

# Prospectivity of the Slyne Basin

Ireland Oil & Gas 2013 Summit, Dublin, 10<sup>th</sup> September 2013

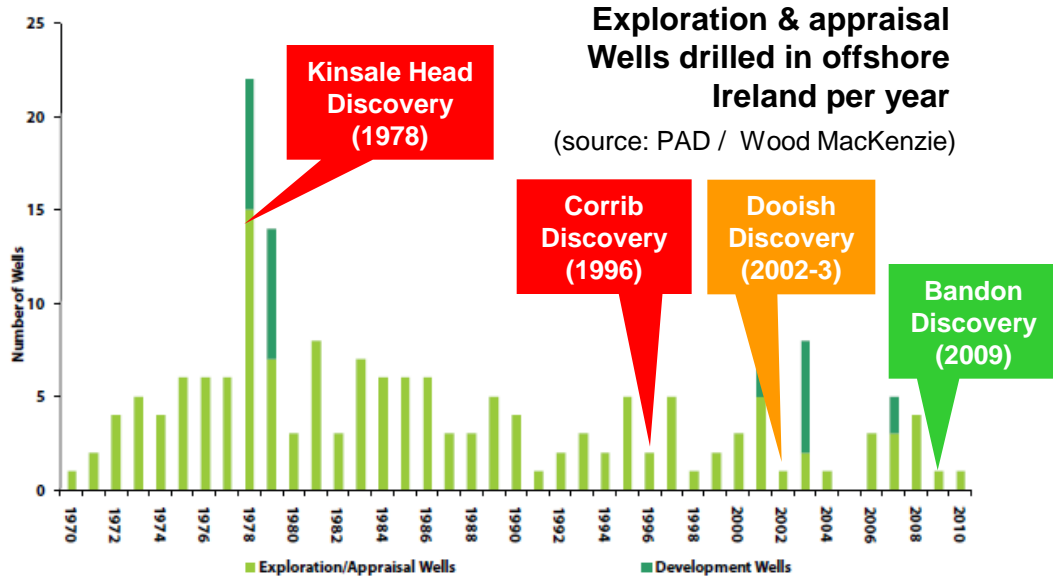
**SERICA**ENERGY



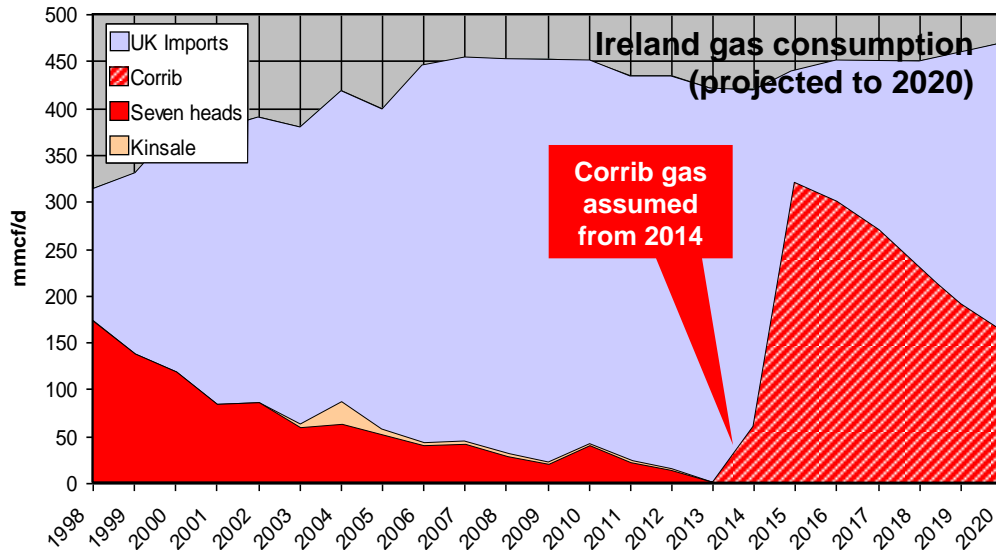
**Petroleum Exploration Licence 1/06 (Frontier), Atlantic Ireland**

# Why Explore in Ireland?

## Commercial Factors



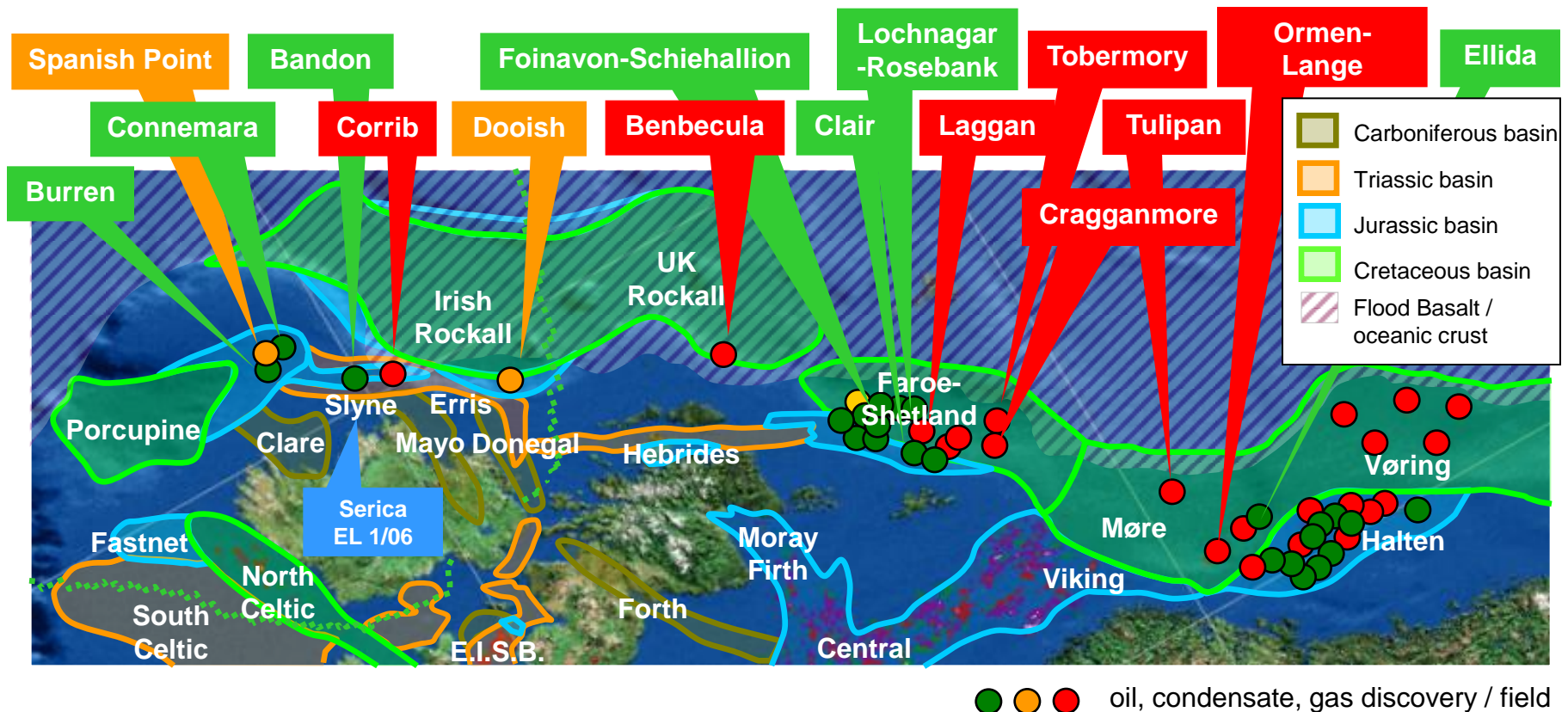
- Highly under-explored
- Big market for domestic production
- Good onshore Irish gas distribution network
- Access to European markets via UK interconnector
- Stable politically and economically
- Very favourable corporation tax regime



# Why Explore Ireland Atlantic?

## Geological Factors

- Shared geology with UK, Faroe & Norwegian Atlantic margins
- Numerous rifted basins
- More than one proven play
- Six oil and gas fields / discoveries
- Numerous reservoirs & seals
- Several proven source rocks
- Many large undrilled structures



# Why Not Explore Ireland Atlantic? Debunking the Myths...



- Herd instinct
  - The herd is (mostly!) grazing around Africa
- Perceived lack of exploration success
  - Irish Atlantic is similar to the UK & Norway in terms of drilling success rates
- Lack of geological understanding
  - Diverse geology, similar to other proven North Atlantic Margin basins
- Hostile operating environment
  - Similar to other North Atlantic basins; some plays are not in deep water
- Remote location
  - But potential for large hydrocarbon volumes is proven
- The “Corrib Factor”
  - False perception that Ireland is a difficult place to conduct E&P business



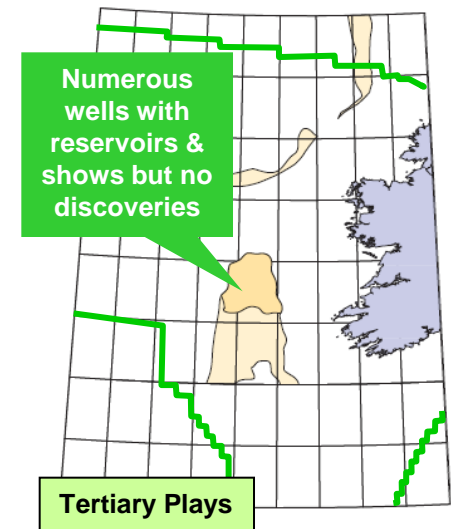
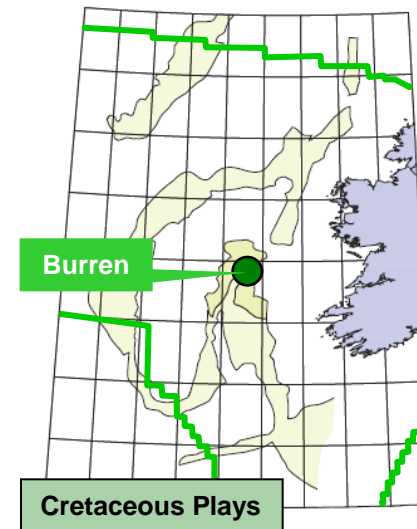
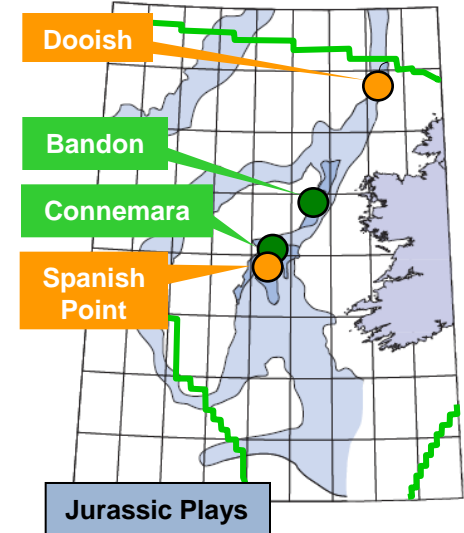
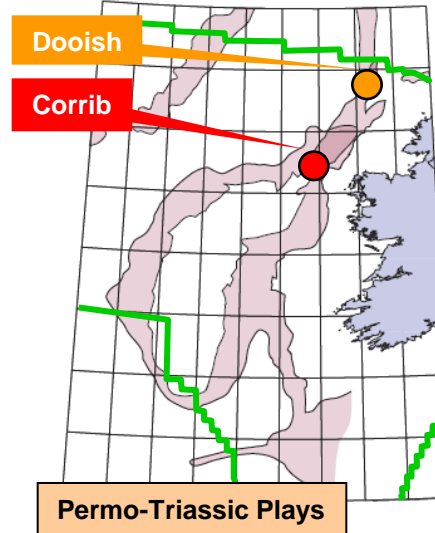
**CORRIB**  
natural gas



