

# PROJECT PORTFOLIO UPDATE

MAY 2024



# ENVOI



# ENVOI

## DELIVERING ENERGY OPPORTUNITIES

Envoi was founded in 2000 as a global advisory consultancy specialising in the marketing of upstream oil and gas asset acquisition and divestment. Our specialist skills and global network have seen us become a leading adviser for the international upstream energy industry.

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### DELIVERING SERVICES

#### Upstream divestments

Envoi's main area of activity is asset or project divestment. This service involves the review, unique technical documentation, marketing, management and coordination of upstream asset sales. It can comprise helping our clients identify new partners through a farmout of interests in exploration or appraisal and development projects, a straight sale of production or a corporate sale.

#### Upstream acquisitions

Envoi can tap into our global network to identify appropriate opportunities for upstream investment, tailored to fit our clients' criteria.

#### Strategic portfolio advice

We assist clients in strategy planning and subsequent entry into new international core areas, leading to the acquisition of projects for a specific portfolio. We help to identify potential new sources of capital through our global network of E&P industry and financial contacts. Conversely, we assist clients wishing to exit a particular region with planning their sale of assets.

#### Country promotion

Our extensive A&D experience and track record in marketing international upstream projects, together with our global network of contacts, underlines our capacity to assist governments and national oil companies to market their country's hydrocarbon potential and encourage new investment. We can also organise roadshows or presentations at industry conferences for specific license rounds.

#### Corporate presentations and reports

Whether you're an energy company or a government, managing a start-up or initial public offering, raising funds for a new project or simply updating your investors, Envoi can help your company prepare a clear and concise presentation.

### DELIVERING ON OUR STRENGTHS

#### Global reach

Over two decades in the world of upstream A&D, Envoi has formed lasting relationships with the industry's leading players and decision-makers, building an unrivalled global network of several thousand high-quality contacts along the way. These include upstream oil and gas organisations of all sizes, as well as financial investors in search of upstream opportunities. By continually meeting and strengthening these contacts with the people who matter, we can better manage the evolving demands of both our network and our clients.

#### Unique style

Our technical and commercial reviews rapidly add value to projects, by pinpointing and highlighting the strengths, while our distinctive documentation ensures positive presentation and clarity of detail to potential buyers.

#### Flexibility

Our bespoke services are tailored to fit our clients' specific opportunities and needs.

#### Expert knowledge

Expanding on our own in-depth experience, we have established associations with specialist consultants who we retain for specific projects when required.

#### Commitment

Our success fee structure aligns our remuneration and goals to our client's success.

# ACTIVE PROJECTS

## ACTIVE PROJECT LOCATOR



### AFRICA



## ZIMBABWE

Onshore / Appraisal, development and exploration

Envoi has been engaged by Australian based ASX-listed Invictus Energy, to assist in its search for a partner to join them in the exploration of their large 1,011 km<sup>2</sup> SG 4571 Permit situated in the Cabora Bassa Basin of northern Zimbabwe, within the southern part of the East African Rift system. Invictus is the operator of the SG 4571 Permit through its 80% ownership of Geo Associates. The remaining 20% interest is owned by One-Gas-Resources, a well-regarded local Zimbabwean partner. Invictus has conducted basin modelling that has defined large Permo-Triassic 'Karoo' oil and gas play potential in the region that includes thick interbedded shales comprising both seals and organic rich oil-prone source rocks modelled to be within the wet gas and oil generation windows present day. These are estimated capable of generating more than enough oil and gas to charge the stacked Upper and Lower Angwa reservoir sands mapped in the primary Mzarabani prospect, a huge 4-way dip closure with an aerial extent of >200km<sup>2</sup>. The recently reprocessed seismic data has also identified a new basin margin play (3-way closure along the southern basin bounding fault) similar to the successful discoveries in the East African Rift System. Deposited as braided river and floodplain sand deposits, these reservoirs have excellent porosities of around 20% and permeability of up to 1,000 mD where measured in surface outcrops along the Zambezi River Valley. Using new and existing data (including previously unavailable Mobil data), Invictus has combined modern processing techniques to confirm and enhance the interpretation of the potentially massive 4-way dip Mzarabani prospect in their Permit. A recent independent CPR by Netherland Sewell commissioned by Invictus of the Mzarabani prospect estimates that the gross mean unrisks recoverable resource potential from the primary target alone could contain as much as 3.9 Tcf gas and 181 MMbbls condensate. As a result, the Mzarabani prospect is believed to be one of, if not the largest undrilled seismically defined structure onshore Africa. Even though Invictus are fully funded for forward work programme they wish to engage with an experienced onshore partner and are offering a material share of their 80% interest in the Permit in return for funding the forward programme.

