Europa Oil & Gas (Holdings) PLC

Farm-out Opportunities in the South Porcupine Basin, Offshore Atlantic Ireland

12th July 2018

EUROPA
Oil & Gas

Contents

Disclaimer

Whilst all information is provided in good faith, neither Europa Oil & Gas nor its agents or affiliates warrant any of the data or interpretations either in this document or otherwise provided to potential farminees. Potential farminees must act, and will be assumed to be acting, exclusively on their own professional judgement.

1. Summary

- Europa is seeking farminees for three of its licences in the South Porcupine Basin, offshore Atlantic Ireland (highlighted in red, Figure 1) totalling 2072km^2. All licences are currently 100% Europa.

- Each licence offers a different play or plays, so potential farminees may wish to look at all three licences or focus on just one or two if they have a specific play preference.

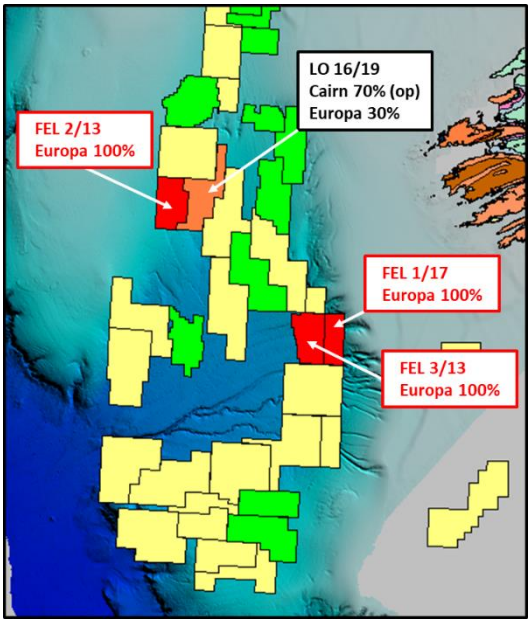
- Europa plans to proceed to "FEL Phase 2" on all licences, so each licence will require a firm well commitment in due course. Europa is seeking a full carry on these wells, with an equity share of back costs.

- FEL 3/13 is on the east side of the basin. It contains submarine fans at two Lower Cretaceous stratigraphic levels. Europa proposes to drill the deeper Wilde fan first (462mmboe[1]). This well would also significantly de-risk the younger Beckett and Shaw prospects (1719mmboe and 747mmboe respectively[1]). Water depth at the proposed location is 1700m, with TD at 3200m ML. The well is targeted for 2020 at an estimated dry hole cost of $37MM (excl. mob and demob, $300,000 rig day rate). FEL Phase 2 is 2019-2023.

- FEL 1/17 is immediately east of FEL 3/13. It contains pre- and syn-rift prospects. The pre-rift includes two fault blocks: Edgeworth (225mmboe[1]) and Ervine (192mmboe[1]). In upside cases these link and include additional terraces to create a potential billion-barrel complex. The syn-rift includes a horst structure (Egerton, 167mmboe[1]) with presumed Tithonian shallow marine sandstone development. Europa is provisionally carrying an Edgeworth drilling location for the first well (water depth 1475m, TD at 3200m ML) but is also working to develop a location which would enable pre- and syn-rift prospects to be tested by a single well. FEL Phase 2 is 2020-2024.

- FEL 2/13 is on the western side of the basin. It again contains a large pre-rift tilted fault block, Kiely (505mmboe on block) and also a lowermost Cretaceous Brae-type slope apron fan, Kilroy (312 mmboe). Prospects in this licence are de-risked by proven source rocks and oil shows in BP 43/13-1 (1988) and by a shared source kitchen with ExxonMobil 44/23-1 (Dunquin) which found a residual oil column. Water depth at Kiely is 875m, with TD at 4000m ML. FEL Phase 2 is 2019-2023.

- It is anticipated that any discoveries would be developed subsea into an FPSO. Independent studies by ERCEquipoise suggest that the minimum economic field size for such a development would be approximately 200mmboe.



[1]gross mean un-risked prospective recoverable resources.

2. Licensing & Background

Ireland provides a stable and supportive political regime with some of the most attractive tax terms in the world. Licences offshore Atlantic Ireland are initially offered as Licensing Options (LO's), typically of two years duration. LO holders then have the option to convert to 15-year Frontier Exploration Licences (FEL's). FEL's typically comprise four Phases. Phase 1 is of three years duration and work programmes usually involve seismic and other pre-drill activities. FEL Phase 2 is of four years duration and requires a well commitment.

FEL 2/13 and 3/13 were initially awarded to Europa as Licensing Options in the 2011 Round (under 2007 tax terms). They were originally farmed out to Kosmos, who converted them to Frontier Exploration Licences (mandatory 25% relinquishment) and acquired proprietary 3D seismic data over both licences in 2013. Kosmos withdrew from the licences in 2015 to focus on their gas discoveries in Mauritania, leaving Europa at 100% and as sole owners of the seismic data.

The initial (PSTM) processing of the 2013 3D seismic data was sub-optimal. Given Kosmos' Cretaceous focus, little attention was paid to deep events, especially below Base Cretaceous. Europa were granted Phase 1 extensions on FEL's 2/13 and 3/13 (to 4th July 2019) in order to re-process the seismic data to PSDM and to explore prospectivity beyond the Cretaceous fan systems which were the focus of Kosmos. Seismic reprocessing was undertaken by DownUnder GeoSolutions in London, closely supervised by Europa. The FEL 1/17 and 3/13 volumes were available in November 2017. The FEL 2/13 volumes in April 2018.

The new data have enabled us to image the internal architecture of the fans in FEL 3/13, giving us more confidence in the volumetrics. They also enables us to better define the fan onlap and up-dip seal potential (including a potential fault). The lowermost Cretaceous slope apron system in 2/13 can been accurately defined for the first time. The new imaging pre-Base Cretaceous is transformational, enabling us to take the pre-rift fault blocks to drill-ready status across all licences, and to image and correlate syn-rift sandstones for the first time.

Given the quality of the prospects in both FEL 2/13 and FEL 3/13, Europa would expect to enter into Phase 2 on both licences from 4th July 2019. Phase 2 is of 4 years duration. It requires a further 25% relinquishment and a commitment to drill a well before July 2023.

