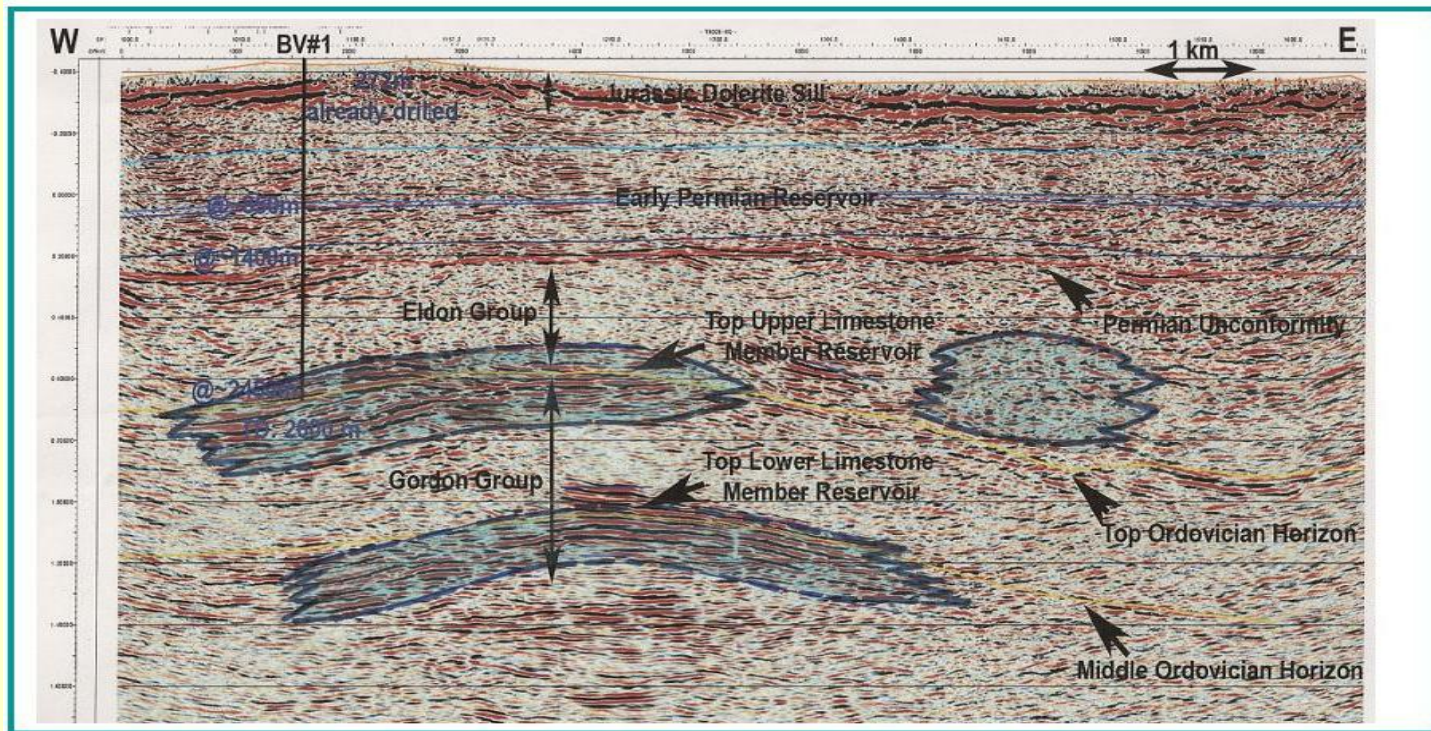


# TASMANIA EL 14/2009 LICENSE

## PROJECT SUMMARY

### Potential Ordovician reefs at the Bellevue prospect location



# Tasmania EL 14/2009 License – The Opportunity



**Attractive onshore Tasmania exploration opportunities with multi-million barrel oil or oil-equivalent potential**

## Executive Summary

This document reviews briefly two attractive exploration opportunities onshore Tasmania – the Bellevue and Thunderbolt prospects – that can be drilled at moderate and affordable cost to Empire Energy and JV partners.

