

## **UK Onshore Licence PEDL 153 Relinquishment Report September 2010**

### **Licence Details**

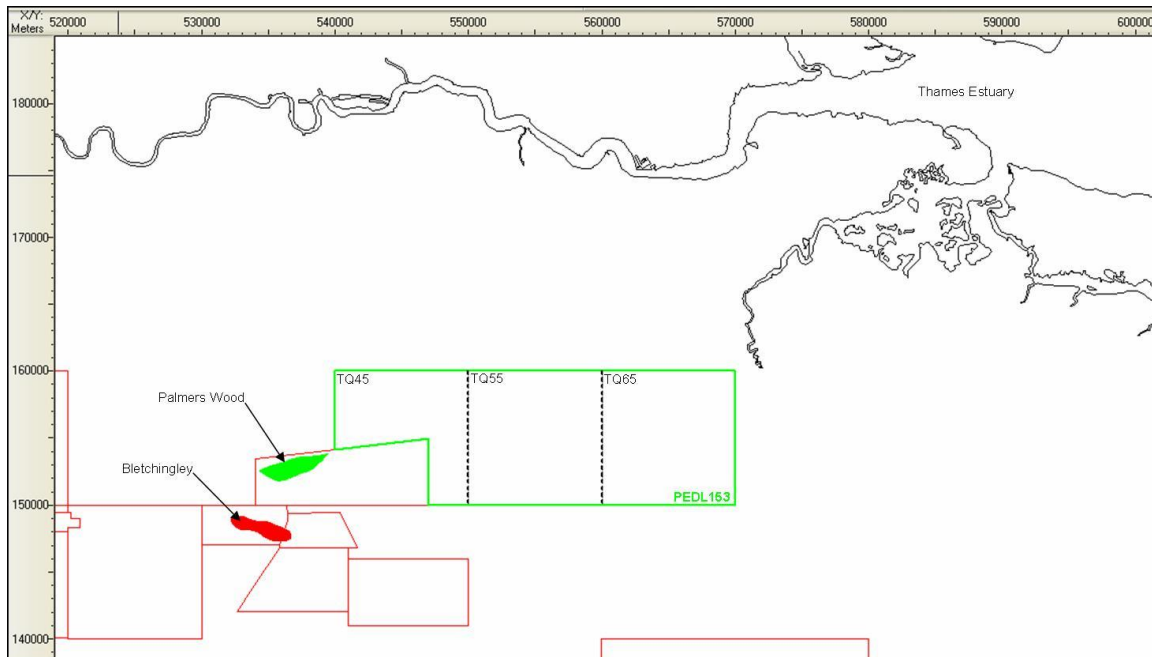
Licence Number : PEDL 153  
Licence Round : UK 12<sup>th</sup> Onshore Licensing Round  
Effective Date: 1 October 2004  
Licence Type : Petroleum Exploration and Development Licence (Onshore)  
Block Number : UK National Grid Blocks TQ45(part), TQ55, TQ65  
Operator : NP Weald Limited (33.34%)  
Partners : Magellan Petroleum (N.T.) Pty Ltd (33.33%)  
Glenclova Oil Limited (33.33%)  
Work Programme : Acquire 200 km of existing 2D seismic data over the Licence's area, drill-or-drop election to be made within the Licence's initial term

### **Summary**

The PEDL153 Group has confirmed a prospect, Ide Hill, sufficiently robust to be considered as drillable from a technical/economic perspective. However, the mapped structure underlies an area which is both relatively densely populated and very environmentally sensitive. The Group has expended considerable effort and has commissioned detailed research into possible locations for a well to test the Ide Hill structure using consultants who are very experienced in planning issues in southern England. Unfortunately, the Group has been forced to conclude that it is not possible to find a suitable site that would have any chance at all in the consultants' judgement of being accepted by the Planning Authority or the local community. Given that the Group considers that the Ide Hill structure represents the most prospective target within the Licence but yet cannot see any way that it can be drilled under current Planning regulations and public sentiment, it has reluctantly decided to relinquish the Licence.

### **Licence Synopsis**

PEDL153 is located near the northern margin of the Weald Basin, in the north-eastern part of Kent, effectively centred on the town of Sevenoaks (Fig.1), and is currently approaching the end of its 6-year initial term.