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### AFRICA



## GHANA

Offshore / Exploration

Envoi has been commissioned by Amni International Petroleum Development Company Limited (Ghana) ('Amni'), to assist in its search for a partner for its 90% owned and operated Central Tano Block in the Tano Basin, offshore Ghana. The remaining 10% is controlled by the Ghana National Petroleum Company (GNPC). The Block is situated approximately 60 km offshore in water depths of 300 to 1,500 metres and is bounded by the prolific Deepwater Tano and Cape Three Points Blocks, within which are a number of very large discoveries, including the Jubilee, the TEN field complex and Teak Fields, which are recognised by the industry as the first discoveries in the deep water Cretaceous (Cenomanian-Turonian-Campanian) sand play. The 279.48 km<sup>2</sup> Central Tano Block is part of the original Deepwater Tano Block, which was relinquished by its operator Tullow in 2013 as part of their Licence obligation. Amni was awarded the area as the distinct "Central Tano Block" in March 2014 for an initial seven year term of three exploration phases. Amni's acreage is considered highly prospective due to its position in the heart of the most productive area of the Tano Basin, where three different plays are being evaluated, including: 1). the Turonian and Cenomanian fan systems, analogous to the Jubilee field, 2). the shallow Campanian fan systems and 3). the Albian-Aptian synrift system. Five prospects and eleven leads across the three plays have so far been identified to date with a combined potential of more than 3,500 MMbo in place. Amni has completed the interpretation of the 1,600 km<sup>2</sup> Tano Deep 3D data set together with some 450 km<sup>2</sup> of 3D PSDM reprocessed seismic. This has enabled the initial selection of three possible drilling locations where stacked prospects can be tested by individual wells. Amni plans to spud the first of two commitment wells following the delays prior to the ITLOS ruling confirming Ghana's western maritime border. Amni is looking for a partner willing to earn up to a 40 % equity in the Block by contribution to the two obligation wells with a negotiated contribution to past costs.

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## AUSTRALASIA



### AUSTRALIA **NEW**

Offshore / Exploration

Envoi has been engaged by Australia-based ASX-listed Pilot Energy Ltd (“Pilot”), to assist in their search for a partner for their 100% owned and operated WA-481-P Permit, situated ~ 350 km north of Perth, offshore Western Australia.

The large 8,605 km<sup>2</sup> Permit covers the under-explored offshore part of the North Perth Basin, where water depths range from less than 50 metres in the prospective inboard area, to over 1,000 metres on its western margins. The Permit captures the Abrolhos Sub-basin which lies parallel to the Dandaragan Trough onshore, separated by the Beagle Ridge.

The existing well penetrations offshore are not only sparse but drilled in the 1980s and 2000s on old data and did not target the deeper Lower Permian ‘Kingia’ sandstone play fairway. This play was subsequently unlocked in the onshore sub-basin where new multi-Tcf gas resources in several large fields have been discovered since 2014. Significantly, Pilot’s work shows that the Kingia Play does extend offshore in WA-481-P, but it was not effectively targeted by the legacy wells.

Furthermore, Pilot’s remapping of the existing 3D and 2D seismic in their offshore Permit, integrated with the new geological framework and well analysis, has highlighted that a large deep ‘Kingia’ play closure remains untested below the TD of the old Leander Reef-1 well drilled in 1984. This undrilled Lower Permian ‘Kingia’ play prospect alone is estimated capable of containing between 450 and 700 Bcf recoverable gas resources (based on the sum of ‘mean’ and ‘best estimate’ numbers) in the Permit.