Opportunities are associated with a moderate to high geological risk (1:5 to 1:6) consistent with exploration risk in frontier areas, but low commercial and political risk, as Tasmania has attractive fiscal terms and a stable political climate.

Preliminary 2D seismic evaluation completed and an inventory of drillable prospects, containing up to 17 prospects and leads, prepared.

Total mean prospective resources estimate from all prospects and leads exceeds 1 billion barrels of oil or oil equivalent.

# Tasmania EL 14/2009 License – Prospectivity Summary

**Potential Ordovician reefs and large closed structures at Bellevue & Thunderbolt are solid and objective play elements, providing a compelling reason and material opportunity for exploration drilling at these two locations.**

Two distinct, vertically stacked and independent plays identified on the island: Play 1 - Permian-Triassic (Gondwana Petroleum System); and Play 2 - Ordovician-Devonian (Larapintine Petroleum System).

Limited, geographically scattered geochemical data suggests potential source rocks within both petroleum systems are mature for oil/gas generation over the central and south-eastern part of the island, where Empire Energy's EL 14/2009 License is located.

The basin setting of Empire Energy's License (i.e., location of block within the basin with regard to expected development of specific source and reservoir systems) appears therefore very favourable for impact potential hydrocarbon accumulations, both oil and gas.

Bellevue and Thunderbolt are seismically defined large structures containing multiple potential reservoir levels within both the Gondwana and Larapintine petroleum systems. Mean prospective resources in the two prospects are estimated at 500 million barrels of oil.

The estimated geological probability of success for Bellevue ranges from 22% to 24%. For Thunderbolt, chance of success ranges from 18% to 22%.

The two play systems in the Bellevue prospect - the largest closed structure in the License - are independent from each other, which may result in an improved overall chance of success. Both play systems can be tested by drilling one single well on the structure.

High exploration risks are associated with source rock properties and play dynamics (hydrocarbon generation & migration; timing of trap formation). Other play elements – reservoir, seal, trap geometry – have a lower exploration risk.

