# Viva Energy Australia WAG Pipeline Suspension

Presented by:
Anthony Jones and Matthew Lynch
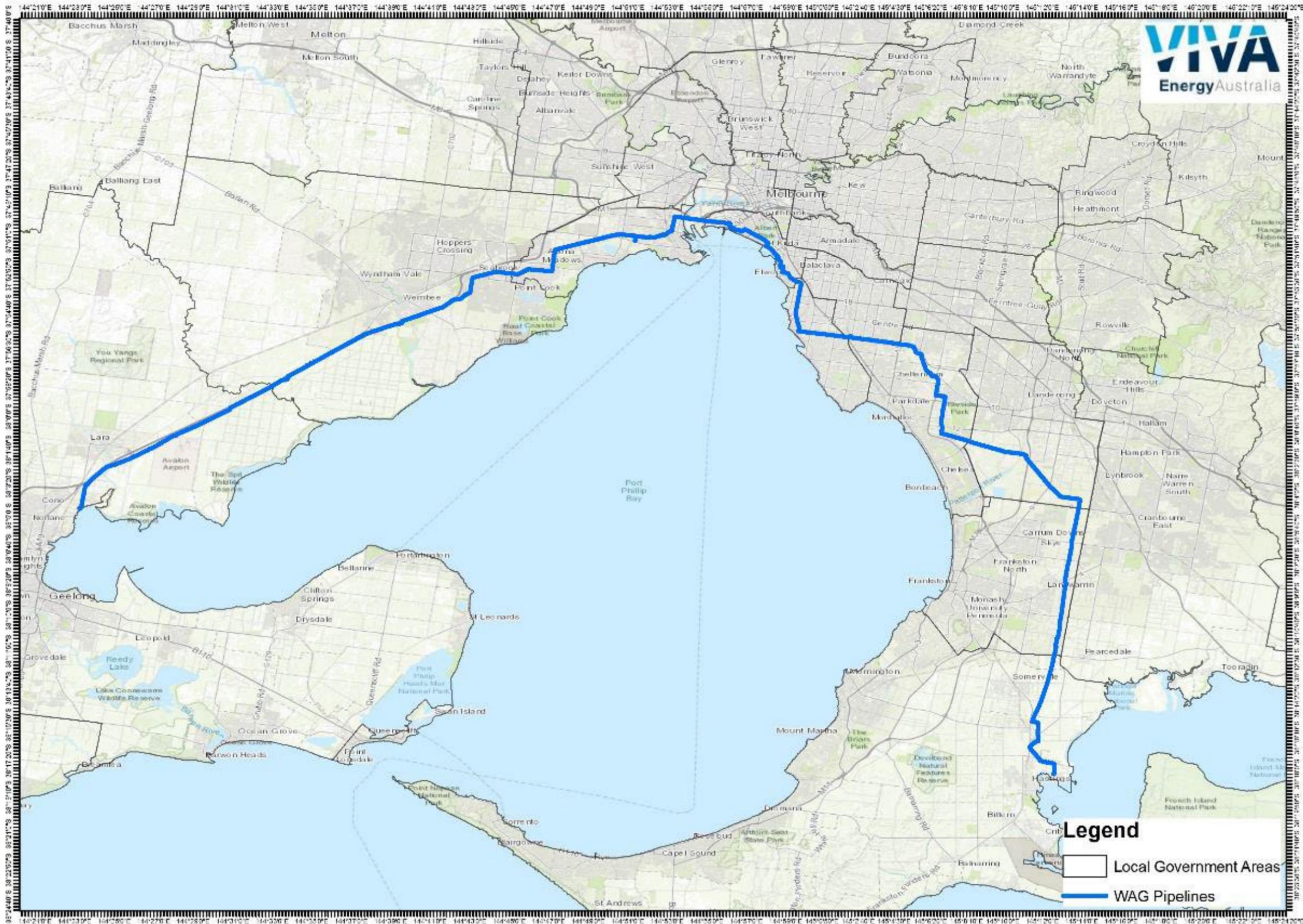POG Seminar
5 March 2026

Session Points:

- Clearing entire contents of Gippsland Crude Oil from the 135km multi diameter WAG Pipeline – Licence #65 in urban Melbourne for the first time
- Successful use of pig technology, nitrogen generation
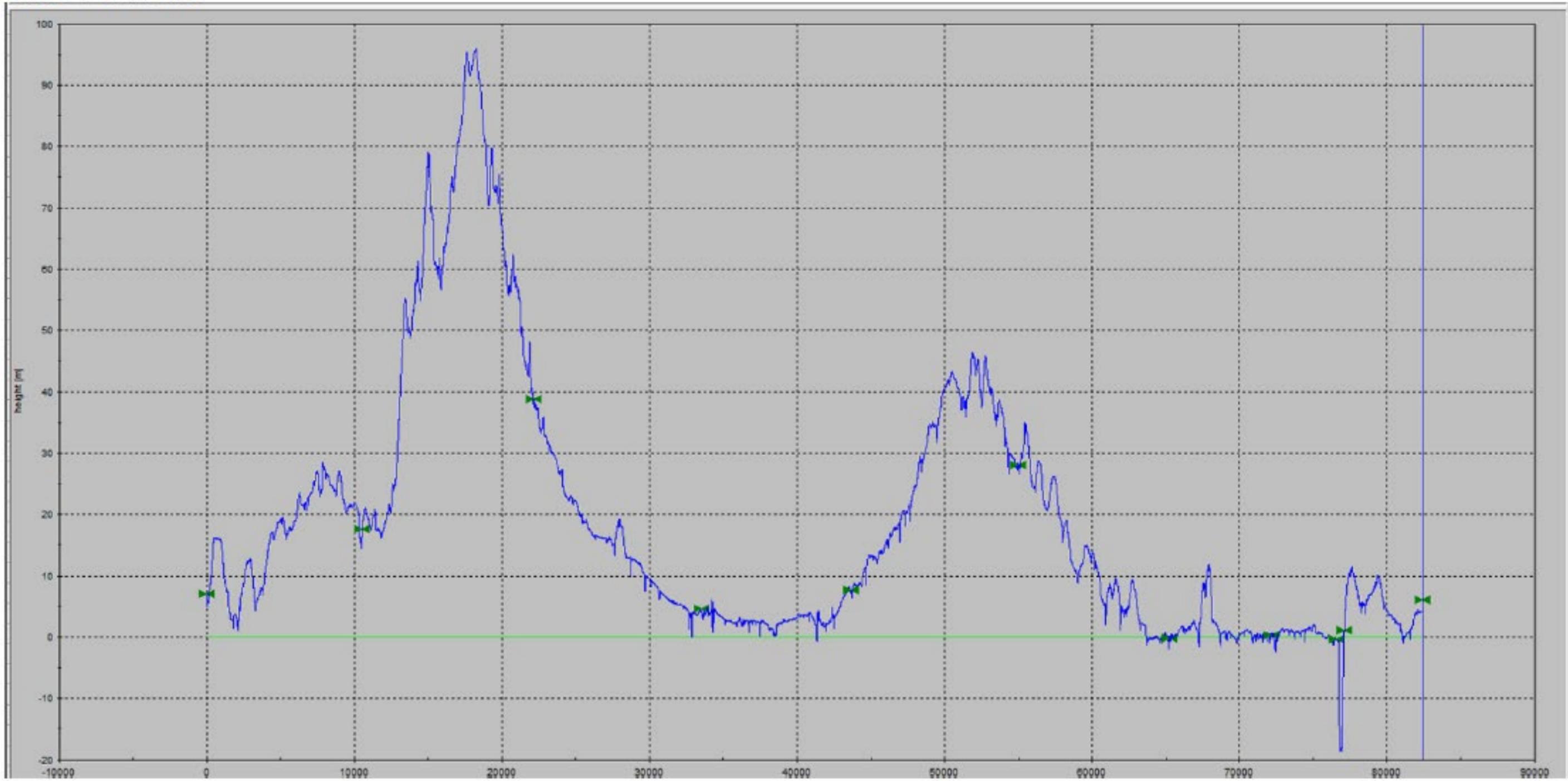- How risks were managed
- Psychosocial hazards