As part of Permit commitment, Pilot will acquire a new 3D seismic survey to enhance the existing interpretation and enable selection of a suitable drilling location to test the primary Leander Reef Deep Permian prospect.

Additionally, three Irwin River Coal Measure sandstone (IRCM) prospects and leads have been mapped in the shallower ‘inshore’ eastern part of the Permit, where they lie on-strike with the existing Cliff Head and Xanadu oil analogues. Mapped on sparse 2D seismic and aeromagnetics, the Cliff Head SW, Babbler and Brahminy prospects are estimated capable of containing a combined 41 MMbbls prospective resource potential, needing 3D to mature. Their proximity to the large Geraldton Fault also raises the possibility of a late gas charge from the lower Triassic Kockatea shale similar to Dongara Field. Additional prospectivity in the Permit includes several gas-prone leads, providing running-room subsequent to additional 3D seismic coverage.

Pilot wishes to extend the area of 3D seismic acquisition to the east and improve the imaging of the follow-on targets mapped on existing 2D seismic within the shallower part of WA-481-P, on trend with Cliff Head oil field.

Pilot seeks a partner interested in earning equity by funding at least the new 3D seismic survey, estimated to cost around A\$ 10 million (~US\$ 6.5 million equiv.) with an ‘option’ to earn a further material interest in the Permit by committing to participate in a subsequent well, estimated to cost US\$ 30 million (~ A\$ 46 million equiv.).

The value of any oil and gas field is also recognised with additional revenue potential from Pilot’s CCS project where the estimated storage capability is over 80 million tonnes of CO<sub>2</sub>, which would generating a future revenue beyond hydrocarbon production.

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## AMERICAS



### SURINAME

Offshore / Bid Round

Envoi has been commissioned by Staatsolie, the national oil company of Suriname, to support in the marketing and promotion of their Shallow Offshore Bid Round (SHO2) which officially opened on 7th November 2023.

The Bid Round comprises 11 Blocks covering a combined area of 34,520 km<sup>2</sup> of acreage which includes much of Suriname’s shallow offshore area, the majority of which are located in water depths generally less than 150 metres. Comprehensive new regional G&G studies have been carried out by Staatsolie over the last 24+ months, including most recently, a detailed petroleum systems modelling study of the whole offshore area following a comprehensive geochemical analysis project of all hydrocarbon occurrences within the basin. These studies have positively advanced the understanding of the offshore source and charge potential and confirmed the Aptian as a mature source capable of charging the Shallow Offshore acreage in addition to the proven ACT+C (Albian, Cenomanian, Turonian & Coniacian) kitchen mature in the deep offshore, which is the primary source for the prolific Golden Lane play trend in the Suriname - Guyana Basin.

Exciting new prospectivity is also being unlocked by the new multi-client 3D seismic now available to lease from the consortium (BGP, CGG & TGS) which acquired data over an area covering the western parts of the open SHO2 acreage to the east and south of the previously licenced shallow offshore blocks.

Staatsolie is inviting companies to bid for one or more of the SHO2 blocks based on a range of minimum and additional biddable work programme commitments during an initial 3 year Exploration Phase. This involves either the lease or acquisition of 3D seismic data in blocks that are currently only partly covered by 3D, or only contain 2D seismic. This would be followed by a ‘drill-or-drop’ decision to progress to the next Exploration Phase. One block is being offered on fully biddable terms due the very limited existing data within it. Conversely, the blocks covered by the new multi-client 3D seismic will require leasing directly from the seismic consortium and a well commitments in the 1st Exploration Phase.

All the SHO2 blocks are being offered with modest ‘minimum work programme commitments’ and the opportunity to add ‘biddable work programme elements’ for the initial 3 year, phase 1 exploration terms. Together with the favourable fiscal terms that have been specifically tailored to the known prospectivity and technical risks in each area, the SHO2 terms have been designed to be competitive and ensure that even modest sized discoveries can be commercialised.

Staatsolie allowed an initial 5 week period for interested parties to register before the data rooms opened in mid-December 2023. These will remain open until the end of April 2024 when they will then be closed to new registrations. This ensured a total of 6 months was available for those engaged early and submitting their registration before mid-December, before final bids are due on 31st May 2024.