# Tasmania Exploration Play System

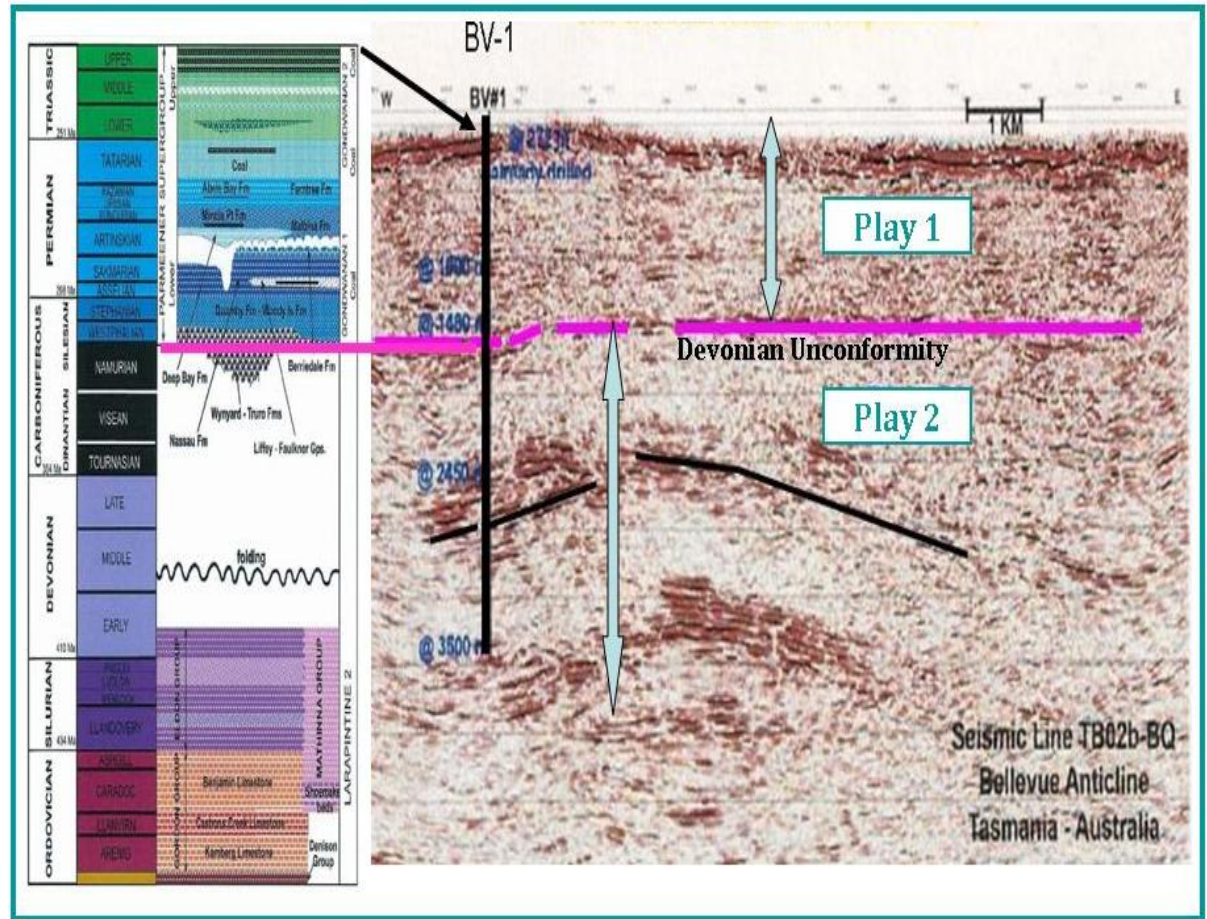
## Play Definition

**Play 1** - Shallow play (1000-1800 m depth) targeting epicratonic clastics of Permian-Triassic age in mildly folded Jurassic - Cretaceous traps, with potential hydrocarbons sourced by Lower Permian mudstones maturing in Late Cretaceous (Gondwana Petroleum System).

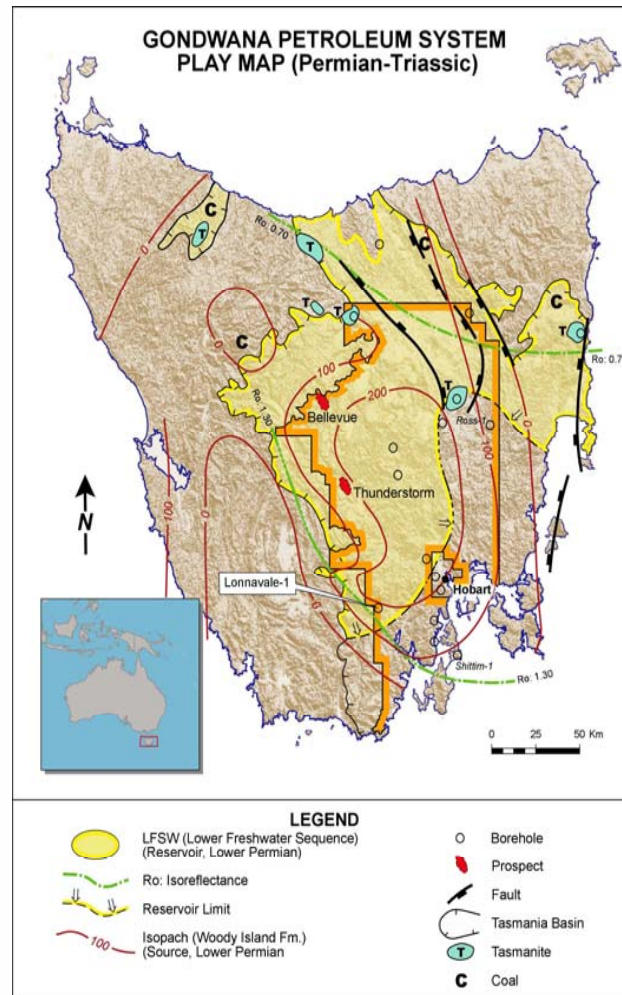