FEL 1/17 was awarded to Europa as a Licensing Option in the 2015 Round and converted early to FEL Phase 1 effective 1st July 2017. Licences awarded in the 2015 Round are subject to revised 2015 tax terms and are not subject to mandatory partial relinquishments. FEL 1/17 is largely covered by the FEL 3/13 3D discussed above, and reprocessed to PSDM in 2017. Europa bid on this area because we could see large pre-rift tilted fault blocks on the original 3D. The new reprocessing has allowed the accurate spatial positioning of pre-rift events which makes these tilted fault block blocks drillable, but it has also added considerable detail, including in the late syn-rift where events are correlateable for the first time.

FEL 1/17 Phase 1 runs until July 2020, so there is no immediate pressure to make a drilling commitment. However, Europa believes that the prospects are robust and that a well is warranted. Given that the licence is contiguous with FEL 3/13 it seems likely that a farminee may wish to come into both licences. Europa would expect to make a commitment to Phase 2 in July 2020, with an FEL 1/17 well in the period 2020-2024.

Subject to final reporting to (and approval by) the Irish authorities in 2Q 2019, there are no current outstanding work commitments on any of these licences. New commitments would be made on entry to FEL Phase 2.

3. Regional Geology

The Porcupine Basin is a Late Jurassic rift, roughly congruent with the bathymetric deep (Figure 2). It may be divided into a low-stretch, low subsidence North and a high-stretch, high-subsidence South. The two areas are likely separated by transfer elements, sometimes referred to as the "Dunquin Transfer Zone". Twenty six exploration wells were drilled in the North between 1977 and 2001, resulting in three oil discoveries in Upper Jurassic structural traps: Connemara, Spanish Point and Burren. To date, none of these has proved commercial due to relatively low overall STOIIP and poor reservoir quality/connectivity resulting in non-commercial flowrates.

Only four wells have been drilled south of the Dunquin Transfer. The first (Esso 62/7-1, 1982) is on the Goban Spur, a relative bathymetric shallow which extends south west from the Celtic Sea and is underlain by a labyrinth of small Mesozoic sub-basins and intra-basinal highs. 62/7-1 had minor oil shows in a thin Middle Jurassic sandstone. Its main relevance to the Porcupine story is in proving that the thick and locally source-prone Lower Jurassic ("Lias") of southern England and the Celtic Sea extends at least this far west prior to Upper Jurassic rifting. The Lias provides and alternative source rock, particularly for the tilted fault blocks in FEL 3/13.

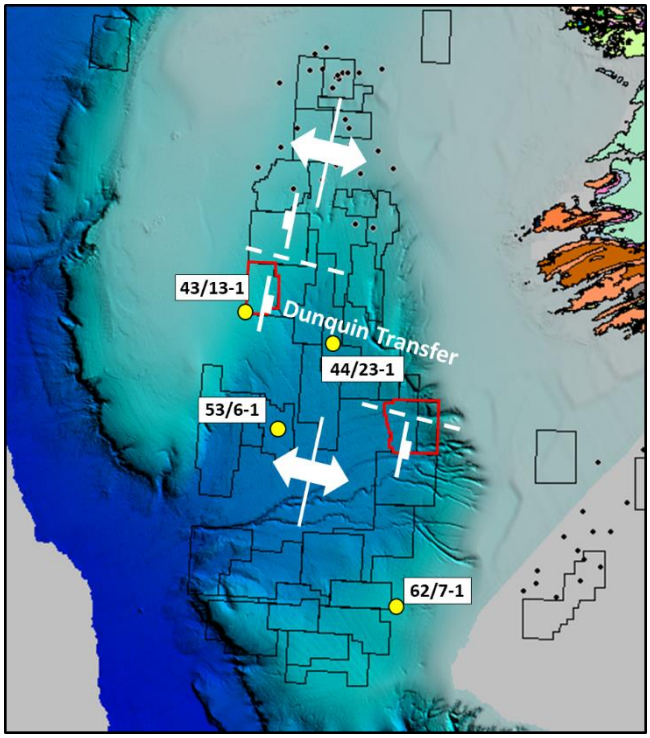


Figure 2. Porcupine bathymetry & key wells

BP 43/13-1 (1988) is on the west side of the basin, on the edge of FEL 2/13. It targeted a North Sea style tilted fault block on the basin margin. It reached a TD of 5128m MD and it appears that BP felt they had tagged the pre-rift. We now believe that they TD'd in the Kimmeridgian, so the pre-rift play remains untested. 43/13-1 did, however, establish the presence of Kimmeridgian and Tithonian source rocks in the South. It also had oil shows in thin Kimmeridgian sandstone stringers which can be typed to nearby mature Jurassic. A recent review of the oils and source rock data for the Porcupine[2] suggests that most of the oils seen so far relate to Kimmeridgian or Tithonian marine/restricted marine source rocks with affinities to the conjugate Flemish Pass. The exception are the 35/6-1 (Burren) oils which appear to relate to Middle Jurassic lacustrine source rocks such as those seen in 34/15-1.

There was no further drilling in the Porcupine until 2013, when ExxonMobil tested an intra-basinal high along the Dunquin Transfer (well 44/23-1). This is one of two spectacular Lower Cretaceous atolls on what appear to be volcanic highs. The structure proved to be breached, but there is a 40m+ residual oil column, providing further evidence of a working hydrocarbon system in the basin.

Providence Resources became the first company to drill in the deep Porcupine in 2017 (well 53/6-1). They targeted submarine fans at two stratigraphic levels: Paleocene (Druid) and mid-Cretaceous (Drombeg). Both fans appear to lie at the end of long slope channel systems and the well penetrates both systems 10's of km's down-system. We therefore suspect up-dip trap integrity in both cases, though there may be an additional regional problem for Druid with oil migration above the Chalk. Drombeg is of approximately the same age as

[2] Irish Petroleum Infrastructure Programme Project IS16/01 (Beicip-Franlab)

our Beckett and Shaw fans in FEL 3/13: part of the reason why we prefer the deeper Wilde target, which is also closer to the source rock and appears to have better up-dip seal potential.

Figure 3 summarises the key South Porcupine plays based on a line from our new PSDM across FEL's 3/13 and 1/17.