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## AMERICAS



### JAMAICA

Offshore / Exploration

Envoi has been engaged by London-listed (Dublin-based) United Oil & Gas Plc, to assist in their search for a partner to help accelerate the exploration of their large, 22,400 km<sup>2</sup> 100% operated Walton-Morant Block, located offshore southern Jamaica. United initially farmed into the acreage for a 20% interest in 2017 by funding 3D seismic, acquiring the other 80% interest and operatorship in 2020 to pursue the high potential of the prospectivity unlocked by the new 3D seismic. Only 11 wells have been drilled in the country; 9 onshore and just 2 offshore, all drilled between 1955 and 1983. None of these wells are now interpreted to have tested valid structures, although all contained hydrocarbon shows. Prior to United joining the licence, various vintages of pre-existing 2D seismic were combined and reprocessed, with 3,650 km of new infill 2D data acquired in 2016 and 2017. This helped further delineate and unlock the potential of the Walton Basin in the west and Morant Basin in the east of the acreage and led to the new 3D survey acquired over the Walton Basin 'sweet spot' in 2018 after United's entry.

Onshore fieldwork and well core analysis studies have confirmed Eocene and Cretaceous oil-prone source rock potential, with migrated oil identified in onshore wells and outcrop samples as well as onshore and offshore seeps. These include Late Cretaceous (Cenomanian-Turonian) aged organic shales exhibiting TOCs up to 8% with maturity. Modelling also suggests significant oil potential exists in mature Cretaceous source kitchens in both the Walton and Morant basins while shallower Palaeogene shales with TOCs up to 15% could also locally be deep enough to be mature.

The large Colibri Prospect is interpreted on 3D to contain karstified Upper Cretaceous carbonates developed on a prominent palaeo-horst. Additional, amplitude supported prospects have also been defined on the 3D in the Walton Basin, with Eocene-Oligocene carbonates as the primary reservoir targets. Eocene clastic reservoirs are the main reservoir target in the Morant Basin and include fluvio-deltaic and marine sandstones. These are found across onshore Jamaica in outcrop with depositional modelling indicating their distribution into the offshore. Eocene targets identified include a series of tilted fault block closures mapped on the 2D in the Morant Basin. Extensive shales, marls and tight limestones create effective seals across the two basins.

An independent Prospective Resources Audit completed by Gaffney Cline & Associates in December 2020 estimates that the 11 prospects & leads evaluated for the audit contain combined total unrisksed mean prospective recoverable resources in excess of 2.4 Billion bbls STOOIP. Of this, 406 MMbbls is attributable to the Colibri Prospect alone, with an upside of 966 MMbbls STOOIP. Additional leads identified on older 2D seismic data could hold another 4.8 Billion bbls of mid-case unrisksed prospective recoverable resources.

United is offering a material interest in return for funding the upcoming work programme (est. cost US\$3 million) to complete the obligations for the current First Exploration Period, for which a 2 year extension to January 2026 has been granted. This is designed to significantly de-risk the prospectivity of the licence area through acquisition of a piston coring survey over features of interest, together with seismic reprocessing to improve structural and reservoir imaging. Further equity would be available in return for a commitment to fund United's share of drilling costs (a well to test the large 3D-defined Colibri in 750 metres of water is estimated likely to cost c. US\$ 30 million dry hole) in the subsequent Second Exploration Period of the licence.

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## AMERICAS



### CARIBBEAN

Onshore/Offshore / Exploration

Envoi has been engaged to assist a private client in the search for a partner(s) to join in the exploration of two offshore blocks in a well-established hydrocarbon region of the Caribbean. Envoi's Client would now like to establish potential industry interest to farm in and earn equity in one or both blocks on offer by funding the planned work programmes in each. Fulfilling the work commitments involves the drilling of a well in each of the two blocks.