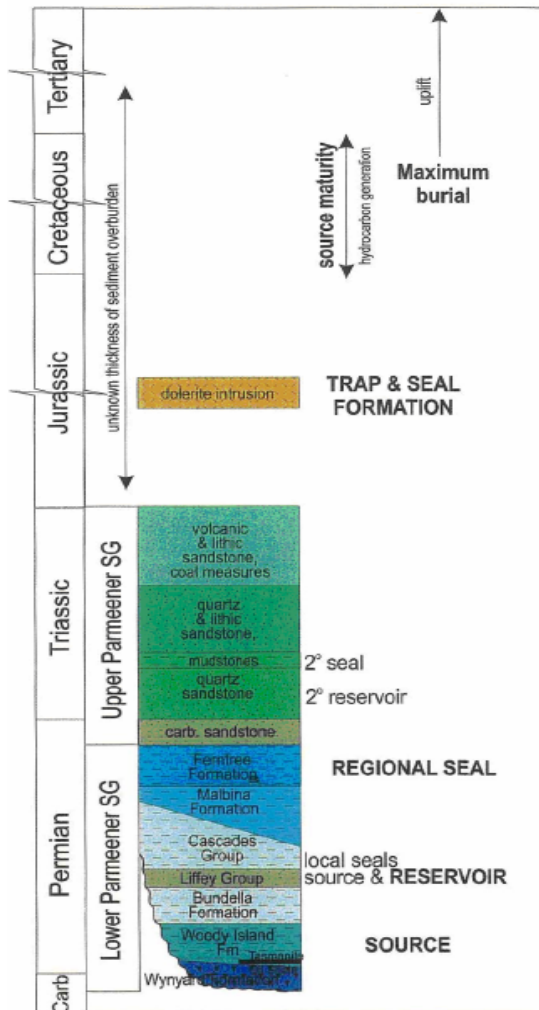
**Play 2** - Deeper play (1800-3500 m) targeting Ordovician reefs and fractured carbonates in large Devonian foreland anticlines, with potential oil/gas accumulations sourced by dark grey micritic limestones maturing before or during Devonian time (Larapintine Petroleum System).