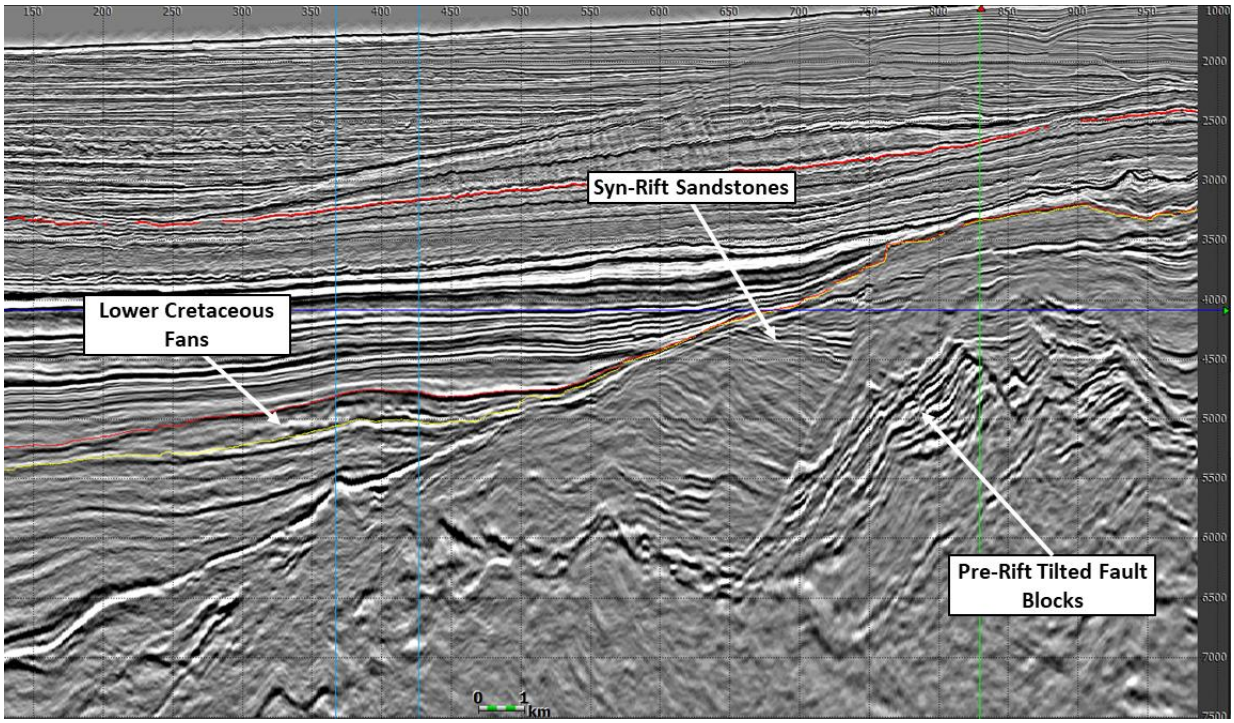


Figure 3. Example W-E seismic line showing key plays

4. FEL 3/13

FEL 3/13 is on the east side of the Porcupine Basin. Pre-Base Cretaceous structures are generally too deep to be of direct exploration interest in FEL 3/13, though pre-rift structure is of great importance in setting up a canyon entry point for the Lower Cretaceous fans (Figure 4). We believe that this entry point is a unique feature of the FEL 3/13 area and enables direct access to re-worked Old Red Sandstone, exposed in the Munster Basin onshore Ireland today. The pre-rift high ("PR3", Figure 4) is a regional migration focus with a gas chimney on top.

The main prospects in FEL 3/13 are the Wilde, Beckett and Shaw fans. Regional correlation suggests that Wilde is of approximately Hauterivian age, Beckett and Shaw are of Aptian-Albian age.

Wilde is clearly defined on seismic attributes (Figure 5) and by an isopach thick (Figure 6). Lateral seal is provided by passage from hummocky or transparent seismic facies into thinner, laterally continuous facies. Up-dip seal is by onlap onto the Base Cretaceous unconformity (generally underlain by syn-rift mudstones). We interpret a fault which may assist with up-dip seal in the throat of the canyon. The particular attractions of Wilde are:

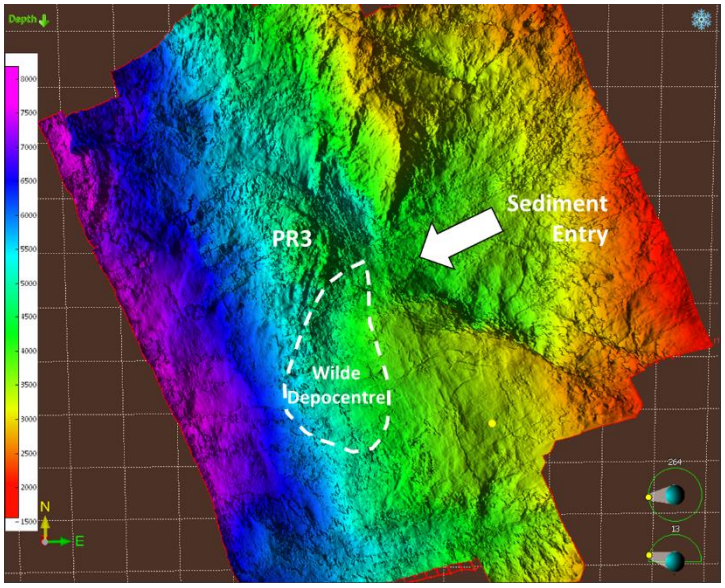


Figure 4. FEL 3/13 area: canyon geometry at Base Cretaceous

- It is detached, at the foot of a steep canyon. Isolation, possibly assisted by faulting, may enhance up-dip seal.
- It is focussed by pre-rift structure, which makes it thick and aerially restricted – this geometry may be preferable for a subsea development project.
- It is stratigraphically deep and close to the oil-mature Upper Jurassic source.