# Irish Atlantic Margin

## Many Diverse and Proven Plays

	RESERVOIR	SOURCE	SEAL
Eocene	possible	none	probable
Palaeocene	Probable	none	probable
Upper Cretaceous	Possible	none	probable
Lower Cretaceous	PROVEN	possible	PROVEN
Upper Jurassic	PROVEN	PROVEN	PROVEN
Middle Jurassic	PROVEN	PROVEN	PROVEN
Lower Jurassic	PROVEN	PROVEN	PROVEN
Triassic	PROVEN	none	PROVEN
Permian	PROVEN	none	Possible
Carboniferous	Probable	PROVEN	none



darker shading = proven areas

(source: PAD / Ternan, 2006)

# Irish Atlantic Margin

## Proven Source Rocks & Hydrocarbons

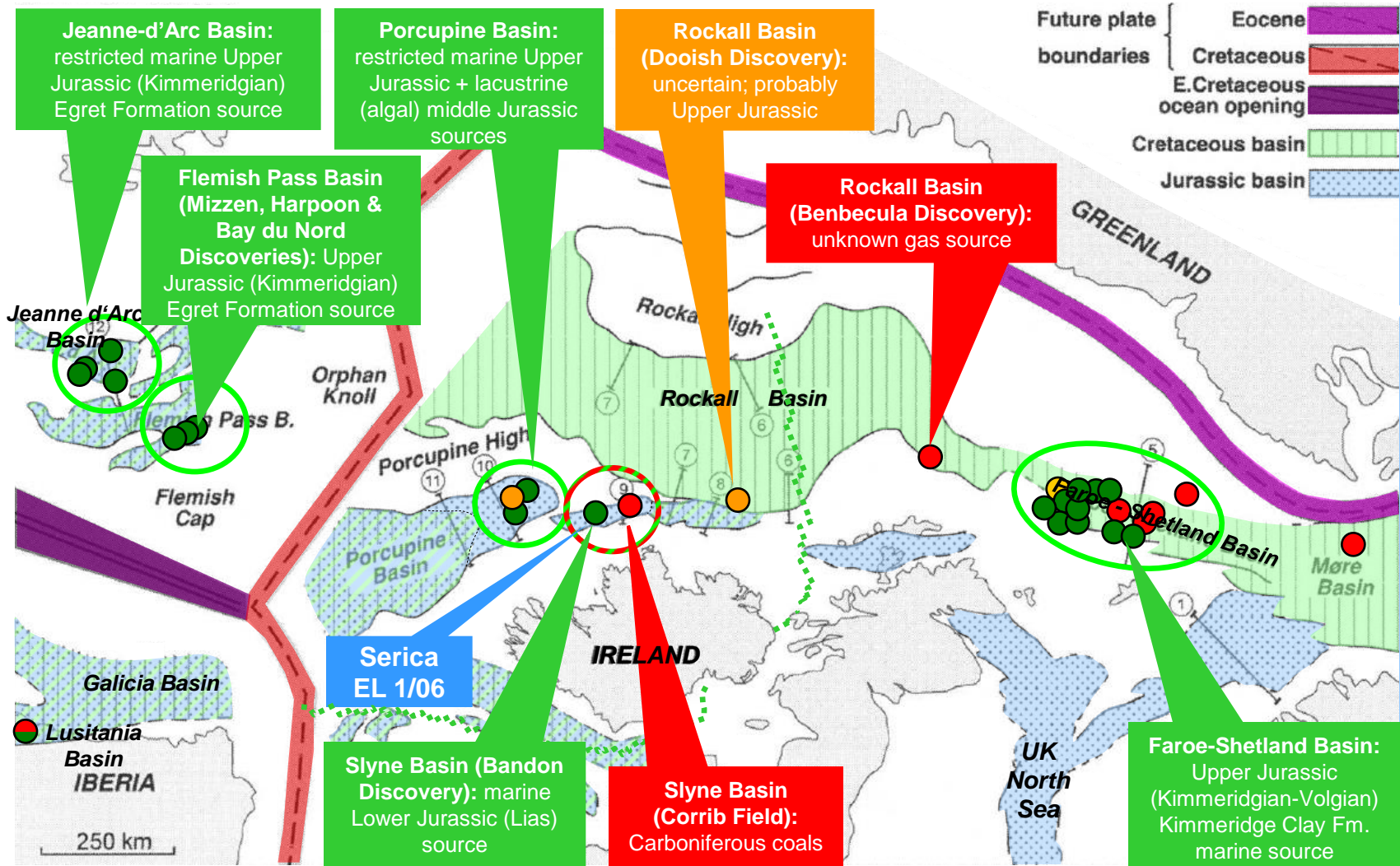
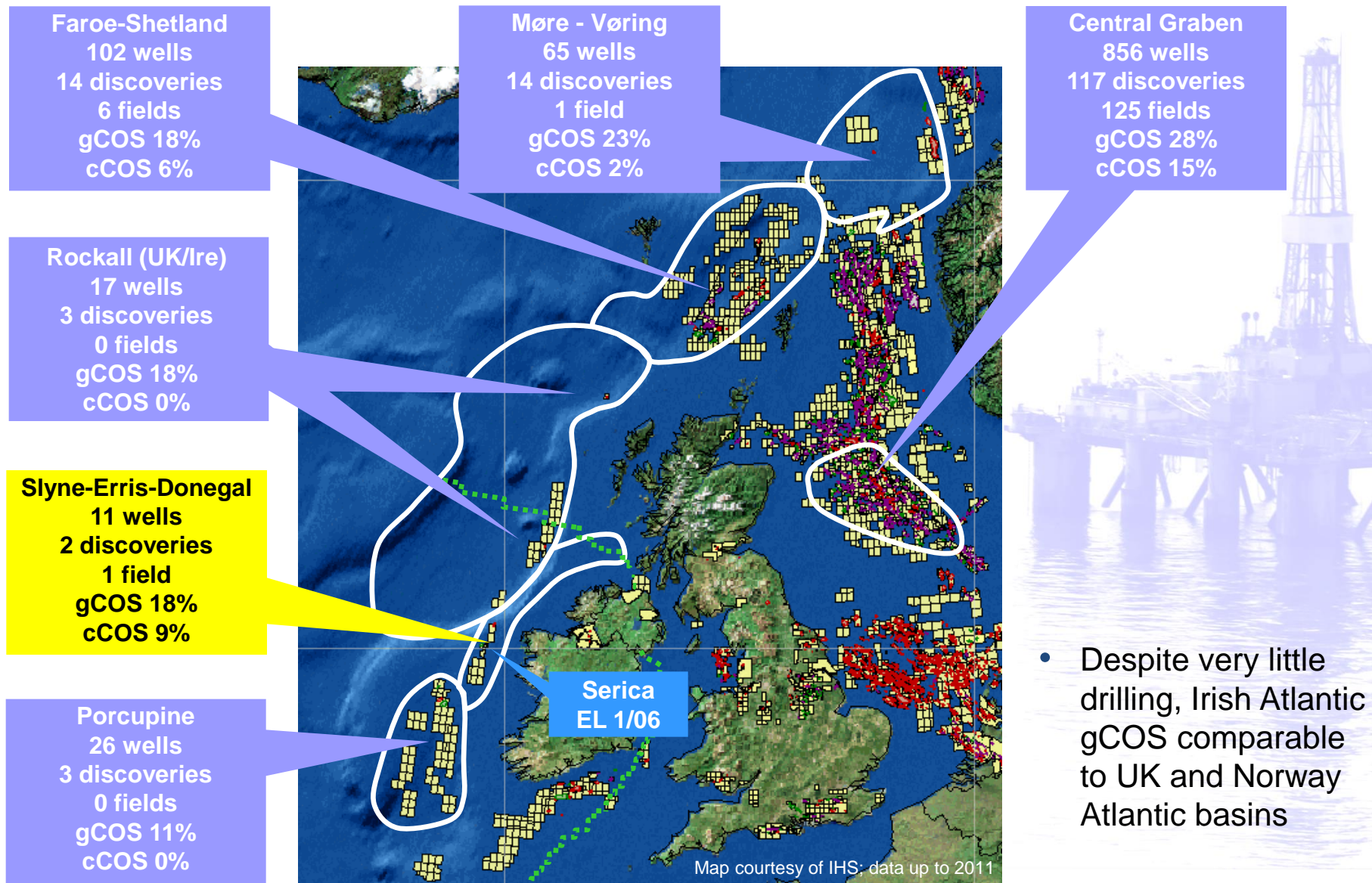