The image displays a geological cross-section of the Bellevue Anticline in Tasmania, Australia, along seismic line TB02b-BQ. The section is oriented West (W) to East (E) and includes a 1 km scale bar. A vertical well, BV#1, is shown on the left. The stratigraphic column on the left identifies units from the Ordovician to the Triassic. A prominent pink line marks the Devonian Unconformity. Play 1 is indicated by a double-headed arrow between approximately 1000m and 1400m depth, targeting Permian-Triassic clastics. Play 2 is indicated by a double-headed arrow between approximately 1800m and 3500m depth, targeting Ordovician and Devonian carbonates. The text "Seismic Line TB02b-BQ Bellevue Anticline Tasmania - Australia" is in the bottom right corner.

**Play 2 - Deeper play (1800-3500 m) targeting Ordovician reefs and fractured carbonates in large Devonian foreland anticlines, with potential oil/gas accumulations sourced by dark grey micritic limestones maturing before or during Devonian time (Larapintine Petroleum System).**



# Tasmania – Gondwana (Permian-Triassic) Play Map



## Source rocks

**Primary:** Lower Permian oil/gas prone claystones & siltstones (Woody Isl. Fm) & oil prone Tasmanite shales.

**Secondary:** Upper Permian gas-prone coals & carbonaceous mudstones.

**Questionable:** Triassic gas-prone coals & coaly shales.

## Reservoir rocks

**Primary:** Lower Permian fluvial/marginal marine sandstones (Lower Freshwater Sequence, Liffey Gp.)

**Secondary:** Upper Permian-Triassic fluvial to alluvial sandstones (Coal measures).

**Traps:** Early Jurassic- Cretaceous mild closures draped over Devonian sharper folds..

## Hydrocarbon Charge (HC)

Lower Permian sources mature and within the oil/gas window in south-eastern part of island.

Peak hydrocarbon generation during Cretaceous-Early Tertiary.

Coaly sources have questionable maturity.