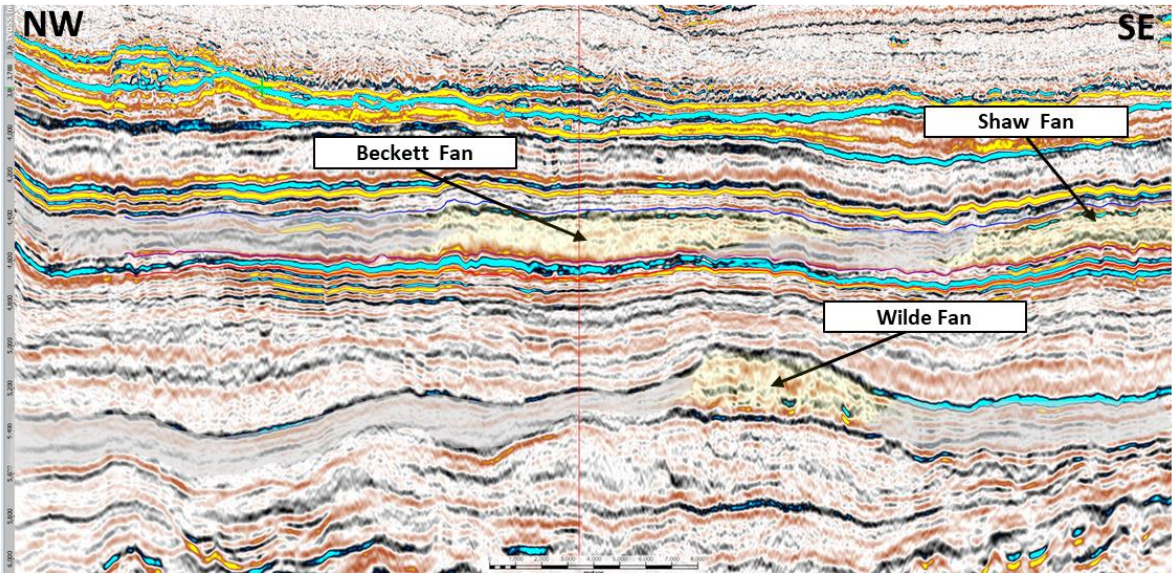


Figure 5. Strike line across Lower Cretaceous fan systems, FEL 3/13

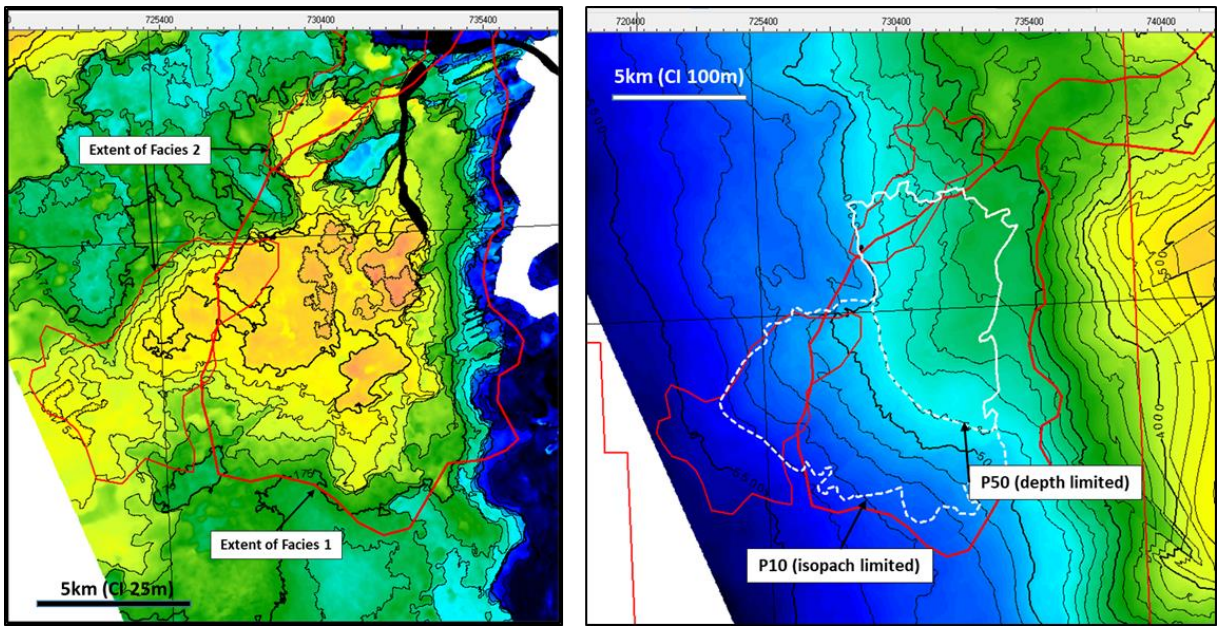


Figure 6. Wilde Fan: isopach, facies distribution and depth structure

Beckett (Figure 7) and Shaw are younger and unconfined, though the new PSDM shows good internal facies expression (Figure 5) which supports a gross thickness of 250-325m and hence the high prospective resource numbers. We propose that the Wilde fan would be the best initial target, but the Wilde location would also test Beckett within seismic attribute expression, so sand stringers/shows at Beckett level would significantly de-risk the younger fan systems.

Volumetrics for the FEL 3/13 fans are summarised in Section 7. Europa plans to survey the Wilde well location in 2019 and drill in 2020.

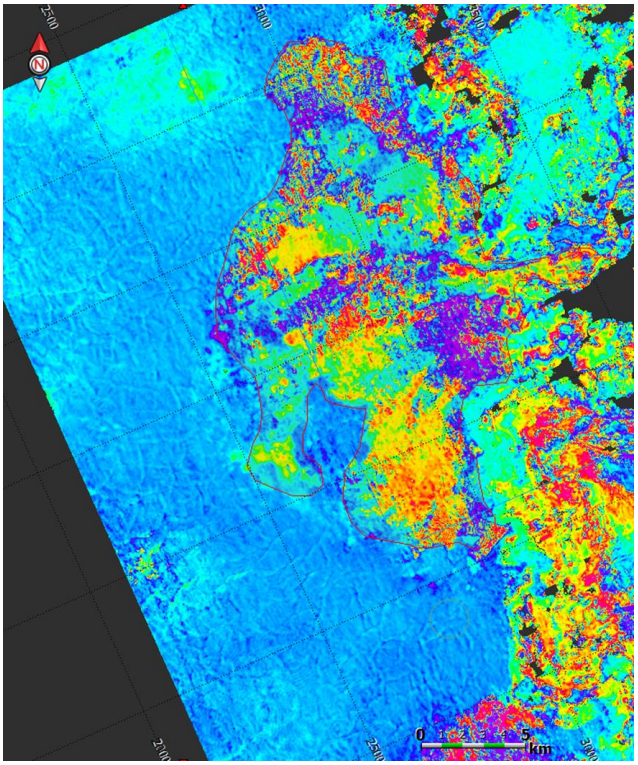


Figure 7. Instantaneous Phase image from near base Beckett fan.