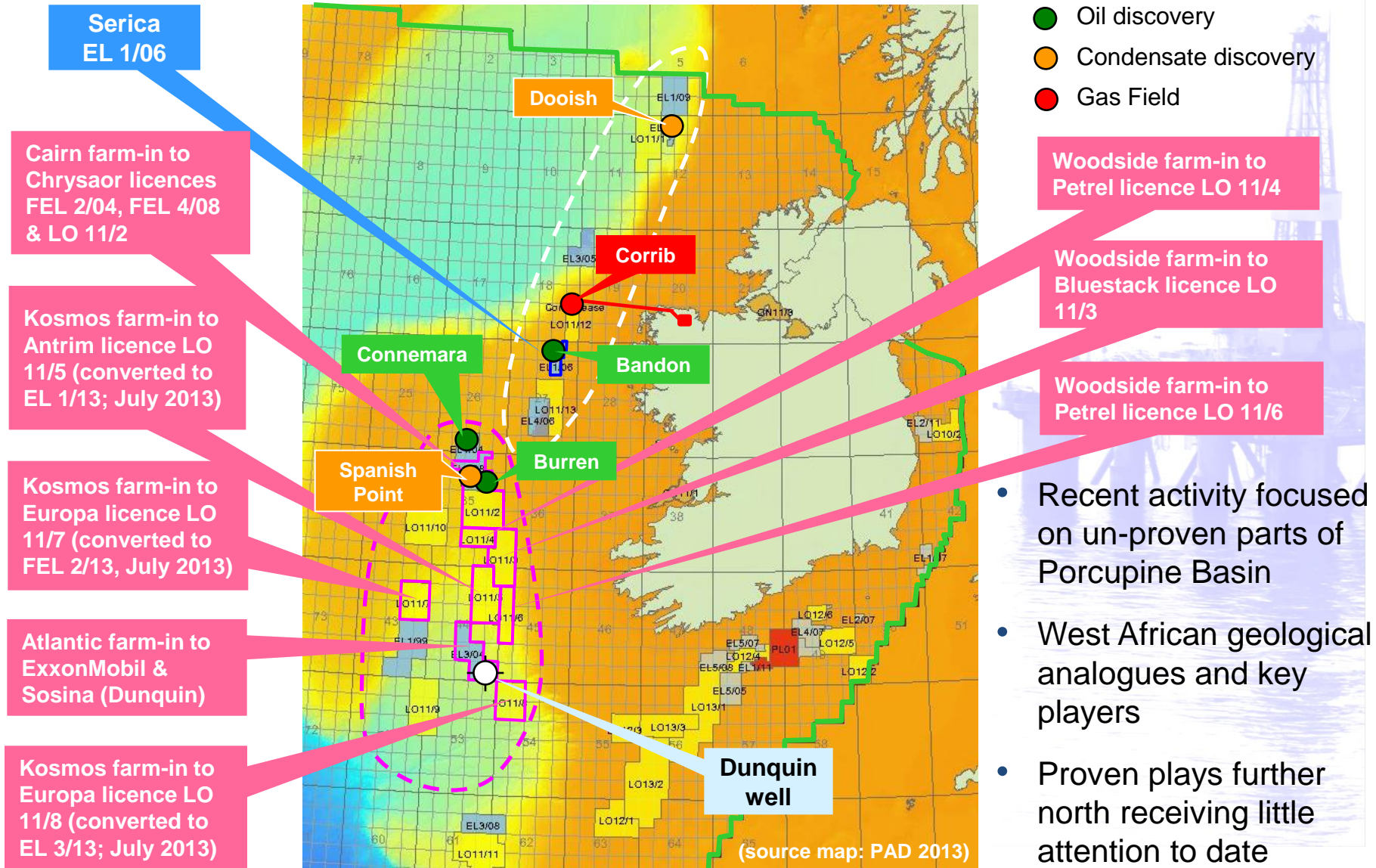
Plate reconstruction, early Cretaceous (Barremian 130 Ma)

# Atlantic Margin Geological & Commercial Chance of Success (gCOS & cCOS)



- Despite very little drilling, Irish Atlantic gCOS comparable to UK and Norway Atlantic basins

# Irish Atlantic Margin Licence Activity 2013 to date

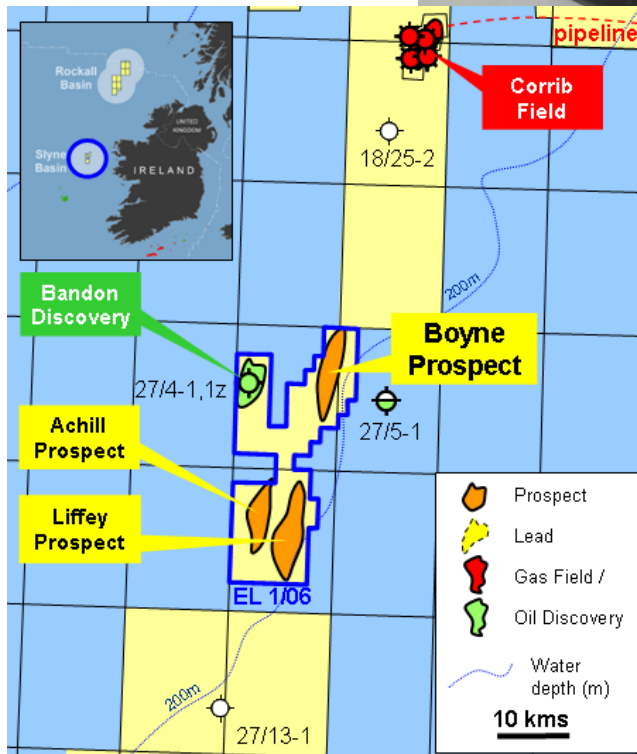
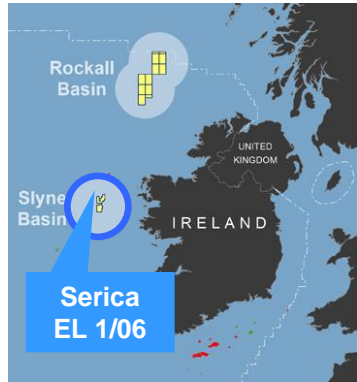


- Recent activity focused on un-proven parts of Porcupine Basin
- West African geological analogues and key players
- Proven plays further north receiving little attention to date



# Petroleum Exploration Licence 1/06 (Frontier) **SERICA ENERGY**

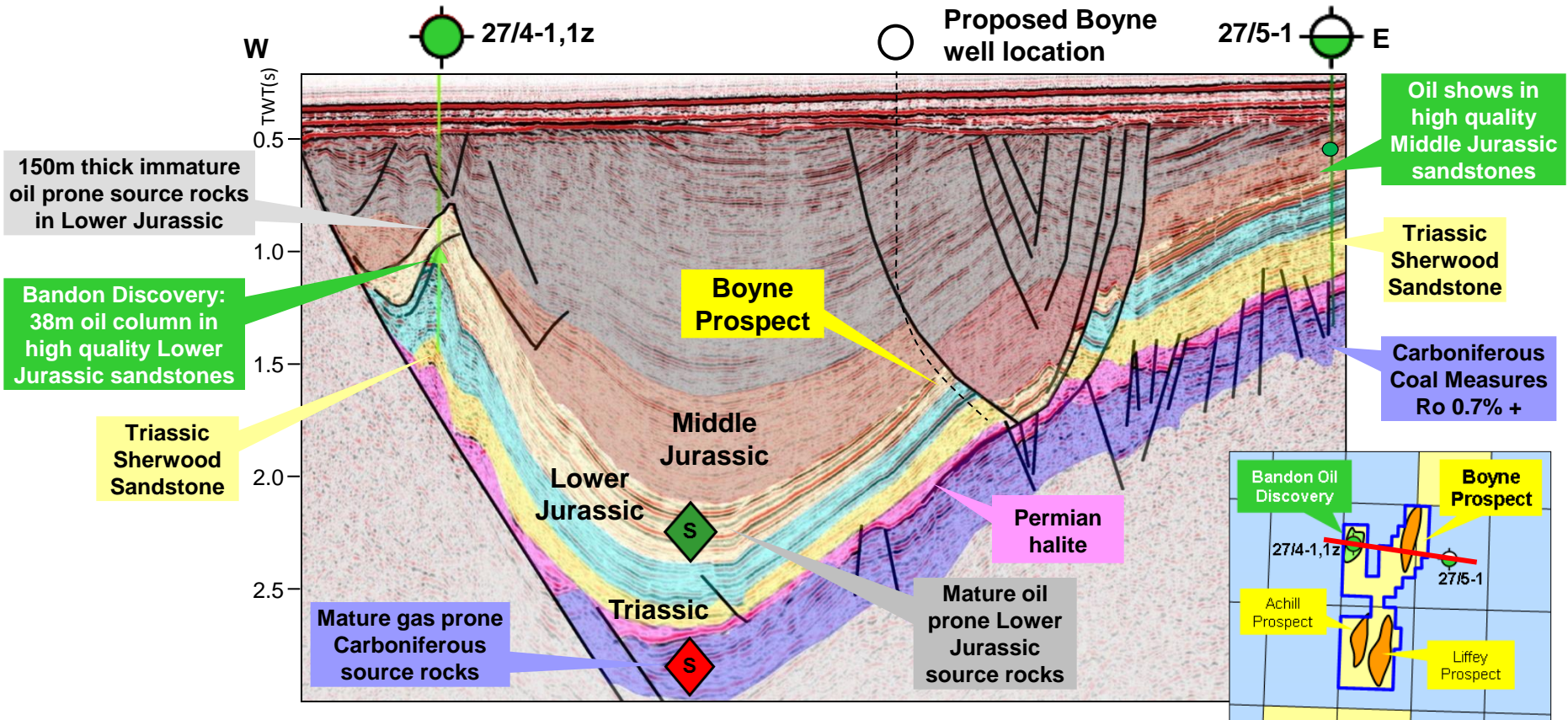
## Summary



- Low risk exploration, Slyne Basin, west of Ireland
- EL 1/06 operated by Serica (50%) in partnership with RWE
- Water depth ~200m
- Proven oil on block (27/4-1,1z Bandon Oil Discovery)
- Nearby commercial gas field (Corrib)
- Good quality Lower Jurassic and Triassic reservoir sandstones
- Boyne, Liffey & Achill prospects clearly defined on 3D seismic data
- Exploration upside in the event of success

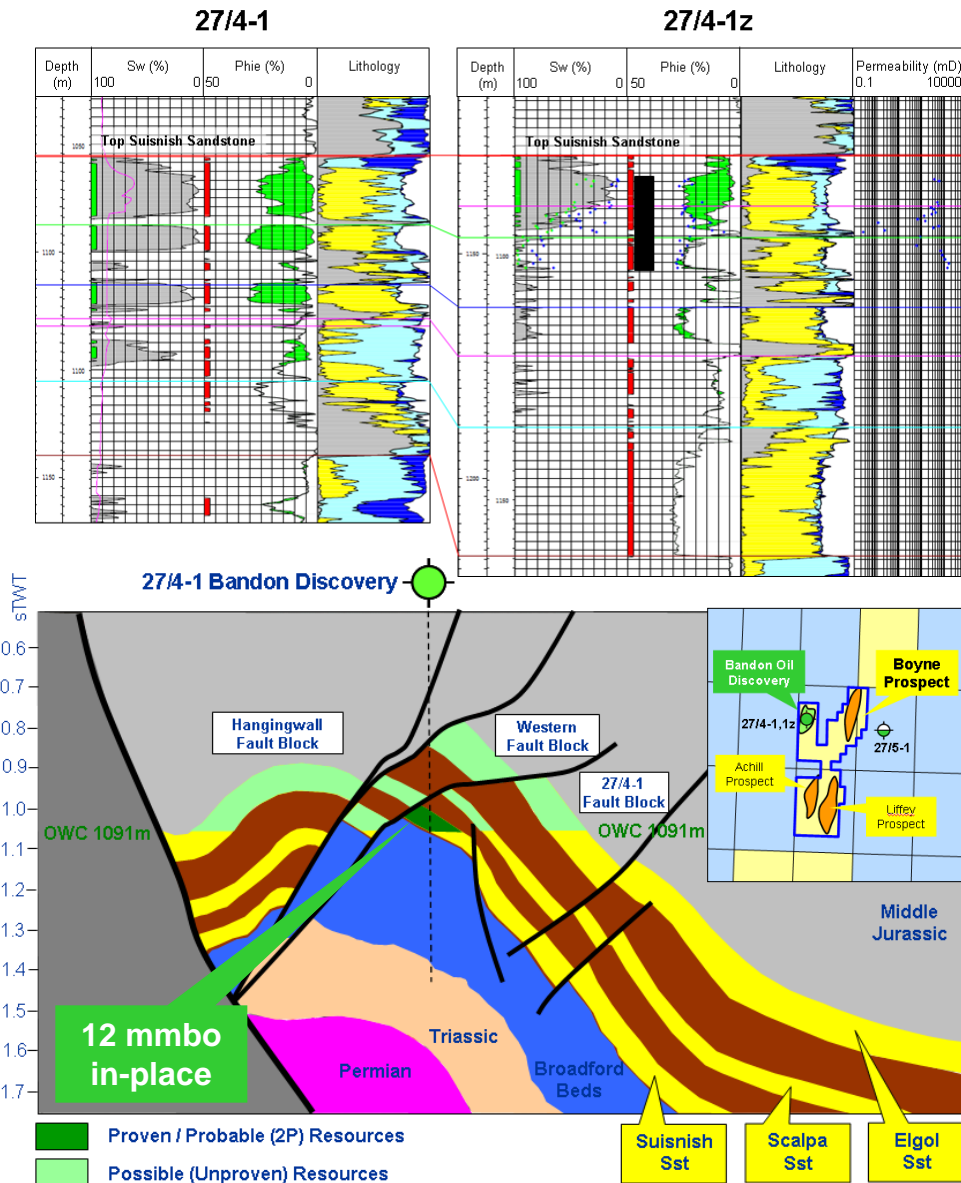
# Slyne Basin Petroleum System

## Two Proven Plays



- Lower Jurassic reservoir sandstones sourced by Lower Jurassic oil shales
- Proven by the Bandon Oil Discovery 27/4-1,1z
- Triassic reservoir sandstones sourced by Carboniferous coals
- Proven by the Corrib Field 40 kms to north

