



DOUGLAS-WESTWOOD

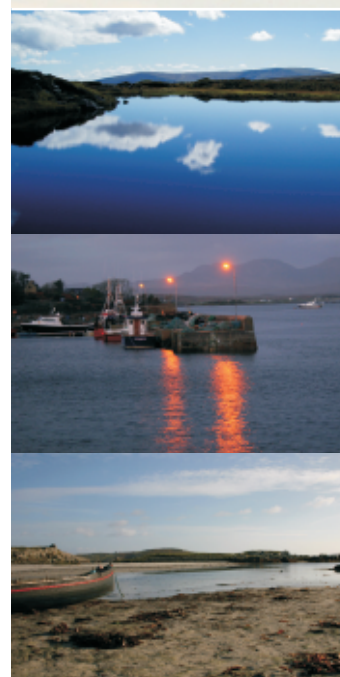


Atlantic  
**Ireland**  
An exciting petroleum province

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**FIELD DEVELOPMENT OPTIONS**



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Ireland's Atlantic basins hold the potential for major oil and gas discoveries in water depths ranging from 150 to over 2,500 metres. In order to demonstrate the strong economic foundations for investment in offshore Ireland, ten field development scenarios have been modelled in detail. These cases provide analysis on each of the four Irish Atlantic basins: the Rockall Basin with challenging water depths ranging from 1,000m to over 3,000m, the 'North' Porcupine Basin with depths of up to 2,000m, the 'South' Porcupine Basin at depths of up to 2,500m and the Slyne/Erris/Donegal Basins where the water depth ranges from 150m to 1,500m. Experience in the Gulf of Mexico and offshore Norway has shown that the harsh conditions and deep water of the Irish Atlantic Basins, whilst posing interesting engineering decisions, can readily be overcome – with drilling now occurring in water depths of as much as 2,600m and the associated technology and techniques improving all the time. The study includes a survey and analysis of the types of production facilities suitable for use in the Atlantic Ireland Basins. The positive investment metrics included in the report are based on an engineering study and conservative economic assumptions. As such they provide a thought-provoking insight into the attractive nature of oil and gas plays in the Irish Atlantic Basins. The ten field development scenarios included in the report are summarised in the following table:

Case	Field 1A	Field 1B	Field 1C	Field 1D	Field 2A	Field 2B	Field 3A	Field 3B	Field 3C	Field 3D
Basin	Rockall			'South' Porcupine/ Goban	'North' Porcupine		Slyne / Erris / Donegal			
Water Depth (m)	2,500	2,500	2,500	2,000	1,000	500	350	350	350	350
Oil (MMbbl)	400	750	150		125	225				
Gas (Bcf)			1,000	2,000		1,500	1,000	500	250	125
Hydrocarbon type	32-38" API crude	32-38" API crude	Gas cond.	Sweet gas	32-38" API crude	Gas cond.	Sweet gas	Sweet gas	Sweet gas	Sweet gas
Type of development	FPSO	FPSO	FPSO + gas export pipeline	FPSO + gas export pipeline	FPSO	TLP + gas and cond. pipeline	Subsea and new terminal	Subsea and modified terminal	Subsea to beach	Subsea to Corrib
Wells	29	53	12	18	12	24	10	5	3	2



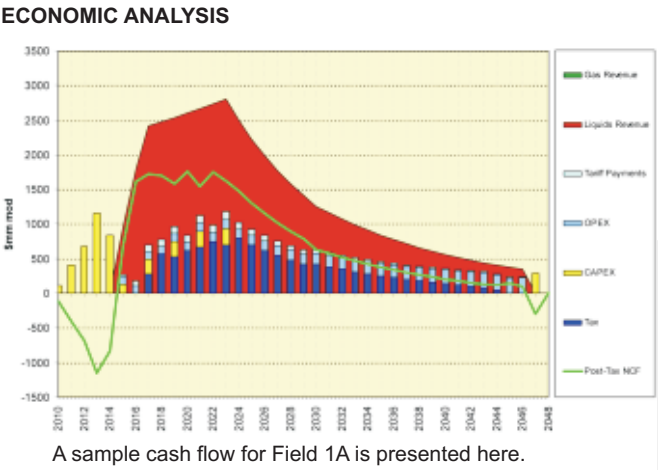
**ENGINEERING STUDY**  
The engineering study includes CAPEX and OPEX for the ten field development scenarios.

- CAPEX costs include the following:
- o FEED studies
  - o Project management and engineering
  - o Development drilling activities
  - o Subsea / export pipeline
  - o Offshore facility costs including installation
  - o Onshore facilities
  - o Abandonment

- OPEX costs include the following:
- o Facility operating costs
  - o Onshore logistical support
  - o Well work-over operations
  - o Maintenance activities

	Field 1D	Field 2B
Mangement and engineering	353	326
Drilling and completions	972	420
Subsea / export pipelines	366	377
Floating facility costs / topsides	574	720
Onshore facilities cost	45	80
General / warehousing / insurance / surveys	32	28
<b>Sub-total</b>	<b>2,344</b>	<b>1,950</b>
Contingency, 15%	352	292
<b>Total CAPEX</b>	<b>2,695</b>	<b>2,242</b>

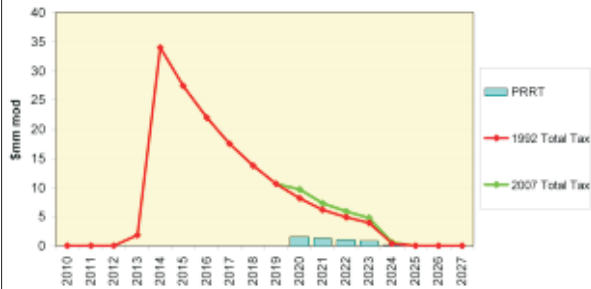
This table provides a summary of CAPEX costs (in \$million 2009) for two of the cases.



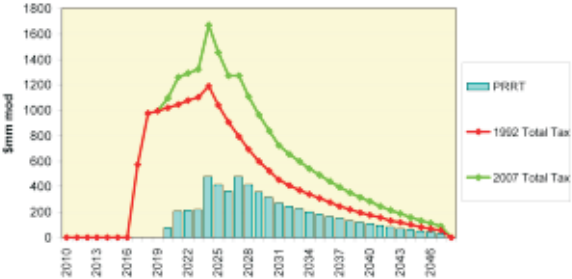
Using prudent technical and commercial assumptions, detailed economic output is included in the report. Three price scenarios are used in the economic analyses and the following key investment metrics are generated for each of the price scenarios:

- o NPV discounted at 10%
- o Internal Rate of Return
- o Disc. Profitability Index
- o Disc. Payback Period

**2007 FISCAL TERMS**  
The tax analysis included in the report provides a comparison of the old and new fiscal terms which apply to the petroleum sector in Ireland. The fiscal terms in place since 1992 were augmented in 2007 with a new profit-based tax (Petroleum Resource Rent Tax) which applies to all licences awarded after 1 January 2007 – the report provides a detailed examination of the impact of this new tax.



Smaller, or otherwise less profitable fields will pay little or no Petroleum Resource Rent Tax under the 2007 fiscal terms, as seen here for Field 3D. Nevertheless, this case achieves an Internal Rate of Return (IRR) of 34.5% and NPV is reduced by just \$1 million when compared to that under the 1992 terms.



An example figure from the tax analysis for the large Field 1B is included here