Western Port – Altona – Geelong (WAG)

Legend
☐ Local Government Areas
— WAG Pipelines
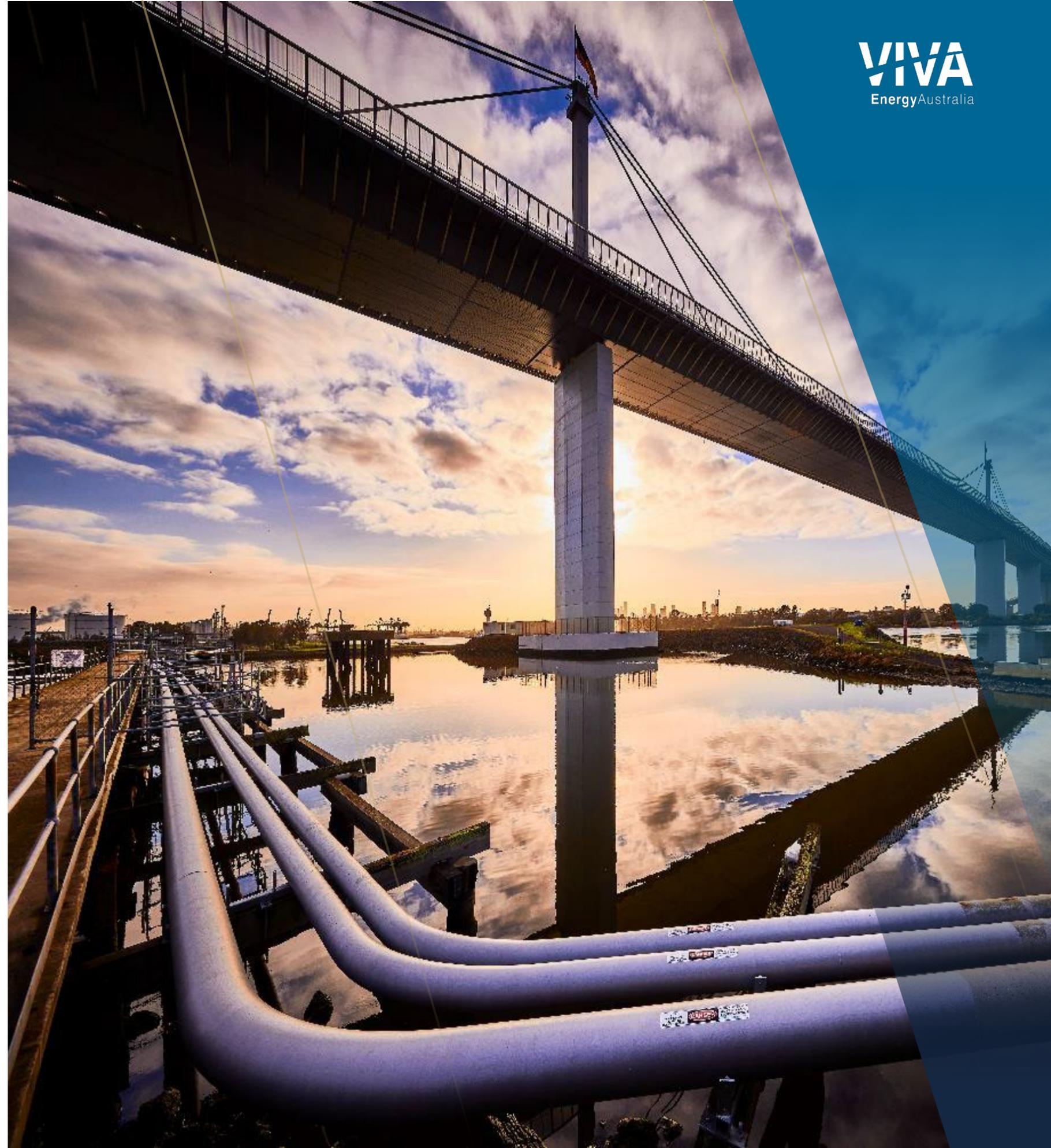
Western Port – Altona – Geelong (WAG)

WAG 600 Profile

Risks Identified:

1. Available pressure to propel first pig

2. Control of nitrogen/liquid interface

3. Control of nitrogen/liquid mixture

Pressure to Propel First Pig

How do we propel the pig? Resting pressure is ~550kPa and 26ML of oil.