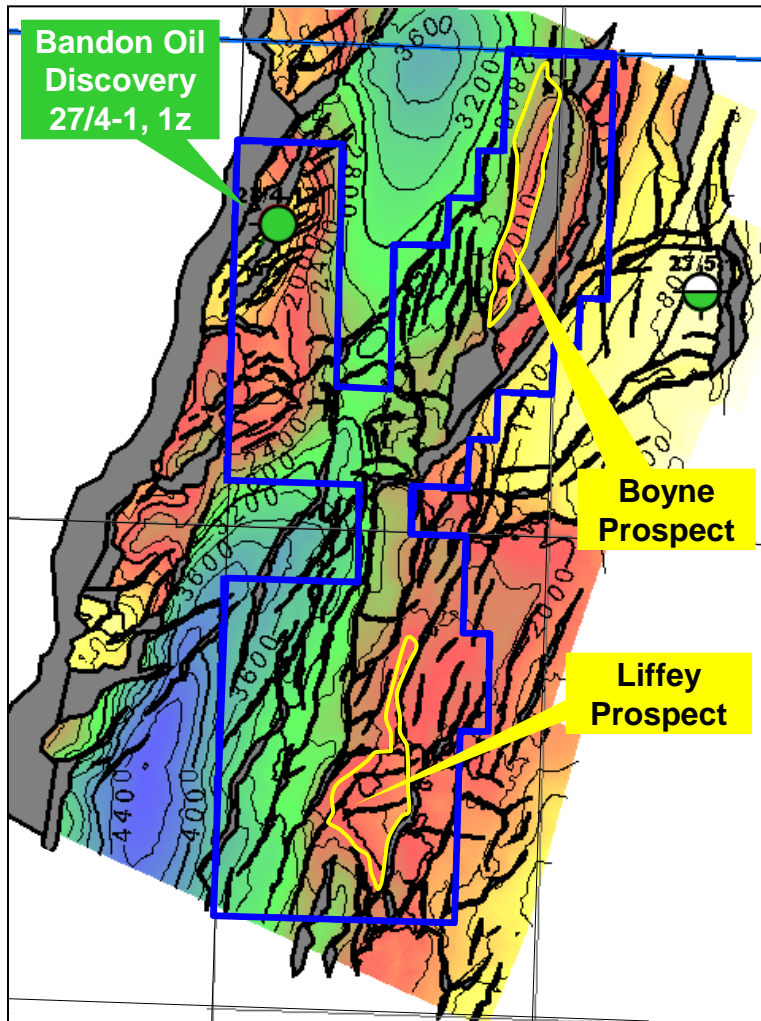
# 27/4-1, 1z Bandon Oil Discovery



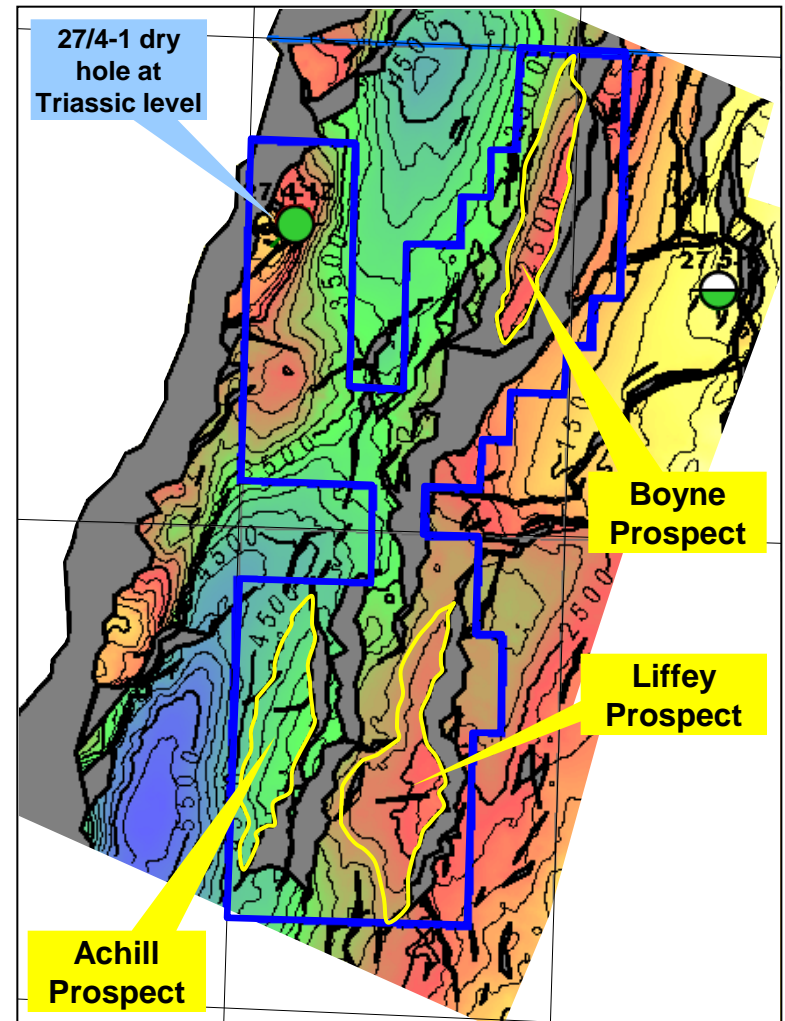
- 27/4-1,1z drilled by Serica in 2009
- 38 m gross oil column in Lower Jurassic sandstones
- Oil-water contact 1091 mSS
- Triassic sandstone moderate quality but water wet
- Well sidetracked to obtain core & MDT oil samples
- 16 °API oil; biodegraded due to shallow depth
- Proven 12 mmbo in-place
- 27/4-1,1z has proven a new oil play

# Boyne, Liffey & Achill Prospects

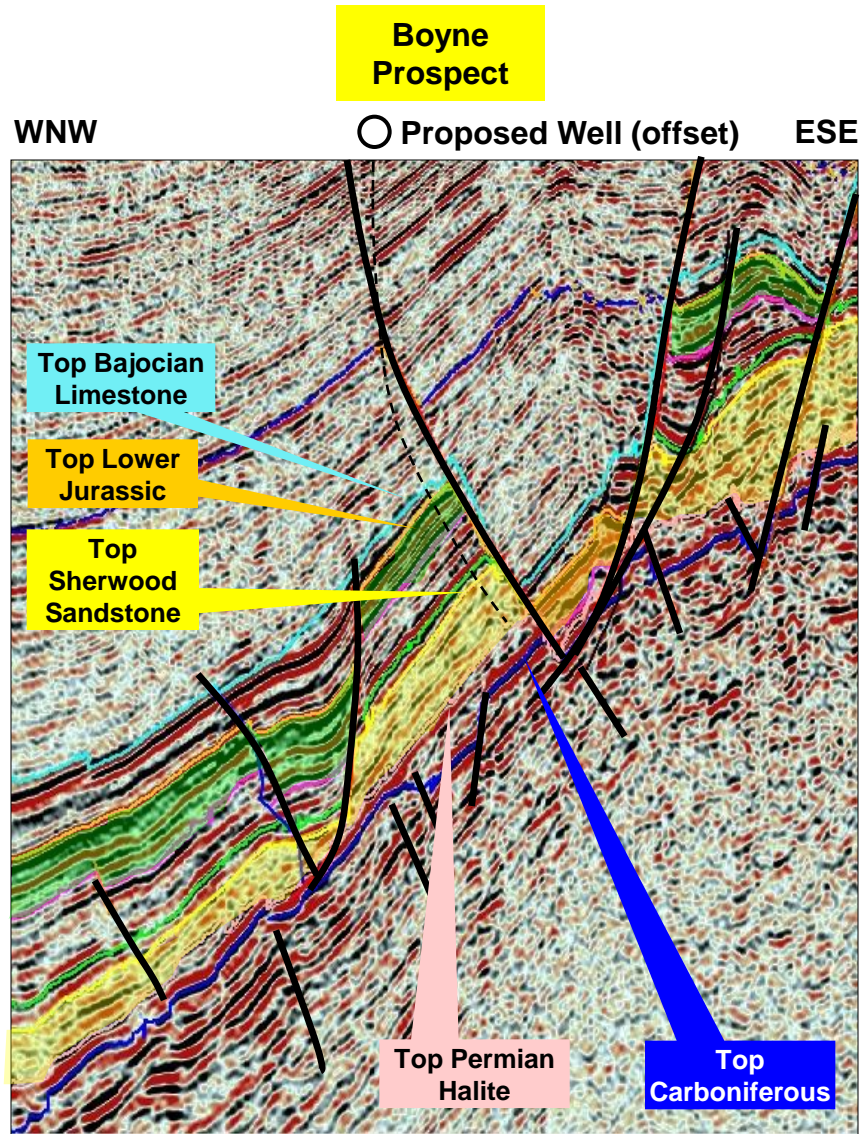
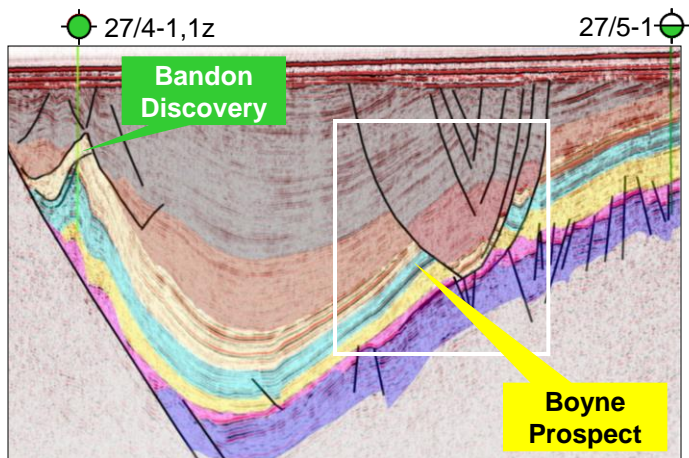
Top Lower Jurassic Depth Map