5. FEL 1/17

FEL 1/17 is immediately east of FEL 3/13, but the Lower Cretaceous is condensed and shelfal at this location. The main exploration interest is the Jurassic syn- and pre-rift.

The pre-rift comprises a linked set of west-dipping tilted fault blocks (Figure 8). The largest blocks form the Edgeworth and Ervine prospects. Clearly, success in any block would significantly de-risk the others, including the many smaller terraces. Top Pre-Rift is underlain by a package of high-amplitude laterally continuous reflectors (Figure 9) which is variable in thickness but typically 400-800m. Volumetrics have been calculated using the isopach of these reflectors within structural closure. This package appears to be very different in seismic character from the [Oxfordian, early syn-rift] non-marine reservoirs further north and we suggest that Middle Jurassic shallow marine sandstones may be preserved in the South Porcupine (see also FEL 2/13). This would allow significantly improved reservoir quality. Note that we are some 130km from the nearest Jurassic well control.

Hydrocarbon sourcing is most likely from Kimmeridgian-Tithonian marine source rocks in the immediately overlying, or immediately basinwards, syn-rift as proven further north. A straightforward catchment from the deep basin is one reason to favour Edgeworth. Intriguingly, Edgeworth also demonstrates amplitude conformance (Figure 10). Seal would be provided by the same syn-rift

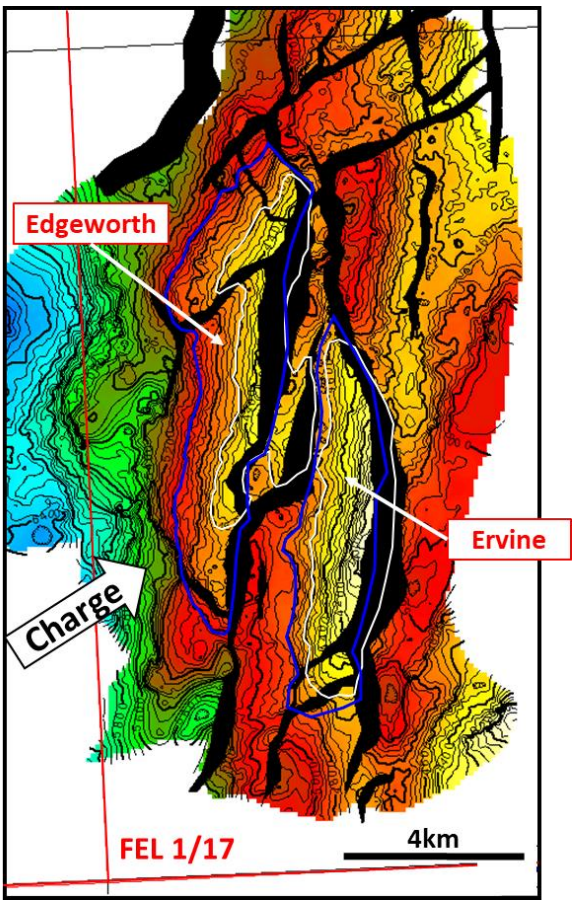


Figure 8. FEL 1/17 Top Pre-Rift (Base Upper Jurassic unconformity?)

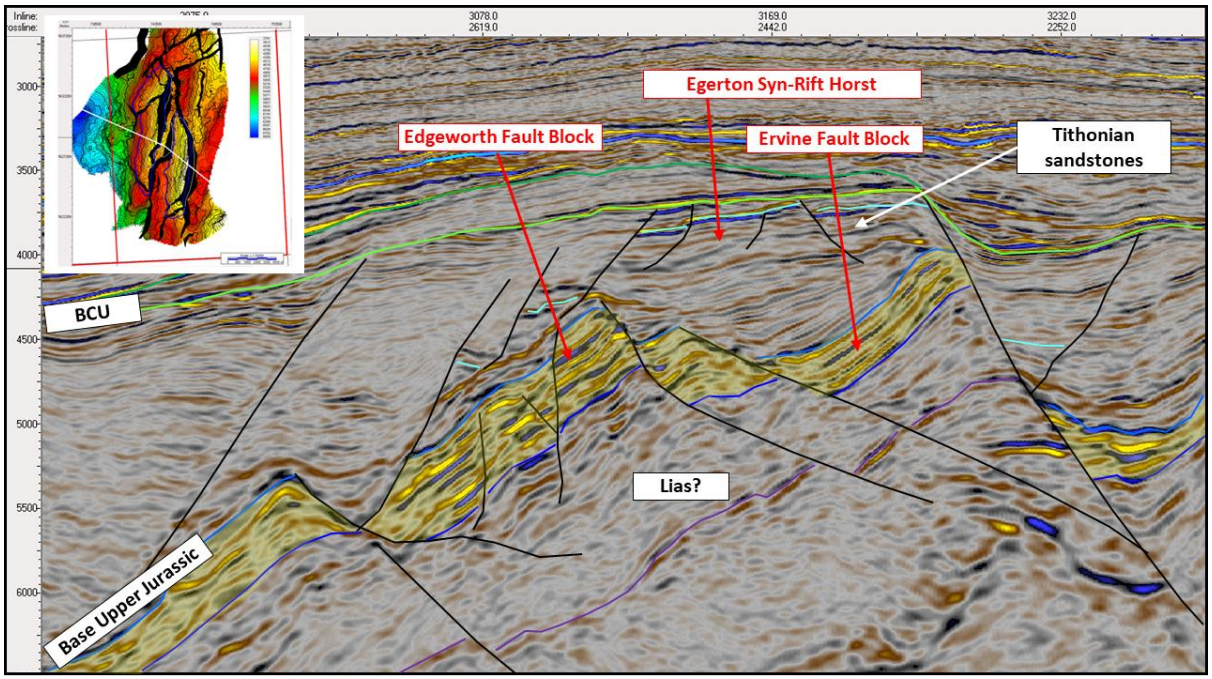


Figure 9. FEL 1/17 NW-SE seismic line through Edgeworth, Ervine and Egerton prospects