Solution
Developed a model from operational data to calculate as-built surface roughness. This enabled accurate calculation for required power to push the pig.

Calculate Head required vs Purging Rate to determine input pressure, flow to determine resource time, with respect to elevation

Result was a nitrogen generation system of:
- 4x HP air compressors 2,348m3/hr at 2,500 kPa
- 1x Nitrogen generator (membrane) N2 Purity 94%
- Consuming 400L/hr of diesel (a total of 80,000L for the project)
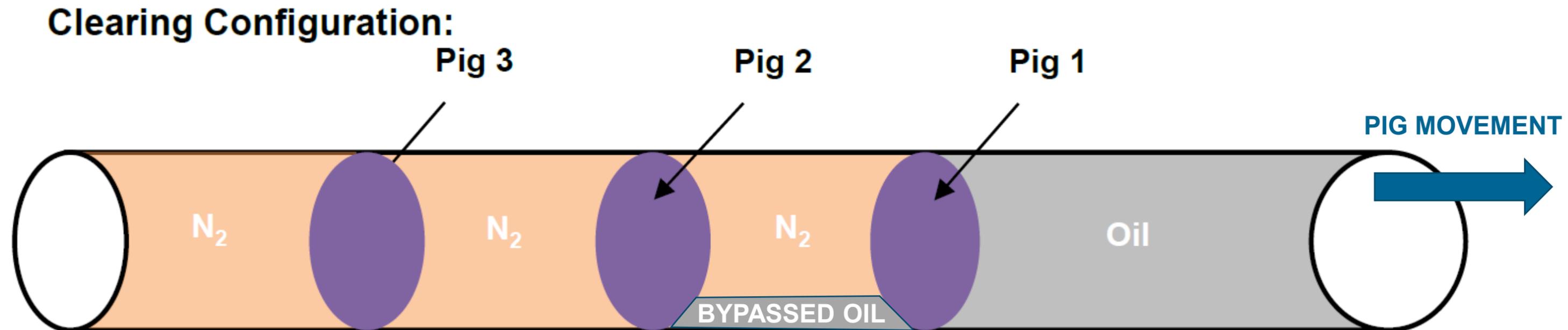
Average pig speed <1m/s

Control of Liquid/Nitrogen interface What Can Go Wrong ?

The displacement of crude liquid with nitrogen has the following risks

- Nitrogen bypassing into crude
- Crude bypass and remains in pipe
- Second pig collecting crude bypass of unknown quantity

Clearing Configuration:

Pig 3   Pig 2   Pig 1

PIG MOVEMENT

N_2 N_2 N_2 Oil

BYPASSED OIL

Control of Bypassed Crude

Estimating the bypassed volume

We estimated less than 0.5% of the crude would remain in the pipe for the second pig to displace. Roughly 500,000L or 3kB

Solution

Installed a vented break tank between the pig receiver and the downstream pipeline section. The break absorbs the bypassed liquid on arrival of PIG #2 and prevents nitrogen being injected into the DN400 pipeline downstream.