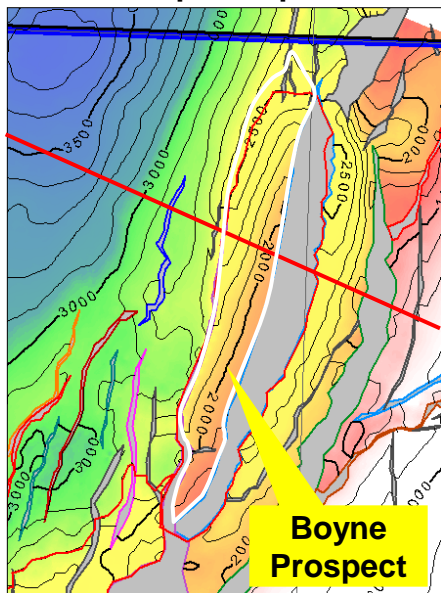
Top Triassic (Sherwood Sandstone) Depth Map



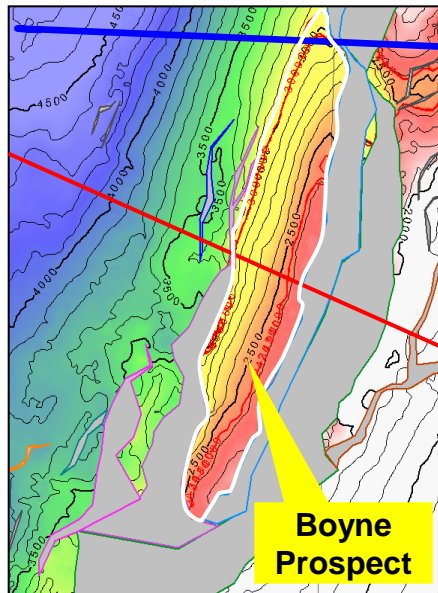
# Boyne Prospect: Trap



Top Lower Jurassic  
Depth Map



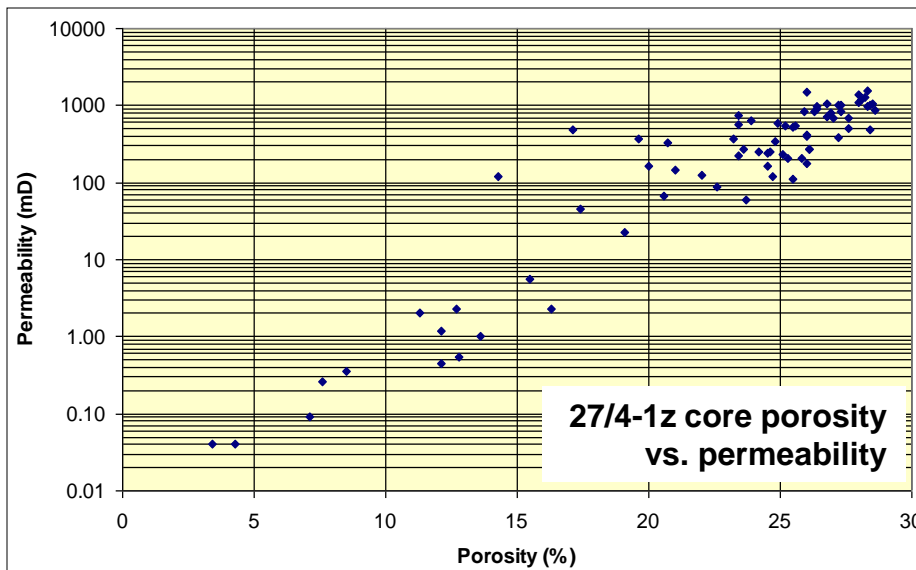
Top Triassic Sherwood  
Sandstone Depth Map



# Lower Jurassic Reservoir



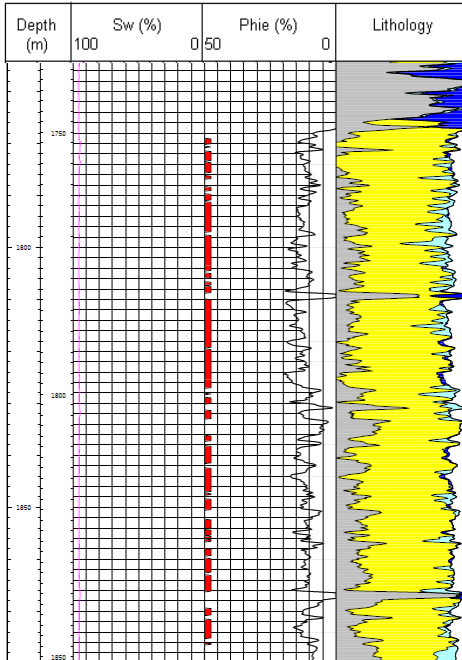
- 27/4-1,1z reservoir: estuarine to shallow marine sandstones
- Excellent core porosity and permeability
- Nearby well 27/5-1 encountered similar, slightly younger sandstones



	Stage	Formation	Member	Lithology	
Lower Jurassic	Early Toarcian	Portree Shale	Bearraig Sandstone	(R)	27/5-1
			Portree Shale	(S)	
	Late Pliensbachian	Scalpa Sandstone	Scalpa Sandstone	(R)	27/5-1
			Pabba Shale	(S)	
	Early Pliensbachian	Pabba Shale	Suisnish Sandstone	(R)	27/4-1,1z
			Bandon Limestone		
	Late Sinemurian	Upper Broadford Beds	Hallaig Sandstone	(R)	27/4-1,1z
	Early Sinemurian		Broadford Beds		
	Hettangian	Lower Broadford Beds			

# Triassic Reservoir

27/4-1

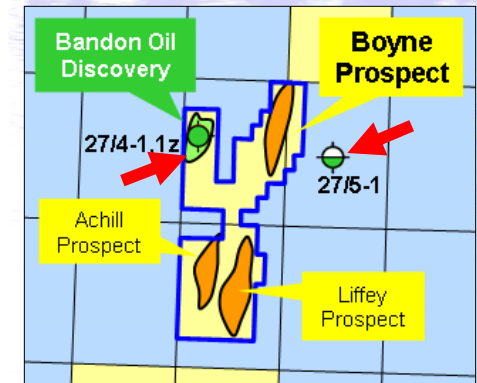
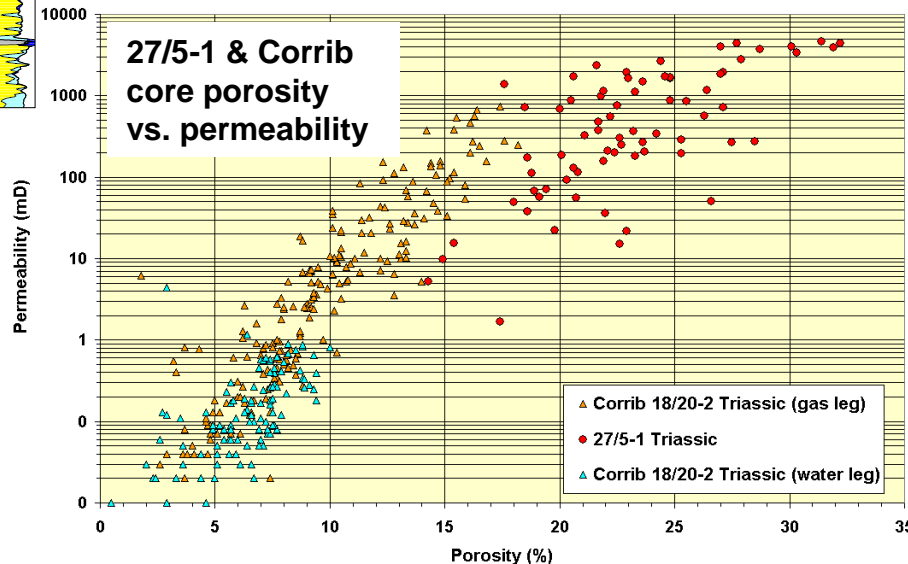


27/5-1 Core

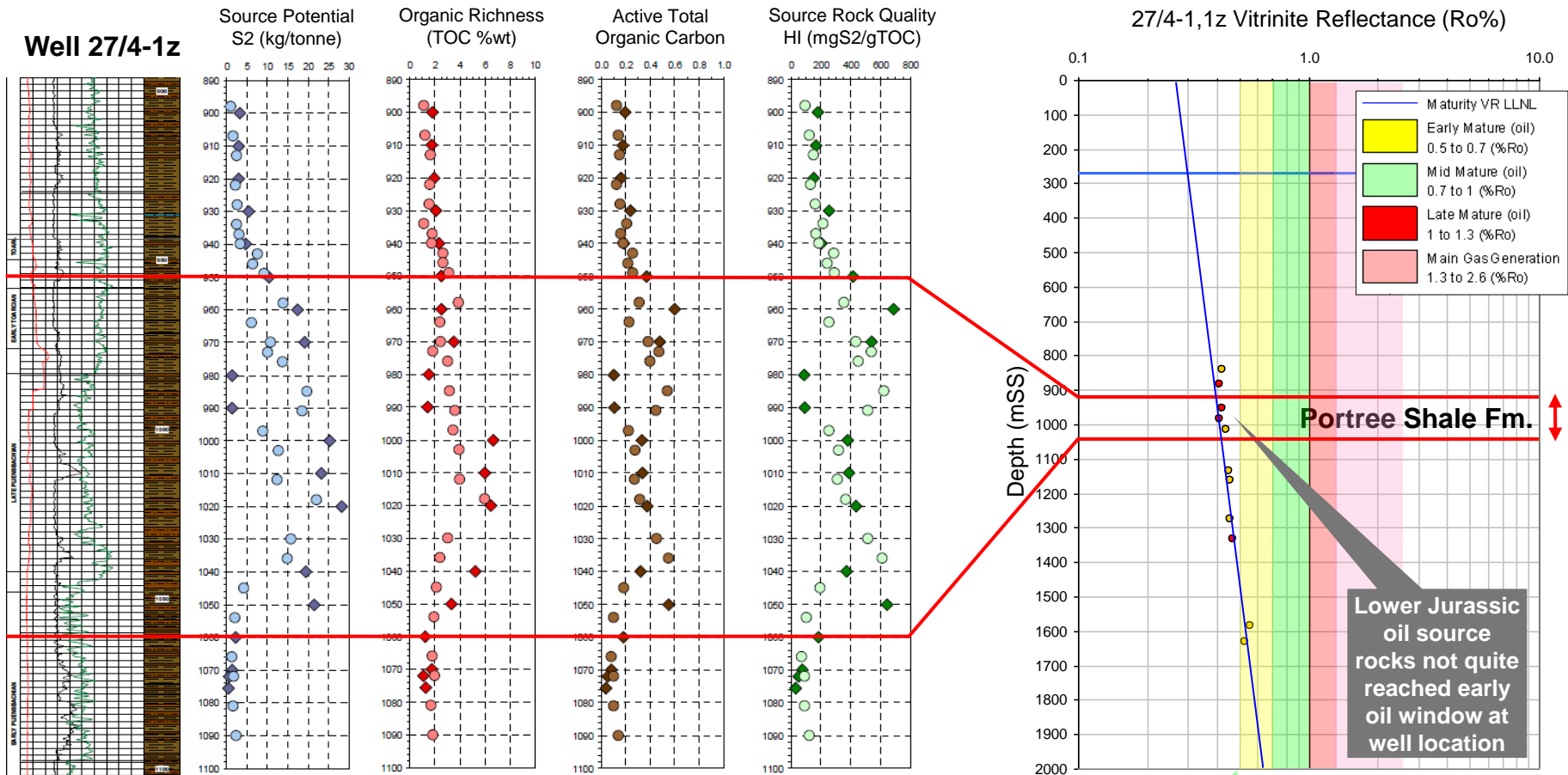


- 27/4-1 modest reservoir quality, comparable to the Corrib Field
- Nearby well 27/5-1 had excellent reservoir quality continental sandstones, again similar to Corrib