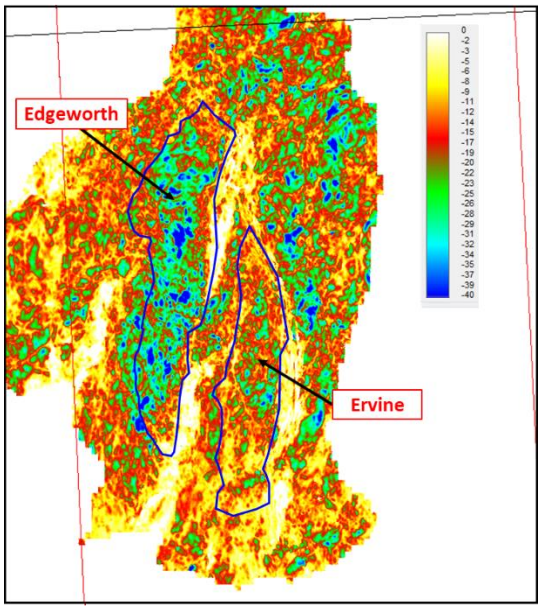


Figure 10. Pre-rift: far angle stack, maximum negative amplitude within reservoir isochore

mudstones, overlying the fault blocks and juxtaposed across faults. The P90 for our volumetrics is dip-closed. The P10 case requires cross-fault seal.

In addition to the pre-rift, the new PSDM also shows significant high-amplitudes in the late syn-rift (Figure 9) which we believe to be the equivalent of the Tithonian sandstones of the Flemish Pass basin offshore Newfoundland. Egerton is a syn-rift horst structure with subcrop to the BCU towards the south. It covers some 9.3km^2 (Figure 11), comprising stacked "soft" events. Prospective volumes are based around 40-80-120m of net sandstone in a series of stacked reservoirs. This is compatible both with direct seismic observation and with analogues such as Bay du Nord.

Europa currently considers the Edgeworth prospect to be the best first-well drilling target in FEL 1/17. We aim to progress a drilling location to site survey in the same 2019 survey campaign as Wilde.

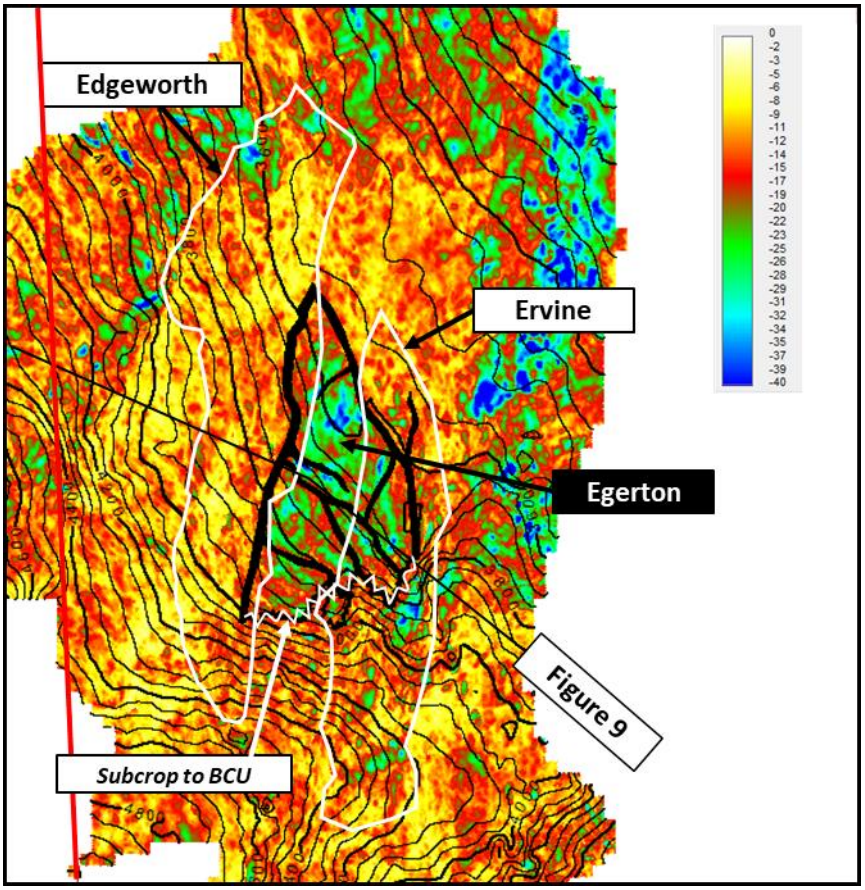


Figure 11. Egerton Syn-rift Prospect (maximum negative amplitude 50-500msec gate below BCU)

6. FEL 2/13

FEL 2/13 is on the western shoulder of the South Porcupine rift. The licence covers a series of west-dipping tilted fault blocks including, along the eastern edge of the licence, the main fault down into the deep basin (Figure 12). The two key targets on the licence are the pre-rift fault blocks and slope apron fans developed along the main basin bounding fault. Previous studies have also identified mid-Cretaceous channel systems and syn-rift leads on the licence which provide further follow-on potential. It should also be noted that 43/13-1 (BP, 1988) is now known to have TD'd in the Kimmeridgian so pre-rift prospectivity in this fault block remains untested.

Europa's current top prospect, on both a volumetric and risk basis, is the Kiely fault block (Figures 12 & 13). The block is actually divided into two structures by a fault, creating Kiely West and Kiely East. Kiely East is shallower, larger and has the more attractive seismic facies. As further south in FEL 1/17, we suggest that the high-amplitude parallel seismic reflectors on the Kiely block represent Middle Jurassic pre-rift sandstones which offer greater potential for good quality shallow marine reservoirs compared with the non-marine early syn-rift Oxfordian sandstones seen to the north. The nearest Jurassic well control is almost 100km to the NE, where the Bathonian-Callovian is absent.