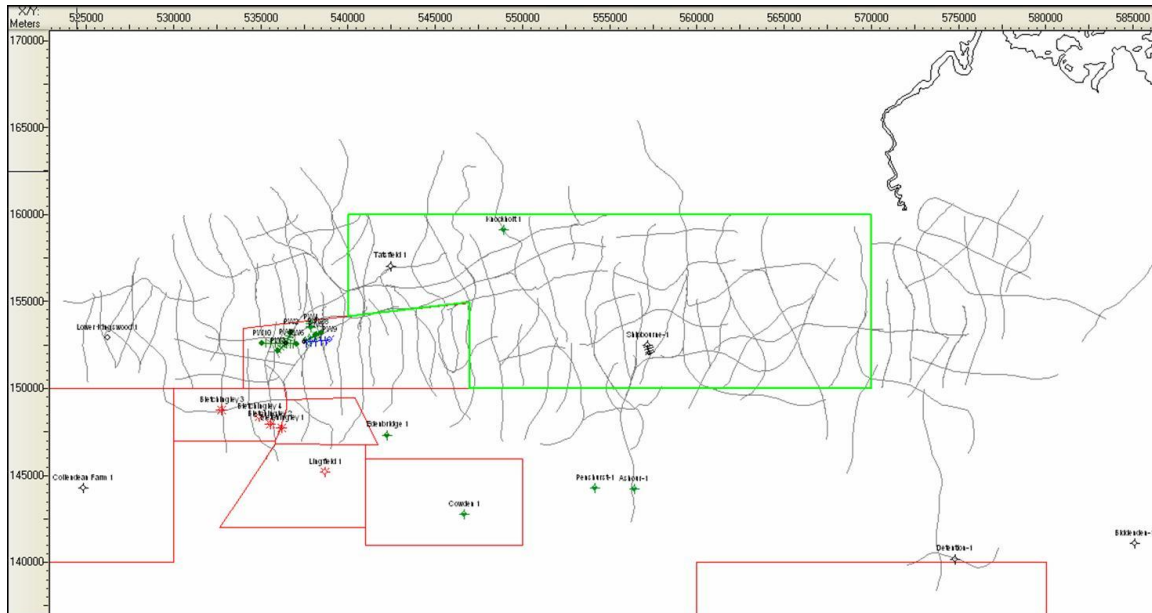


**Figure 1 : PEDL 153 Location Map**

Per the commitment made at the time of the Licence being awarded, the PEDL153 Licence Group has decided to relinquish the licensed area in its entirety since it now considers there is no economic prospect within the Licence area which can be accessed from a suitable drilling location that would be acceptable to local authorities.

## **Exploration Activities**

The Group has not undertaken any new seismic acquisition on Licence PEDL153 nor drilled any wells. As per its work commitment for the Licence, the Group has acquired all of the existing 2D seismic data over PEDL153 (ca. 356 km, Fig. 2) and a significant amount of data outwith the Licence itself to enable a more regional evaluation. The Group also acquired available data for the 3 wells that had previously been drilled within the Licence's area (Tatsfield-1, Knockholt-1, Shipbourne-1) and regional well data. The seismic data were interpreted integrating the well information, thereby extending the Group's regional mapping westwards from its former licence, PEDL112, to the immediate east. Subsequently, the Group has reprocessed 68 km of existing 2D seismic data over structural leads identified in the southwestern part of PEDL153, and has provided copies of the final reprocessed lines to the UK Onshore Geophysical Library (UKOGL).



**Figure 2: PEDL153 Seismic and Well Database**

### **Prospectivity Analysis**

The primary reservoir target at the time of Licence award was identified as being sands of the Late Oxfordian Corallian series, the productive reservoir at the Palmers Wood oilfield to the immediate west of PEDL153. The Shipbourne-1 well drilled by Shell in 1991 encountered porous but water-wet Upper Corallian sands, and recent (2008) drilling at Bletchingley to the south-west of PEDL153 has also discovered producible oil in the same unit. Additional reservoir potential is identified in the Lower Corallian Limestone series, which reservoirs gas at Bletchingley.