- 27/4-1 average porosity 13%;
- 27/5-1 average porosity (core) 23%

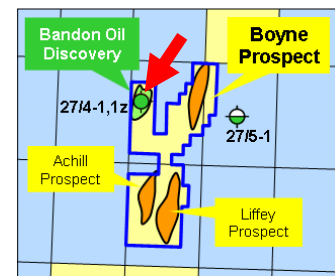


# Lower Jurassic Source Rock



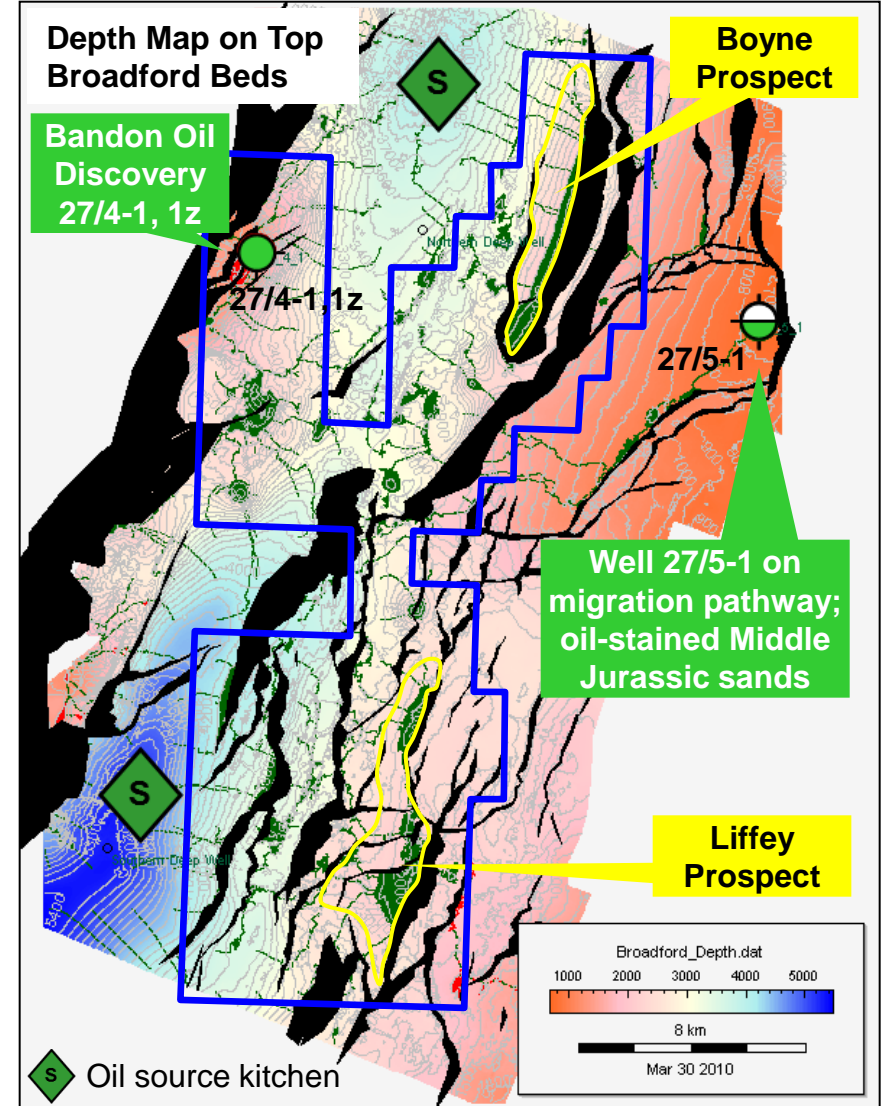
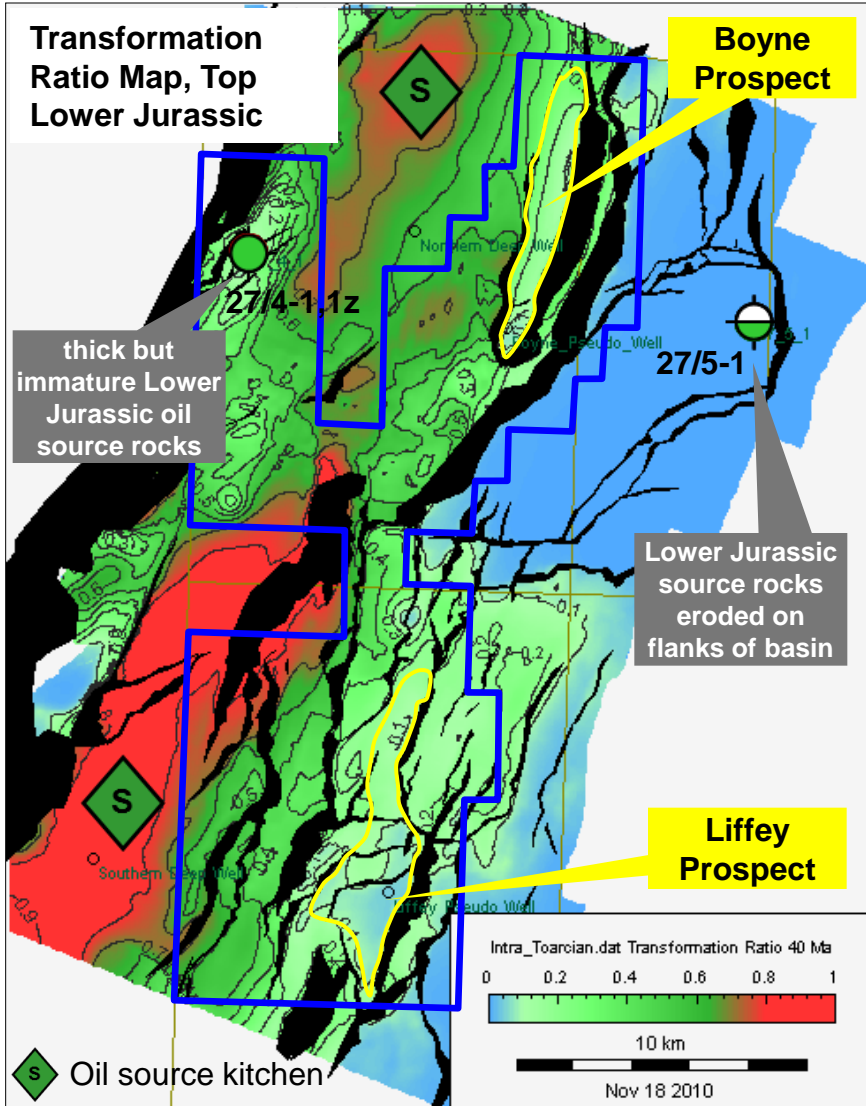
- Portree Shale Formation, Well 27/4-1,1z
- Lower Jurassic age
- Excellent oil source rock characteristics; immature at well location