The proven producing play fairway is a complex east west trending fold and thrust belt incorporating multiple duplexes of stacked Upper Jurassic and Lower Eocene carbonates that have been significantly fractured by the tectonics associated with regional plate movements. Although the oils are relatively heavy in the region (i.e. 8 - 13 API°), the fractures, which tend to be best developed in the crests of each thrust ensure particularly good commercial flow rates which can reach over 2000 bopd/well, up to 6 million barrels per well and over 25,000 bopd GWL pool production. In excess of 300 million barrels of oil have already been produced in this underexplored region, sourced from mature organic marine shales in the Cretaceous carbonate reservoir play. Envoi's client has been active in E&P in the region for almost thirty years and has established considerable expertise and equally important, comprehensive business and government relationships, making them a partner of choice. In 2019, they drilled a well in the offshore acreage to appraise a potential new deeper carbonate thrust play initially discovered in 1993. This recent appraisal well has satisfied the current term's work obligations and the Client now wishes to concentrate on undrilled 3D defined prospects in the proven shallower play. The target prospect is technically a simpler play objective and considered low risk as it lies immediately on trend with a large proven producing (200+ MMbbl) analogue field in the same shallow play in adjacent acreage. The estimated Pmean 60+ MMbbls (130+ MMbbls P10 upside) can be accessed, as have as most of the highly successful historical drilled pools, by an extended reach well from onshore (estimated cost US\$18 million).

Reprocessed 3D seismic over the second offshore Block has defined several new undrilled prospects which would further extend the proven shallow thrust play fairway, estimated capable of a combined 90+ MMbbls resources. A planned shorter long-reach commitment well drilled from onshore to offshore could be drilled for just US\$10 million. Three year extensions to Block 6A and Block 10 have been approved at the Administration Committee level. Extensions have been granted until November 2025 and January 2026 on the blocks respectively. Final documentation is being processed at the Ministry level.

The Client is offering up to 50% of its current 100% equity in one or both offshore blocks in return for funding the planned wells in each of the blocks. Due to the Client's established operations in country, operatorship is not on offer on this project. Our Client is offering a unique opportunity to participate in progressing exploration in a world class play by joining a partner of choice who has an impressive track record and is planning to repeat it in this next cycle of exploration and expected exploitation.

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## AFRICA



### CAMEROON

Offshore / Appraisal and exploration

Envoi has been engaged by Tower Resources Cameroon S.A, a wholly-owned subsidiary of Tower Resources plc, to assist in finding a strategic partner to earn part of their 100% operated interest in the shallow water Thali PSC, offshore Cameroon. Tower was awarded the PSC in September 2015 for an Initial Exploration Period of 3 years, which the government has extended. The Thali PSC, (formerly known as the Dissoni PSC) covers an area of 119.2 km<sup>2</sup>, with water depths ranging from 8 to 48 metres. It lies in the prolific Rio del Rey basin, a sub-basin of the Niger Delta, in which over 34.5 billion barrels of oil has been discovered to date, of which 2.5 billion barrels of oil equivalent ('boe') is attributed to Cameroon. This has already produced over one billion barrels of oil with estimated remaining reserves above 2,000 metres in the proven/producing '**Shallow Plays**' estimated to be 1.2 billion boe. Substantial resource potential also exists in the Tertiary's Miocene '**Deep Plays**' in the area, undrilled in the Thali Block, though proven in large fields in the immediate area, including the 5+Tcf Alba and 2 Bn bbl Zafiro fields south of the Block.

The area has been explored by Pecten (Shell) and ELF (now Total) since the 1960s with several discoveries made within an earlier licence. As a result, the current Thali Block includes the Total's Njonji-1 discovery well drilled in 2008 which encountered 35° API oil in several shallow stacked Pliocene sands. The Njonji-2, appraisal well confirmed the discovery in 2010, but was deemed uncommercial at that time before any testing, leading to Total's strategic exit and sale of its entire Cameroon portfolio to Perenco in 2011. Perenco put the Dissoni field into production, immediately to the north of the current Thali Block, before relinquishing the rest of the licence. Tower then applied for, and were awarded the Thali Block in 2015. Since then, they have reprocessed the 3D seismic originally acquired in 1991 over part of the Block, including over the Njonji discovery. This new data has provided a more accurate definition of the Njonji structure, its closures and their commercial potential. Tower is now seeking a partner to join them in funding the planned Njonji-3 appraisal well to flow test the oil in the Pliocene sands, followed by a rapid development.