The principal source rocks in the Weald Basin are the Lower Jurassic Lias marine shales. Potential for oil generation also exists in Middle Jurassic Oxford Clay and the Upper Jurassic Kimmeridge Clay, the primary source of oil in the North Sea. The Lias shales are interpreted to have been buried sufficiently deeply to generate oil in the Weald Basin and migration is believed to have commenced during Lower Cretaceous times and to have continued until the area underwent significant inversion in response to Alpine tectonism during Miocene time when the source rocks were lifted out of the maturity window and oil/gas generation ceased. It is not clear whether the Oxford Clay has ever been buried deeply enough to become mature for hydrocarbon generation, although it is interpreted that the Kimmeridge Clay definitely has not. It is understood that all the oils produced in the Weald Basin have been geochemically typed to the Lias source rocks. It is also possible that the Carboniferous Westphalian coal measures that were mined in the Kent coalfield to the north-east of PEDL153 may also be locally present and could have been buried deep enough to generate gas, although this hypothesis remains as yet unsubstantiated. It is believed that oil has migrated towards the northern edge of the Weald Basin from a mature generating kitchen in the centre of the Basin to the south, as evidenced by the accumulations at Palmers Wood, Brockham, and Bletchingley, and oil shows in numerous wells including the Knockholt-1 well in the north of PEDL153.

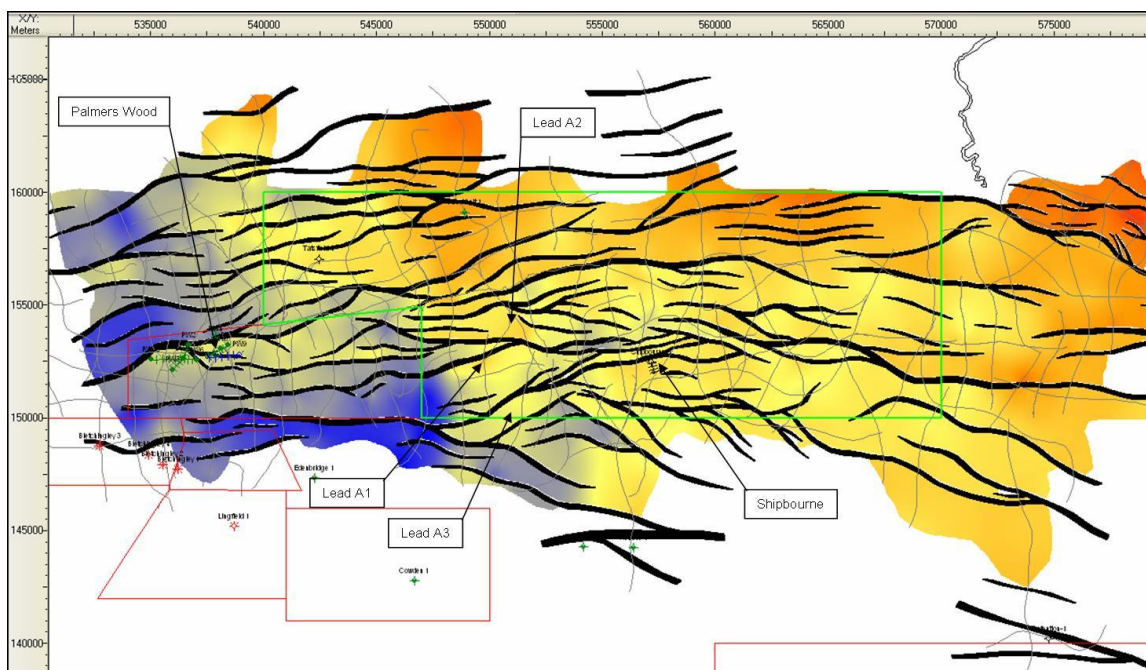
Traps which have been demonstrated to be effective in the Weald Basin (Palmers Wood, Brockham, Bletchingley) were predominantly present as trapping mechanisms at the time of hydrocarbon generation and migration (Lower Cretaceous – Miocene). They generally take the form of tilted fault blocks bounded by a normal fault either to the south or north, with sufficient throw to have caused juxtaposition across the fault of reservoir rocks against an effective seal. Some structures with a younger element related to the Alpine inversion, which is interpreted to post-date the primary generation and migration of hydrocarbons, have also been shown to trap predominantly gas (Bletchingley, Albury), although the actual provenance of the gas is not well understood.