Top early mature oil window at Ro 0.5%





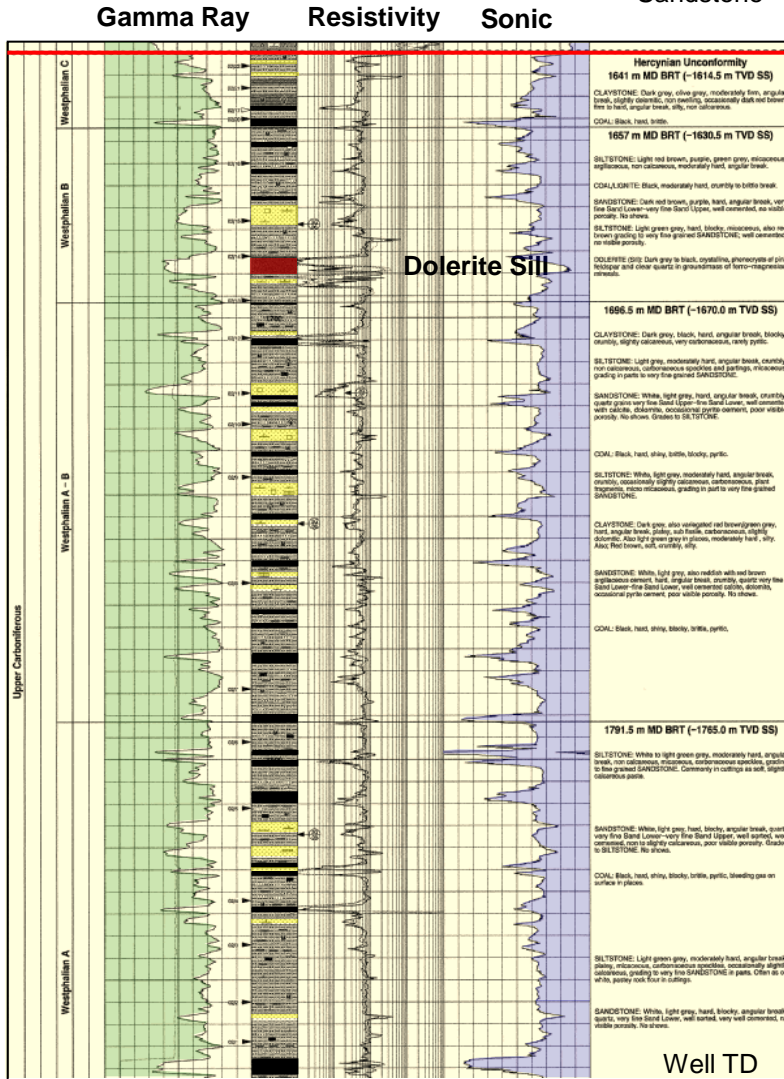
# Lower Jurassic Charge



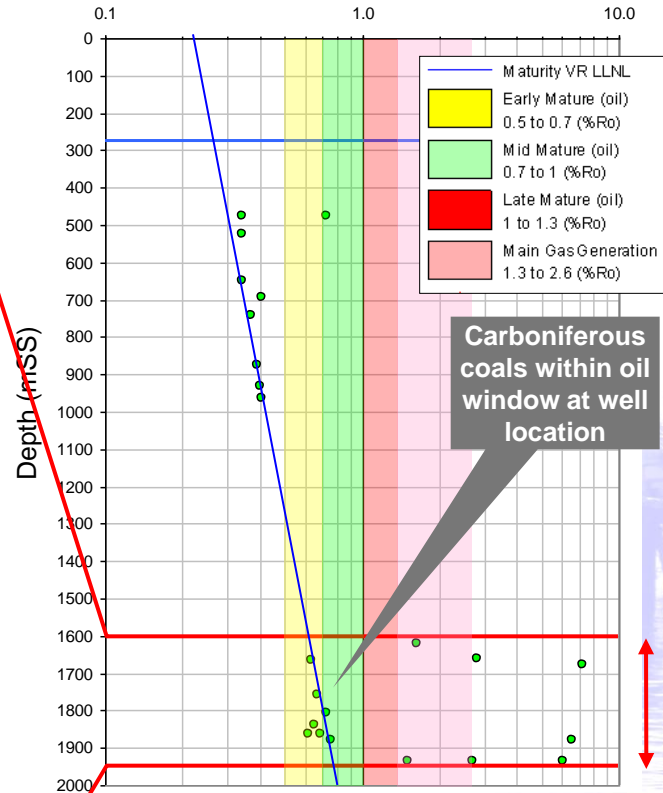
# Carboniferous Source Rock

## Well 27/5-1

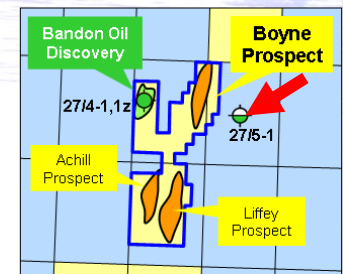
Coal Seam  
 Sandstone



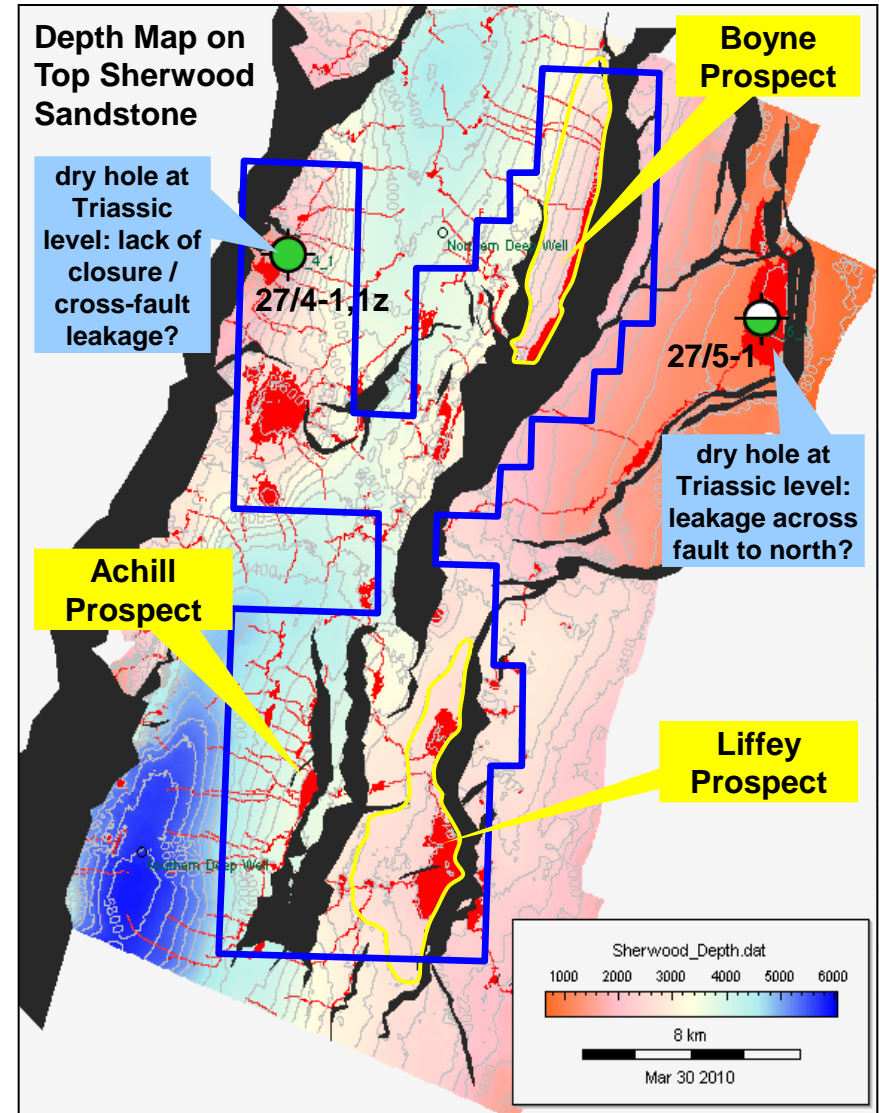
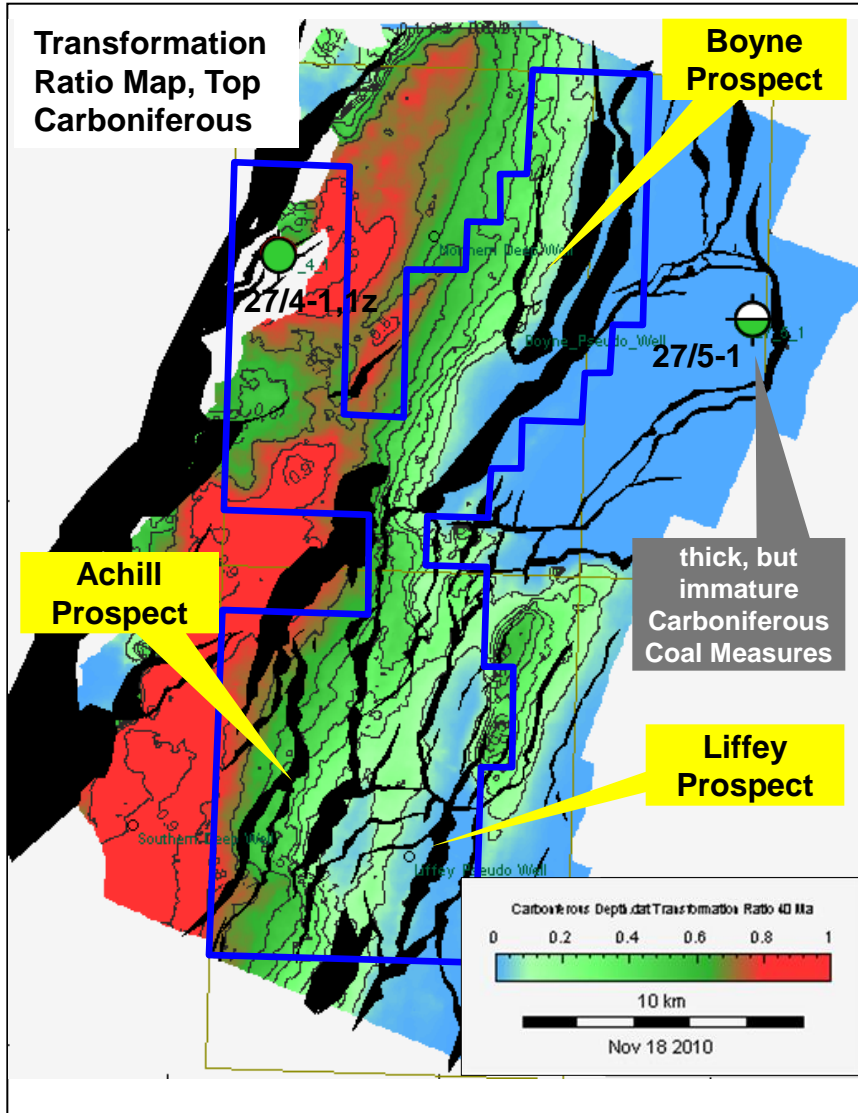
## 27/5-1 Vitrinite Reflectance (Ro%)



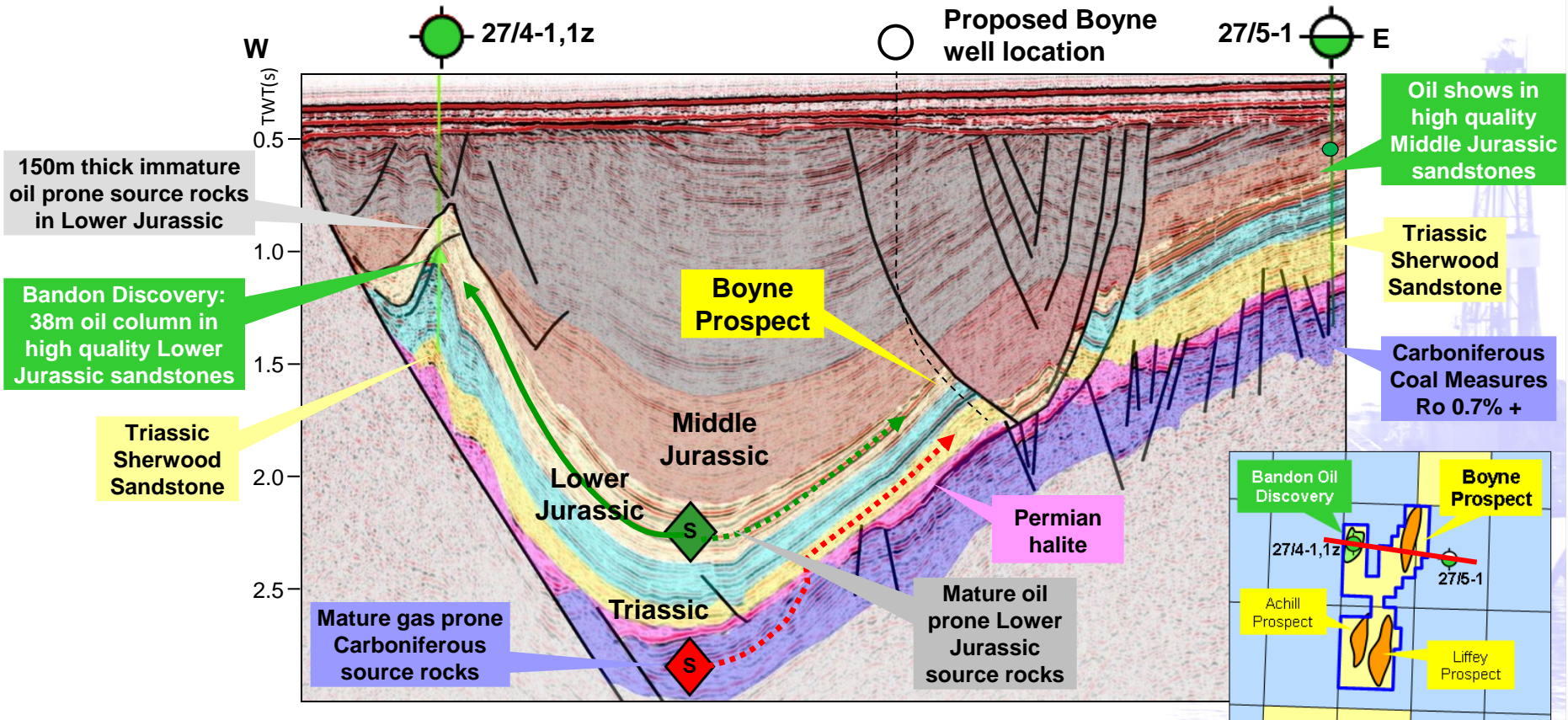
- Carboniferous coals, 27/5-1
- excellent gas-prone source
- immature at well location