The Njonji-3 well is drill-ready, the site survey is completed and rig contract signed for late 2024.

An independent CPR completed by Oilfield International in October 2018 has confirmed an initial two-phase development could exploit the 'mean' 18 MMbbls contingent recoverable resources (and upside of 34+ MMbbls rec) from the three primary Pliocene reservoir sands in the northern Njonji closure above 1,100 metres. Follow-on drilling could then exploit a gross 'mean' prospective resources of 20 MMbbls in the southern closure, which has an upside potential of 74+ MMbbls rec. The economics show a four well 'stand-alone' development of just the contingent Northern Njonji resource potential is commercial. This could produce 8,000 bopd, with the proximity to local infrastructure providing rapid cash flow with recovery of exploration costs under the PSC from potential annual cash flows of >\$100 million and an EMV10 of US\$118 million. An additional EMV10 of US\$82 million is calculated for the development of the prospective Southern Njonji resource potential. Substantial 100+ MMboe potential upside remains undrilled in the Dissoni South and Idenao East analogue prospects in the Block, immediately south of Perenco's Dissoni field.

The undrilled deep exploration play potential in the Thali PSC offers equally large resource upside already proven on trend in the deeper Rio del Rey Basin. In addition to the Alba and Zafiro fields, the Isongo fields lie on trend to the south east of the Thali Block.

## AFRICA



### SOUTH AFRICA

Offshore / Exploration

Envoi has been engaged by New Age African Global Energy ('NewAge') to assist in the search for a new partner to join in the exploration of the large Algoa-Gamtoos Licence, offshore South Africa, which NewAge operates in 50/50 partnership with London-listed Tower Resources plc. The 9,369 km<sup>2</sup> acreage straddles the Algoa and Gamtoos Basins, positioned at the eastern end of a series of en-echelon petroleum basins on the southern shelf margin of South Africa, which developed during the Jurassic break-up and separation of southern Africa from the Falkland Plateau of South America.

Recent geological reviews have shown that the true hydrocarbon prospectivity of the area has been largely unexplored by the drill bit, as historical wells were located using old 2D data and did not intersect valid closure or encountered only modestly developed reservoir sands at the fringes of the main depocentres. Many of these old wells drilled in both the Algoa and Gamtoos Basins, however, either had shows, residual hydrocarbons and/or penetrated and confirmed three mature, wet gas to oil prone shale source sequences of up to 4% TOC. Two of these source units lie within the Jurassic Early Syn-Rift fill and one within the subsequent Cretaceous Rift-Drift succession. Basin modelling by IGI confirms they are mature in both central basin play areas.

NewAges' most recent evaluation has redefined three primary play trends that the Group's forward exploration plan will focus on, comprising:

- **Syn Rift Play in the Gamtoos Basin:** stacked Jurassic and Lower Cretaceous rift fill on the shelf in the west of the acreage (comprising shallow marine, lacustrine and fluvial deposits) have been structured by early faulting, remain untested by any wells and require 3D seismic data to mature leads into drillable prospects.
- **Post Rift Passive Margin Play on the South Outeniqua Basin Flank:** Cretaceous-age deep marine channel and fan systems fed by canyons on the shelf form large 3-way dip and stratigraphic traps on the deep water basin slope in the south western part of the acreage. This play, clearly visible on the newly reprocessed 2D seismic and lies on trend with Total's recent large Brulpadda discovery, requires additional 2D or 3D seismic to define drillable prospects.
- **Post Rift Canyon Play in the Algoa Basin:** to the east of the acreage, Cretaceous-age proximal fluvial to distal marine turbidite canyon fill channel sands deposited in an incised valley on the shelf, are mapped on 3D stratigraphically pinching out, updip from the mature source.

Modern 3D seismic led exploration is now required to accurately map and unlock the newly defined leads offshore. The five primary leads alone are estimated capable of containing a combined mean potential of 2.2 billion bbls STOIP (an upside of over 2.5 Billion STOIP) and several hundred million barrels of recoverable resources in the three undrilled plays to be refined by new data.