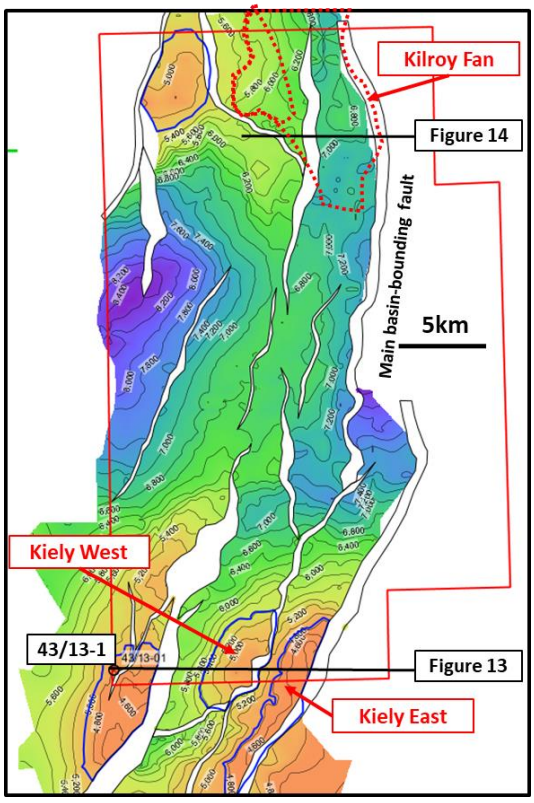


Figure 12. FEL 2/13 Top Pre-Rift (Base Upper Jurassic unconformity?)

Gas chimneys are associated with the eastern bounding fault of the prospect and may relate to gas generation in the deep basin to the east. Kiely is likely to be locally charged from Kimmeridgian and Tithonian source rocks

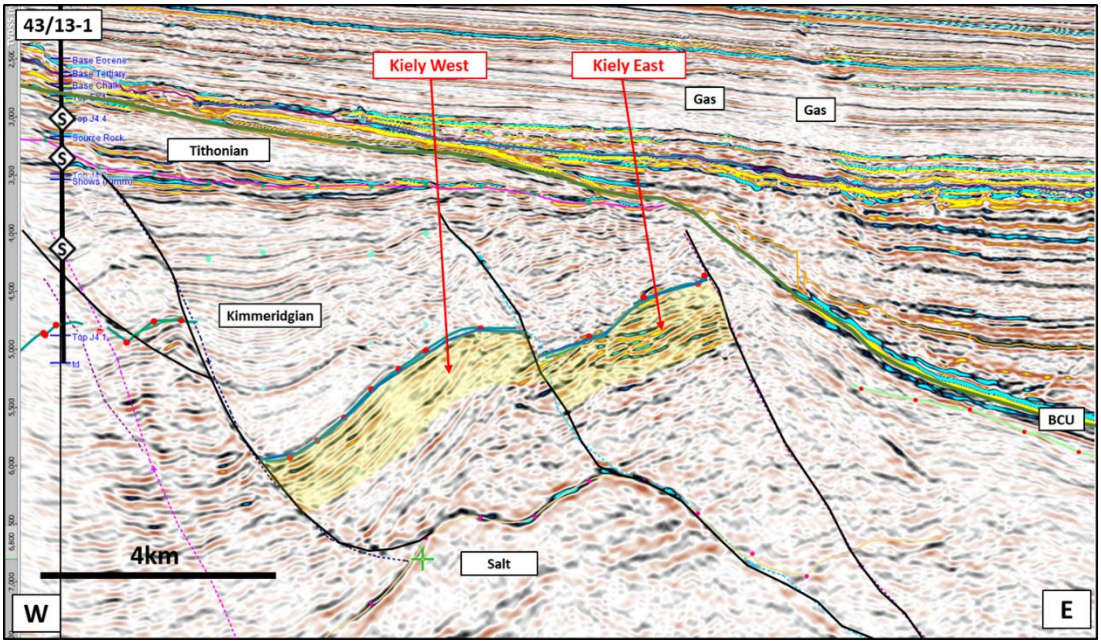


Figure 13. W-E seismic line from 44/23-1 across Kiely prospects

proven in 43/13-1 and known to be mature for oil just down-structure of that well.

A well on Kiely would be drilled in 875m of water to 4km below mudline. Whilst we believe (from legacy seismic data) that the Kiely block closes to the south, this area is off our proprietary 3D and in open acreage. We will verify closure on the new CREAN 3D prior to a well commitment.

Note that the volumes quoted for Kiely (Section 7) are on-block, where we have accurate mapping. Kiely East extends into open acreage to the south (Figure 12) so that the total prospect volume will be much larger than the 505mmboe mapped on block. This makes the overall development economics much more robust.

The other currently material play concept in 2/13 is the suite of slope apron fans of which Kilroy is a good example (Figure 14). These are North Sea "Brae" analogues, formed along the main basin bounding fault without strongly defined canyon entry points (c.f. 3/13). This play is attractive due to close proximity to source rocks and robust seal geometries.