# Carboniferous Charge



# Charge Summary

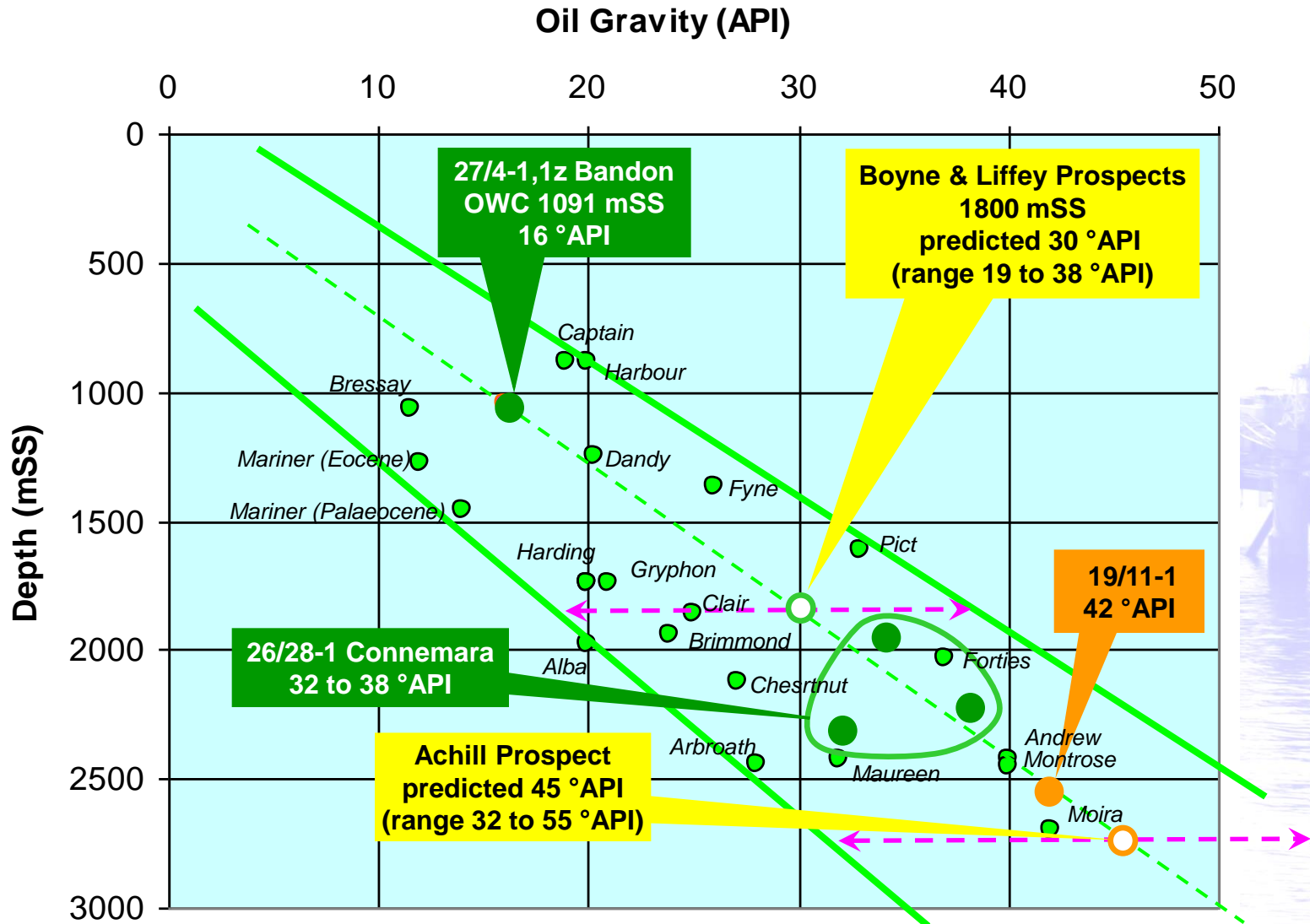


- Lower Jurassic reservoirs sourced by up-dip oil migration from source kitchen
- Concept proven by the Bandon Oil Discovery 27/4-1,1z

- Triassic reservoirs sourced by Carboniferous coals, via windows in Permian halite
- Concept proven by the Corrib Field 40 kms to north

# Boyne, Liffey & Achill Prospects

## Predicted vs. Actual Oil Gravities

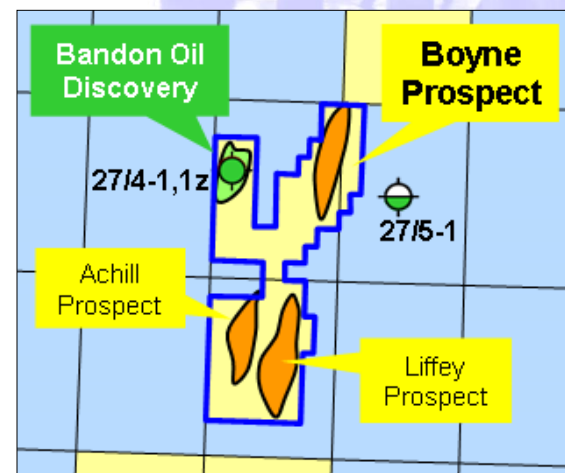


# Resource Inventory

* Resources	P <sub>90</sub>	P <sub>50</sub>	Mean	P <sub>10</sub>	Units
Boyne Jurassic	9	31	<b>45</b>	96	mmbo
Boyne Sherwood	33	199	<b>513</b>	1213	bcf
Liffey Jurassic	6	38	<b>104</b>	245	mmbo
Liffey Sherwood	74	281	<b>473</b>	1059	bcf
Achill Sherwood	58	313	<b>716</b>	1689	bcf
<b>Total mmboe</b>	<b>42</b>	<b>200</b>	<b>433</b>	<b>1000</b>	<b>mmboe</b>

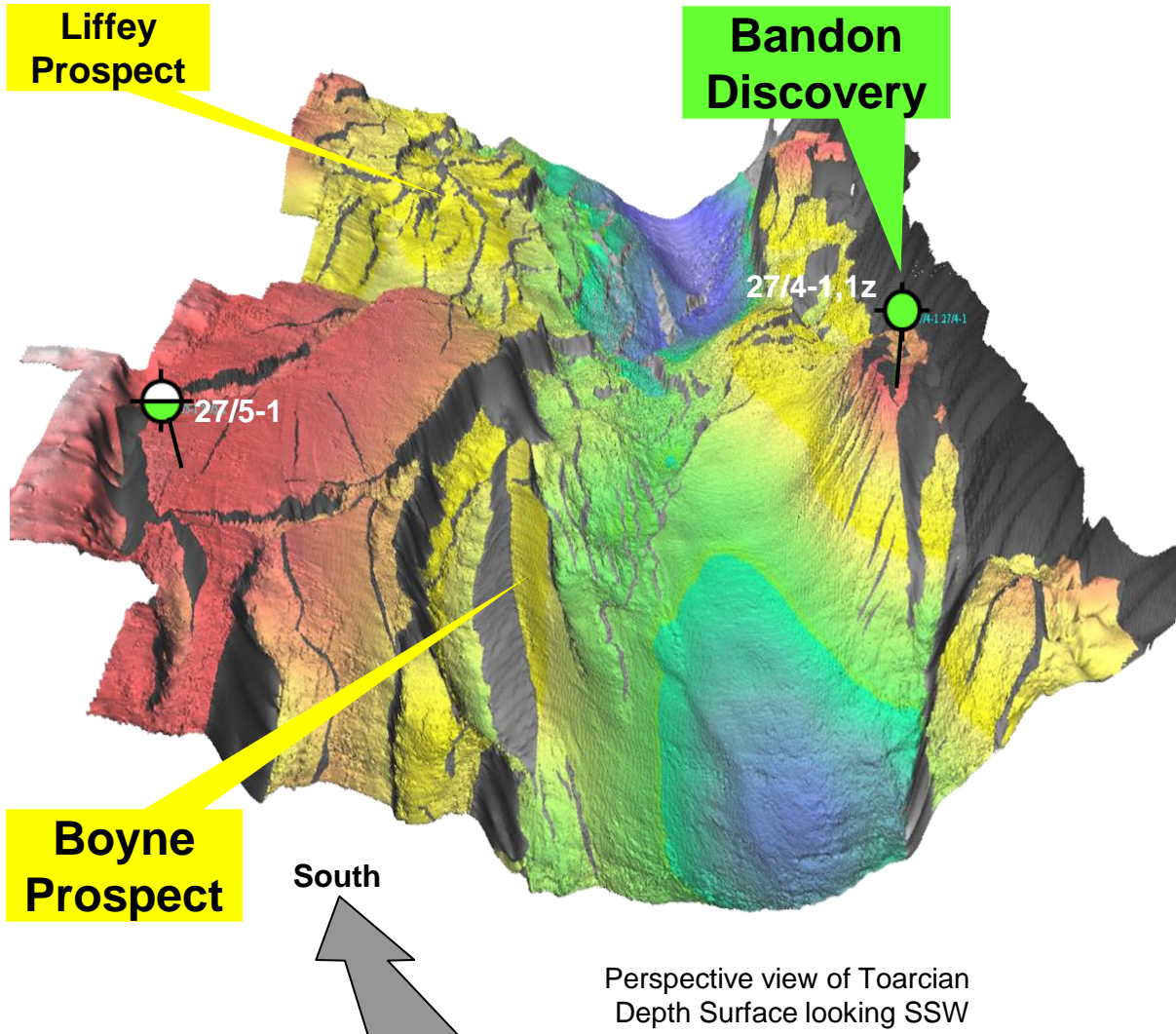
\* Resource estimates are based on latest Serica in-house interpretation

- Boyne Prospect is ranked No. 1
- Boyne Prospect has highest chance of success
- Excellent trap definition and simple charge model



# Petroleum Exploration Licence 1/06 (Frontier) **SERICA ENERGY**

## Summary



- Two proven, low to moderate risk hydrocarbon systems
- Well-defined structural prospects on high-quality 3D seismic data
- Reservoir potential at more than one level
- Boyne Prospect is ready to drill
- Total dry hole well cost ~ US\$ 30 million (includes mob / demob)

# Acknowledgements

**SERICA**ENERGY



**With thanks to Serica Energy & RWE**