The NewAge operated Group would now like to find a partner(s) interested in earning up to 50% of their combined 100% interest by contributing to past costs and funding a new 3D seismic survey (estimated likely to cost US\$ 5 to 7 million gross). The new partner will also have the option to earn additional interest by further contributions to an exploration well in the subsequent Licence Period.

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## UNITED KINGDOM



### UNITED KINGDOM

Onshore / Renewables and production

Envoi has been commissioned to assist Evoterra Limited, a privately-held UK energy company, with the divestment of its traditional upstream and renewable wind assets onshore UK. These are held through two wholly-owned subsidiaries, comprising Terrain Energy Limited ('Terrain') and MicroEnergy Generation Services Limited ('MicroEnergy').

Terrain owns various non-operated interests onshore UK including producing oil fields in addition to development potential and exploration upside. The interests include four Licences in Lincolnshire in the East Midlands petroleum provinces comprising PEDL199 (5%) including production from the Whisby field, PEDL201 (12.5%), PEDL118 (27.78%) and PEDL203 (27.78%). The other two assets are located in the Weald Basin south of London comprising interests in PL235 (10%) including the Brockham field and PL241 (10%) including the Lidsey field. The acreage also offer potential for geothermal and unconventional resources.

Terrain's 5% interest in the Whisby oil field in PEDL199 is their key asset as they are currently benefiting from an 85% share of the production from the Whisby-6 well as payment for funding this last development well drilled in 2016. Together with Whisby-4 (circa 50bopd) the field is producing 115 bopd from the basal Carboniferous sandstone, which is a primary reservoir in the area. Detailed reinterpretation of the existing 2D seismic and integrated well data over the field suggests there is sufficient undeveloped potential for at least two new development wells, which could increase the daily production to at least 250 bopd and help unlock around 500,000 bbls of remaining resources. Licences PEDL118 and PEDL203 contain the historical Kirklington and Eakring-Duke's Wood oilfields from which production had declined to around 20 bopd before being shut in as part of ongoing studies to assess the most effective means of producing all the unswept oil from the reservoirs. The re-purposing of wells for geothermal use is also being assessed by the operator Egdon, which has signed an agreement with Creative Geothermal Solution Limited to assess this. Licences PL235 and PL241 in the Weald Basin contain the Brockham and Lidsey oil fields, which have recently produced up to 20 bopd each. Studies as to how best to increase production and ultimate oil recovery from the Portland Sandstone in Brockham are currently in progress.

MicroEnergy's renewable assets include 139 small wind turbines located across East Anglia. These comprise all British manufactured MCS class and NK accredited 5kW Evance R9000 turbines, which generate in all wind speeds. The electrical power they generate can be used by the landowners, with any excess exported to the grid, all priced by UK feed-in tariffs. The excess (deemed to be 50%) is currently sold to Ecotricity, which also is the manufacturer of the Evance turbines and whose subsidiary, Britwind, carries out the turbine operations and maintenance activities. The combined total estimated annual production for the turbine portfolio, based on the production over the last five years, is calculated to be 652,658 kWh p.a., with an average annual production of 4,695 kWh per system. Average annual revenue is around £235,000, with an EBITDA of around £154,000. Following a pandemic enforced extension to their natural investment cycle, Evoterra's shareholders are seeking cash offers for the UK assets as a complementary conventional upstream and renewables energy portfolio.

