sound!**

# Keynote summary

## Monitoring evolving meteorological conditions and their potential implications during surface disposal operations in Dessel



### CLIMATE-RESILIENT DESIGN

Use design calculations and safety scenarios to withstand rain, wind, erosion and water infiltration.

### MONITOR TO VERIFY

Confirm system behaviour, model assumptions and regulatory compliance; detect releases and support safety decisions.

### MODEL, COMPARE, ADAPT

Compare models with monitoring; reset limits and assumptions when data changes. 2024 exceeded the groundwater model; 2025 was exceptionally dry.

**Bottom line: know the safe operating limits—and have a secure fallback when real conditions exceed them.**

# Group Session

## What technologies, monitoring and modelling innovations are needed?

1-2-4-all method

### MODELS & AI

**Digital twin** — couple complex calculations with a model and AI

**Digital decision framework** — automatic updates from sensors into dashboard (quick issue visibility)

Advanced AI to analyse the data and manage the site

Global-scale and local-scale modelling integration for bigger picture

### MONITORING & DATA

Monitor not just the site but the local area for public use (e.g. local weather forecasts)

**Data retention strategy** — ensuring data is useful for future uses up to 350yrs

Develop a qualification for instruments to ensure they are suitable both now and in the future

Placing monitors as close to the waste for best accuracy

### MATERIALS & CULTURE

**Materials development** — look into new materials that could better 'survive'

Good safety culture that allows for mistakes and learns from them



# What the room took away

One word or sentence to close the session

“Quantify uncertainties —  
and let them be your friend.”

“Creative, inquisitive —  
with collective intelligence.”

THE SESSION FELT

**COLLABORATING**

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ROBUST • INTERFACE •  
SYNERGY

SEVERAL WINDOWS  
OF INNOVATION

MISSIONARY

*“Hard to predict — especially the future.”*