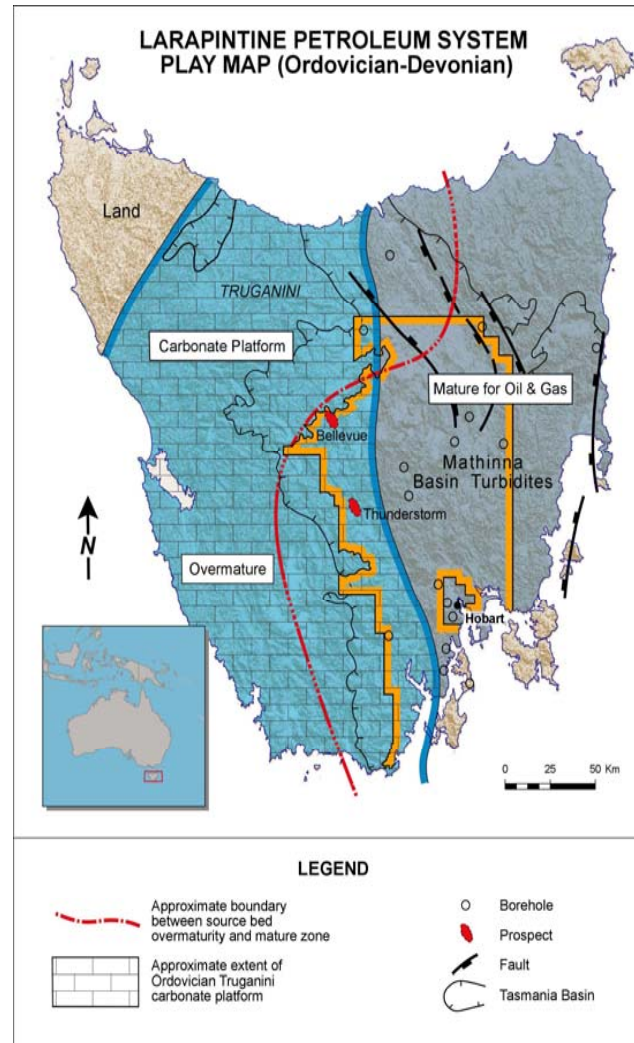
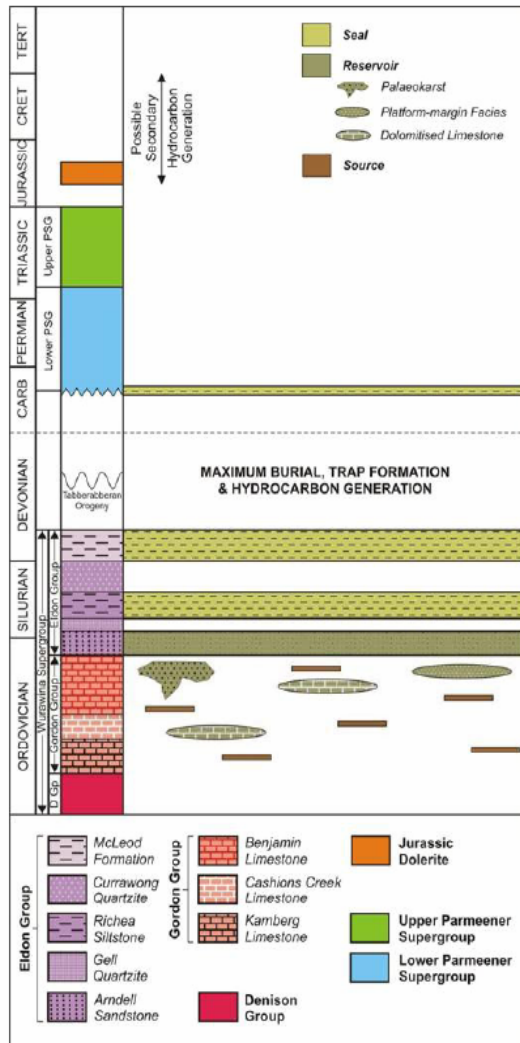
**Seal:** Triassic claystones and Jurassic dolerites.

**Major Risks:** Hydrocarbon charge & complex thermal history of basin.

Formation of some traps may post-date generation and migration of hydrocarbons.