## **Prospectivity Review**

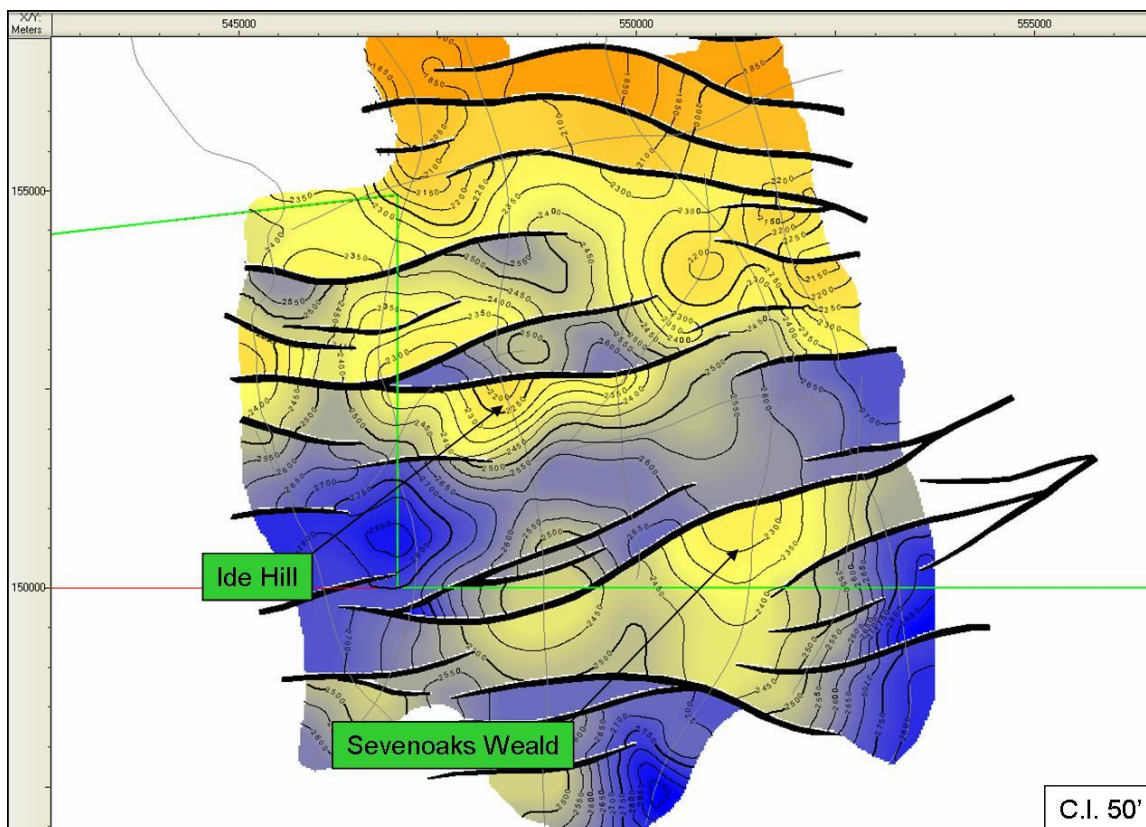
The Group's initial review of the well and seismic data over and around PEDL153 led it to conclude that the Shipbourne-1 well was drilled on a valid structural closure analogous to Palmers Wood. It is mapped as a tilted fault block, dip-closed to the south, east and west with critical closure to the north provided by a significant down-to-the-north throwing normal fault. The failure of this well severely downgrades the potential of any area to the north and north-east as it is difficult to conceive of hydrocarbons migrating from the south/south-west beyond the structure without having first filled the structure itself – in essence a "migration shadow" would exist to the north even if hydrocarbons had been discovered in the well. Consequently, the Group has focussed its latter efforts in PEDL153 on the area to the west of the Shipbourne-1 well and on trend with the Palmers Wood oilfield in the belief that migration of hydrocarbons into that part of the Licence is more likely, especially given the presence of oil shows in Knockholt-1 to the north.

The Group's initial interpretation of the seismic data over PEDL153 (Figure 3) identified a series of three structural leads mapped at Corallian levels. Despite this, none were considered adequately well defined due to the variability in quality of the various vintages of seismic data plus the various, sometimes significant, static shifts that had to be applied to effect ties between the individual seismic lines.