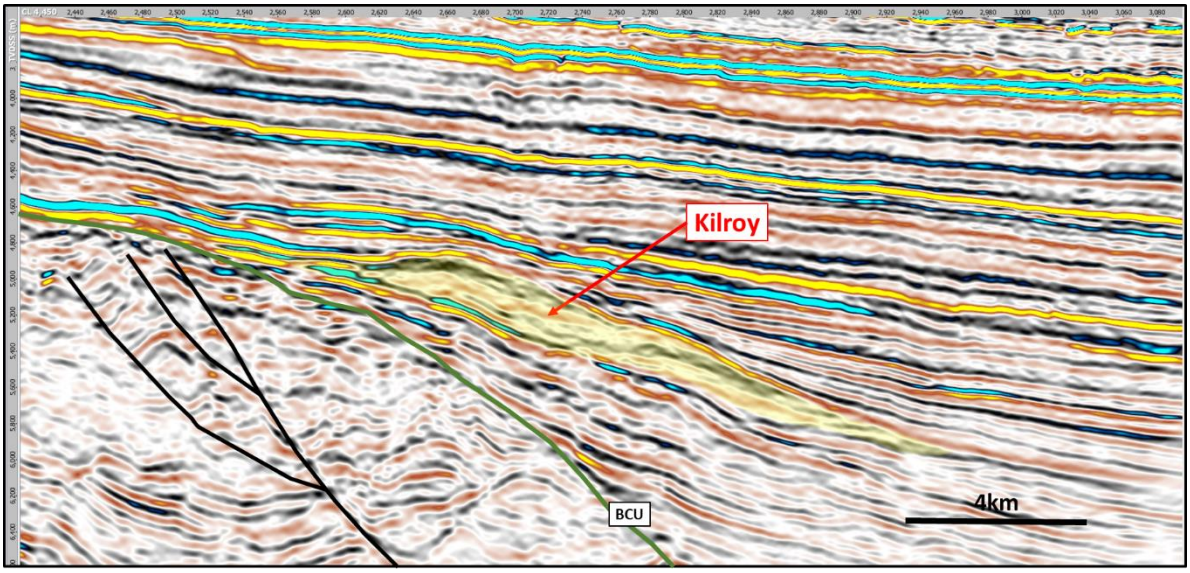


Figure 14. W-E seismic line illustrating Kilroy slope apron fan

7. Prospective Resources

The top-ranked prospects in each licence are tabulated below. In preparation for drilling, Europa proposes to acquire site surveys over the prospects highlighted in yellow in the summer of 2019.

Licence	Prospect	Play	Gross Prospective Resources mmboe* Un-risked Low	Best	High	Mean
FEL 1/17	Ervine	Pre-rift	63	159	363	192
FEL 1/17	Edgeworth	Pre-rift	49	156	476	225
FEL 1/17	Egerton	Syn-rift	59	148	301	167
FEL 3/13	Beckett	mid-Cretaceous Fan	111	758	4229	1719
FEL 3/13	Shaw+	mid-Cretaceous Fan	20	196	1726	747
FEL 3/13	Wilde	Early Cretaceous Fan	45	241	1082	462
FEL 2/13	Kiely East +	Pre-rift	52	187	612	280
FEL 2/13	Kiely West +	Pre-rift	23	123	534	225
FEL 2/13	Kilroy+	Cret. Slope Apron	37	177	734	312
Total						**4329**

*million barrels of oil equivalent. The hydrocarbon system is considered an oil play and mmboe is used to take account of associated gas. However, due to the significant uncertainties in the available geological information, there is a possibility of gas charge.

+prospect extends outside licence, volumes are on-licence

8. Development & Commercial

Development and commercial considerations for a Porcupine discovery were last reviewed independently for Europa by ERCE in 2015. The work was specifically undertaken for the development of a Wilde (FEL 3/13) discovery and was done on volumes which have now been superseded by new mapping. However, some indicative conclusions are generally valid.

Assumptions:

- Medium API oil, GOR 900 scf/bbl, initial well rates of 6000bopd.
- Subsea clusters into FPSO. Water injection and control as appropriate.
- High cases warrant gas export pipeline.
- Ireland 2007 tax.

NPV/bbl for different reserves cases (Figure 15) shows that the minimum economic field size is a little under 200mmbbl. The current Wilde mean case of 400mmbbl oil (no sales gas) has an NPV of approximately 5$/bbl or $2billon. Sensitivities to capex, opex and oil price are illustrated in Figure 16.

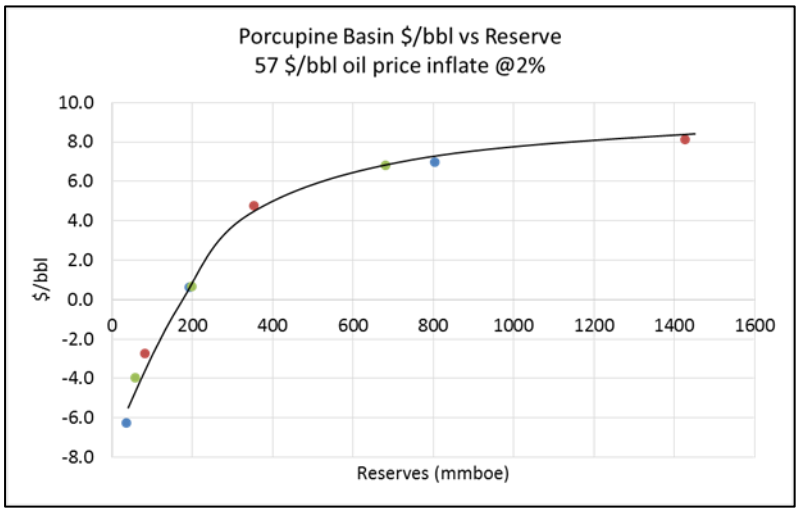


Figure 15. Porcupine Basin NPV/bbl at various field sizes

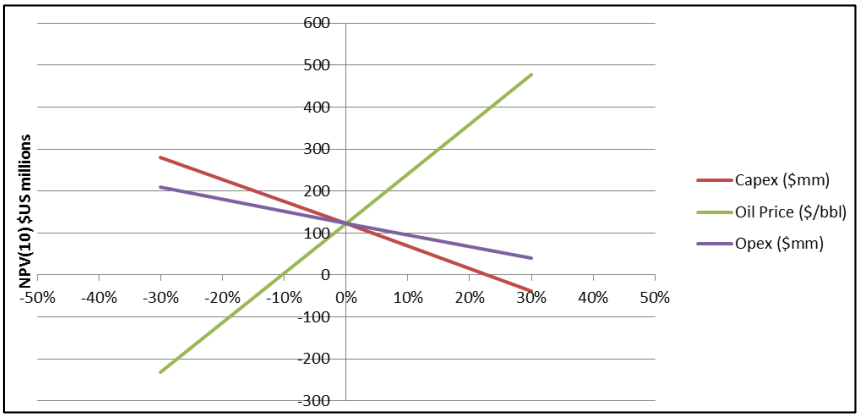


Figure 16. NPV sensitivities to % change in assumptions

9. Next Steps

Interested parties are invited to contact Europa by email mail@europaoil.com or telephone +44 20 7224 3770.

Following execution of a Confidentiality Agreement, access will be given to a virtual data room (VDR) which contains further details of the licences and prospects. Parties with serious interest following the VDR will, if required, be able to interrogate the 3D seismic data on a workstation at Europa's offices in London.

It is expected that offers will close around October 2018.