The break tank capacity is less than 35,000L

Crude flow measurement valuable for first displacement only
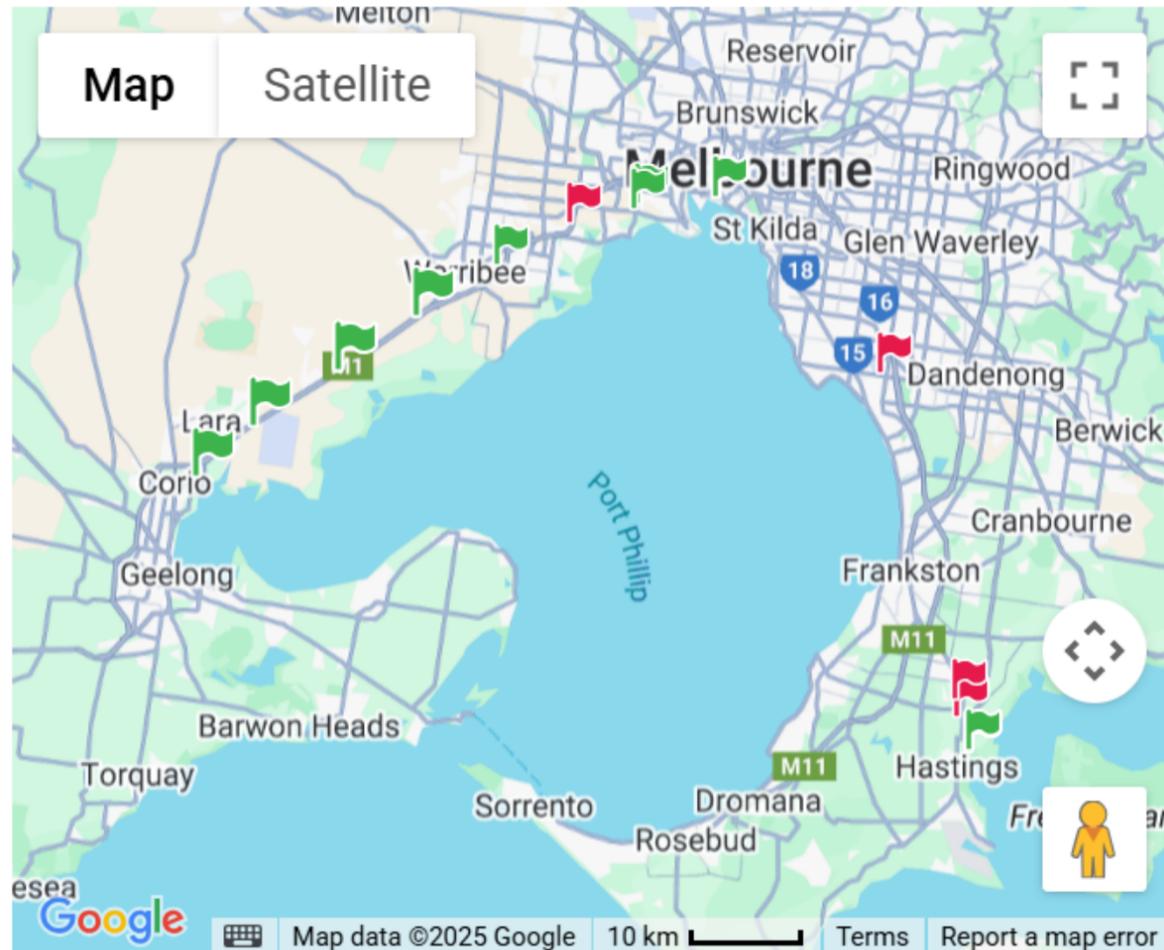Use of pig tracking tools
Use of sight glass

Control of Bypassed Crude

Control of Liquid/Nitrogen mixture

Control of bypassed nitrogen.
With a positive pressure differential across the pig, nitrogen could move forward ahead of the pig.

If the crude has pressurised nitrogen in it, the nitrogen will bubble and release like a champagne bottle in the receiving atmospheric crude tank at the refinery.

Solution
1. High integrity sealing pigs with multiple sealing discs.

2. Oil quantity measurement at refinery

3. Pig tracking tools to correlate distance travelled vs oil throughput

Pig Selection & Design Critical for successful outcome

Clearance Pig Performance – Final Verification

Psychosocial Hazards

The closing of the WAG resulted in multiple redundancies and all these staff were required during the suspension phase.

They often work alone, unsupervised, knowing the quicker they work…

Mitigations were focussed on:

- Understanding their emotional journey

- Providing accurate, timely information

- Appreciate their professionalism in difficult circumstances

- Outside resources available (EAP, outplacement services)

Thank You

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