**Lonnavele Oil Seep:** oil generated from Tasmanite shales.

# Tasmania – Larapintine (Ordovician-Devonian) Play Map



## Source rocks

**Primary:** Ordovician oil/gas-prone dark grey micritic limestones

**Speculative:** Cambrian lacustrine shales.

## Reservoir rocks

**Primary:** Potential Ordovician reefs and fractured platform carbonates (Upper & Lower Limestone Member)

**Secondary:** Silurian-Devonian sandstones & siltstones (Eldon Group).

**Speculative:** Cambrian sandstones.

**Traps:** Large anticlines of Devonian age.

## Hydrocarbon Charge (HC)

Source beds within the oil/gas window in the eastern part of island; over-mature to the west. Sources maturing in Devonian prior to general uplift and erosion.

**Seal:** Silurian shales.

**Major Risks:** Timing of source beds maturation & complex thermal history of basin.

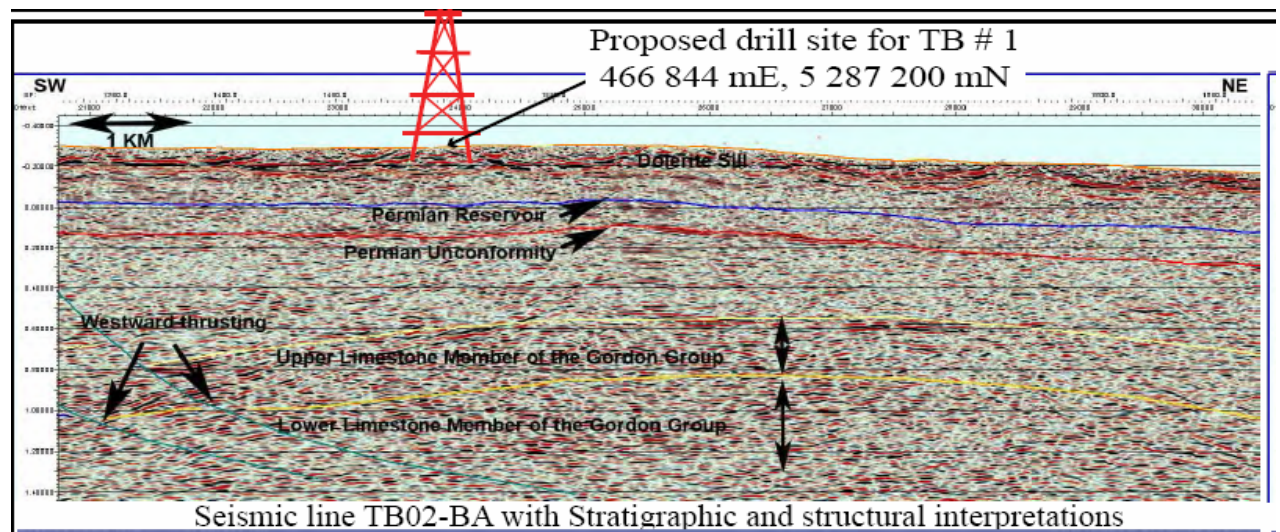
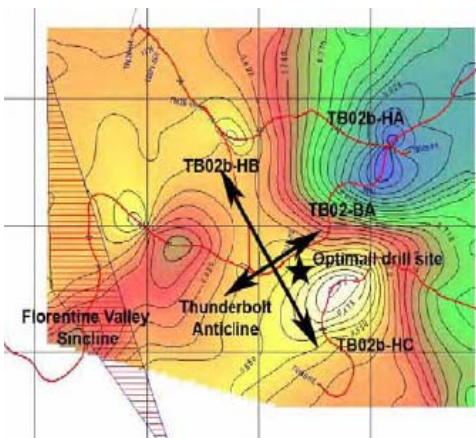
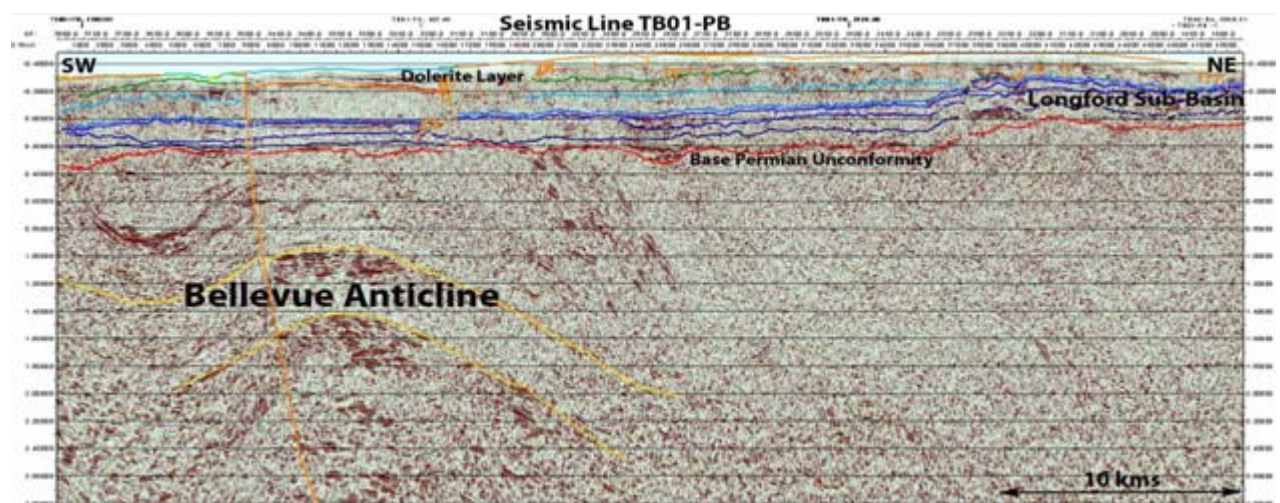
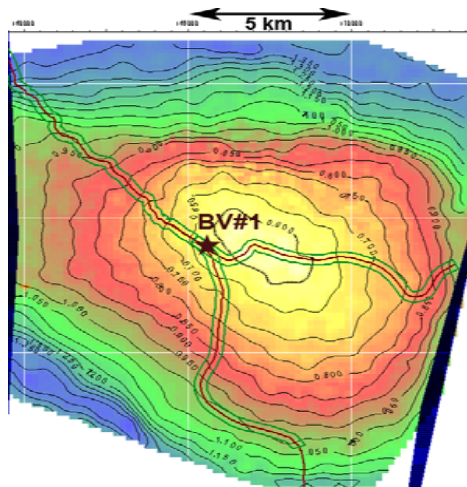
1 – Timing of generation and migration appears to be contemporaneous with or pre-dating trap formation in the Devonian.