The Group therefore decided in 2008 to reprocess all the lines that crossed the three identified leads, a total of 68 km, in order that it might have a consistent set of seismic data with which hopefully to mature at least one of the leads into a drillable prospect. The reprocessed data represented a significant improvement over the original lines and lead to a marked realignment of the fault pattern for the Corallian when interpreted and mapped (Figure 4).



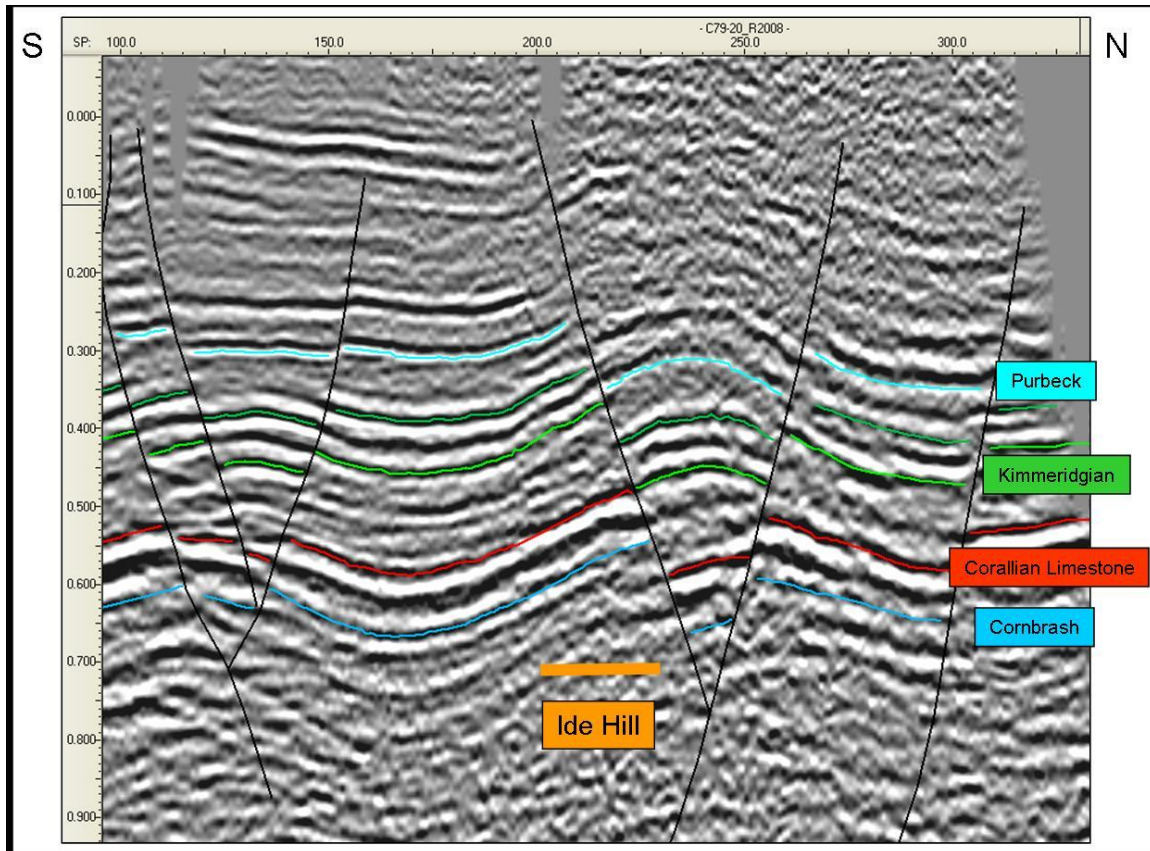
**Figure 3: PEDL153 Top Corallian Limestone Time Structure Map**