2 – Subsequent Mesozoic subsidence & burial in the eastern part of the island potentially sufficient to trigger secondary oil generation from Ordovician sources during Cretaceous-Tertiary time.

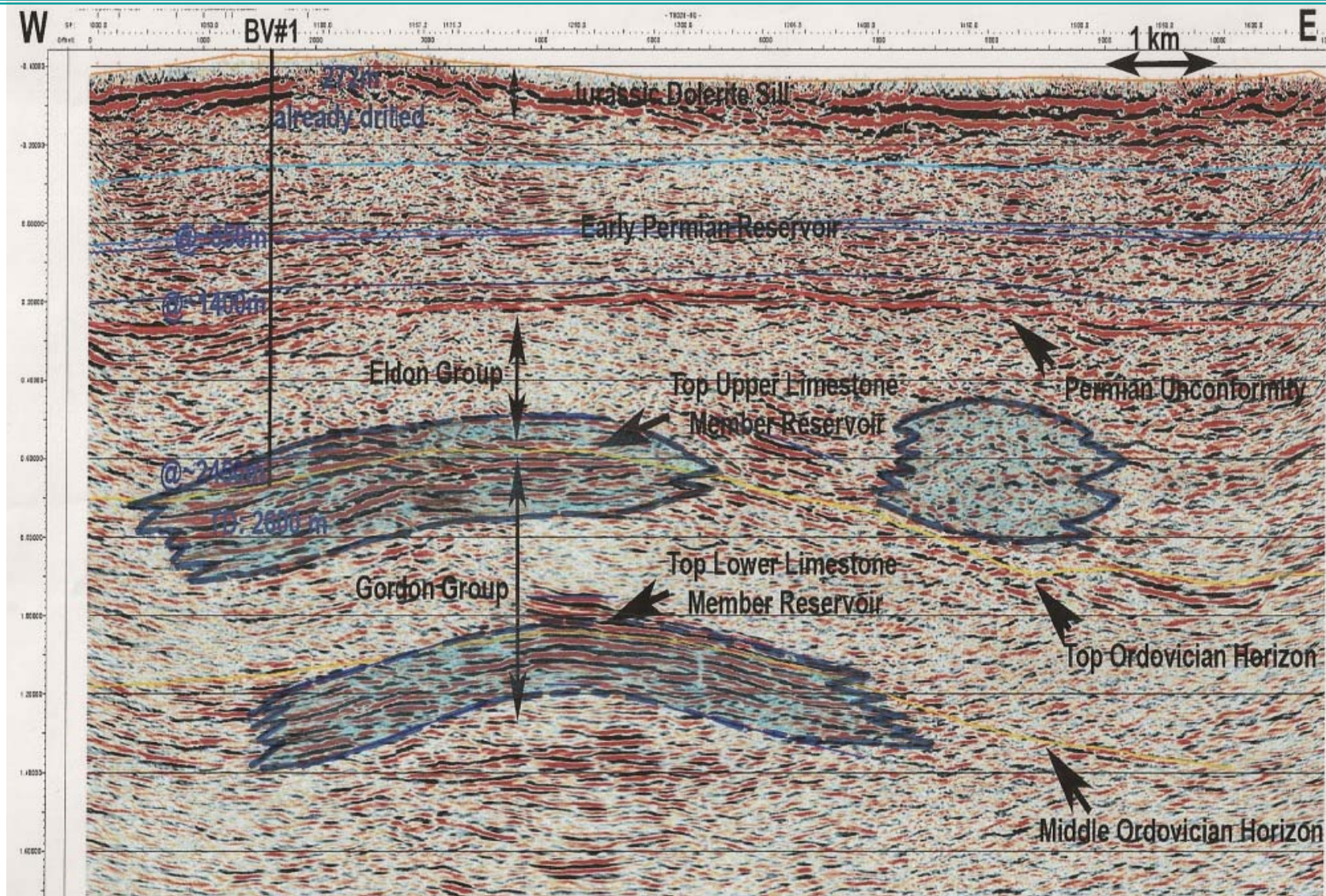
**Analogs:** Central Petroleum recent discovery within the Larapintine Petroleum System in central Australia (Amadeus basin).

# Bellevue (BV) & Thunderbolt (TB) Prospects

Structure time maps on top Ordovician Upper Limestone Member (TWT)



## Potential Ordovician reefs at the Bellevue prospect location



## Tasmania EL 14/2009 License – Geological Risking & Volumetrics

### Larapintine Petroleum System (Ordovician-Devonian)

RPS				
Play Chance		Prospect Chance %		
RFs	%	RFs	Bellevue	Thunderbolt
Reservoir	48	Trap	70	50
Seal	100	Charge	80	80
Source/Migration	25	Reservoir	60	60
		Seal	50	25
Play Chance	12	Prospect Chance	17	6
Overall Chance			2.00	0.72

GES		
Prospect Chance %		
RFs	Bellevue	Thunderbolt
Source	62	62
Reservoir	75	75
Trap	85	70
Timing/Mig.	55	55
Prospect Chance	22	18

### Gondwana PS (Permian-Triassic) - GES

Prospect Chance %		
RFs	Bellevue	Thunderbolt
Source	80	75
Reservoir	70	70
Trap	70	70
Timing/Mig.	60	60
Prospect Chance	24	22

### Mean Prospective Resources MMB Oil

	Permo-Triassic	Ordovician	Total
Bellevue	129	220	349
Thunderbolt	63	88	151
Total	192	308	500