**Figure 4: Top Corallian Limestone Depth Structure Map 2009**

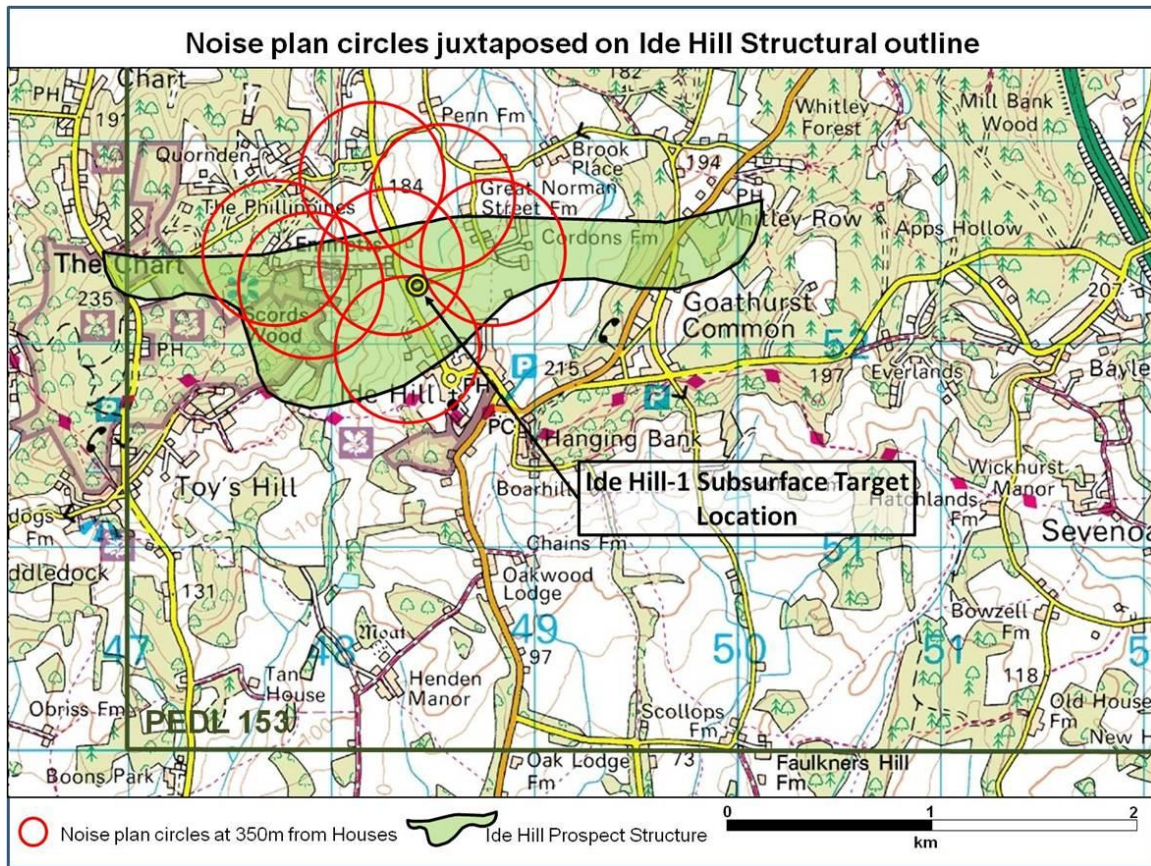


This in turn led to the Group confirming the presence of two of the leads, although one, named by the Group as "Sevenoaks Weald", is only defined effectively by one seismic line so is not sufficiently robust for consideration as a drillable prospect. The remaining structure, "Ide Hill" (Figure 5), is effectively analogous to the Palmers Wood and Shipbourne structures; a tilted fault block critically closed to the north by a significant down-to-the-north throwing normal fault.



**Figure 5 : Seismic Line C79-20 (Reprocessed 2008)**

Unfortunately, the Ide Hill trap underlies an area which is both relatively densely populated and very environmentally sensitive. The Group has researched in some detail possible locations for a well to test the Ide Hill structure, including detailed analysis of noise tolerance (Figure 6), but has finally been forced to conclude that it is not possible to find a suitable site, especially given the constraint that the shallowness of the primary reservoir objective precludes significant deviation of such a well.



**Figure 6 : Ide Hill Location Noise Analysis**

Given that the PEDL153 Group considers that the Ide Hill structure represents the most prospective target within the Licence, it now believes that no prospect that is both economic and practicably drillable exists within the Licence area.

### **Clearance**

As operator for Licence PEDL153, NP Weald Limited confirms that DECC may publish this Relinquishment report, and all 3<sup>rd</sup> party ownership rights have been considered and appropriately cleared for publication purposes.