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## EUROPE



### UNITED KINGDOM **NEW**

Onshore / Exploration

Envoi has been engaged by UK Oil and Gas Plc ("UKOG"), the UK-based, AIM-listed company to assist in the search for a partner to join in the development of its Loxley gas discovery in the proven producing Jurassic play fairway of the Weald Basin, onshore southern England. The gas is trapped in an Upper Jurassic aged Portland Sandstone closure comprising a west-east elongate 4-way dip anticlinal structure which straddles two onshore UK licences involving PEDL 235 operated by Star Energy to the west and UKOG's 100% owned and operated PEDL 234 to the east. UKOG entered the 300 km<sup>2</sup> licence in 2016, acquiring 100% interest from Celtique Energie and Magellan. Since then UKOG has conducted various G&G work over the Loxley structure, including basin modelling, reservoir studies and pipeline engineering. PEDL 235 contains the original 1982 Conoco Godley Bridge discovery and appraisal wells, whilst UKOG's PEDL 234 contains the large undrilled Loxley culmination on the same closure. The Godley Bridge discovery flowed 1.5 mmcf/d gas on test from the Portland, although this is now evaluated to have been significantly less than it is estimated capable of due to the 'skin effect' caused by well damage. The closure was then further delineated by the other 1980s Conoco wells, all of which are now interpreted to have penetrated just the margins of the Portland closure and gas accumulation. UKOG has remapped the existing 2D seismic and modelled the regional velocities and statics resulting in an updated depth map that defined a large undrilled Portland closure named 'Loxley' with as much as 100 ft at its crest. This has been independently verified by RPS whose 2023 CPR confirms the potential to contain 40+ Bcf gross 2C resources and an upside of over 68 Bcf (3C) resources.

The Loxley (Godley Bridge) gas reservoir is the Upper Portland sandstone, interpreted to have been deposited in a shallow upper Jurassic marine environment south of the London-Brabant Massif. This immediately overlies the world-class Kimmeridge Clay source rock and is sealed by thin overlying carbonates and the Purbeck Anhydrite. Significantly, UKOG's PEDL 234 lies north of the designated Area of Outstanding Natural Beauty (AONB) which will ensure rapid development can be achieved via a 6.6 km pipeline connection to the existing gas grid, with available capacity, if the planned appraisal well confirms a gas discovery.

Once the commercial viability has been established by the Loxley-1 well, a field development plan must be submitted by the end of 2025. The production is anticipated to be dry gas with minimal condensate fluid. The local gas transmission system operator has confirmed that it has the capacity for all of the potential future gas from Loxley and that there is an identified grid entry point. UKOG is now seeking a partner(s) willing to earn material share of its Licence in return for funding the planned Loxley-1 well which has the necessary environmental and planning permissions. The appraisal well, subject to tendering and procurement, is estimated likely to cost £ 8 million including the site construction, drilling, coring and flow testing. The economics show that just the 2C resource potential could generate an NPV10 of over £ 80 million net to UKOG's Licence.

[» View project](#)

## ASIA



### MONGOLIA

Onshore / Appraisal Development and Exploration

Petro Matad Ltd, the London AIM listed company, has commissioned Envoi to identify a strategic partner to join in the appraisal and development of two discoveries made in 2019 with the northern part of their 100% owned and operated Block XX Licence in the Tamtsag Basin of NE Mongolia and historically the most productive part of the country. The Licence is situated at the southern end of the basin where Petro Matad's successful Heron-1 was essentially an appraisal of an existing discovery immediately to the north (T19-46-3 made in 2009) which lies in the southern part of Block XIX operated by PetroChina. This Cretaceous play is itself an extension of the proven Hailar Basin that has been producing oil across the border in Chinese since the 1980s following exploration dating back to the 60's. Formed in the Late Jurassic and Cretaceous, the Tamtsag Basin is filled with an estimated 4 km of continental sediments and volcanics. Complex tectonic evolution with rifting and later inversion has resulted in the horst and grabens of the 10 sub-basins identified today. Block XX covered 18,956 km<sup>2</sup> when originally awarded to Petro Matad in July 2006. The completion of subsequent G&G work programmes managed through several renewals, extensions and relinquishments, included the acquisition of both 2D and 3D seismic and gravity and led to a series of wells being drilled between and 2010-11. These were all targeting what had been interpreted as paleo-valleys cut into the Davsan Tolgoi High in the north eastern part of the retained 10,366km<sup>2</sup> area of Block XX, where the crestal area of a rotated fault block forms the south-eastern shoulder of the Tamtsag Basin. Although the initial wells found significant shows in sands of the Lower Cretaceous Tsagaanstav and Zuunbayan formations deposited over the high, subsequent appraisal and well testing confirmed insufficient reservoir quality for commerciality. New management has since switched the exploration focus to the immediate extension of the proven-producing area of Tsagaanstav and Zuunbayan plays where better developed in the Toson Uul Graben. Following receipt and interpretation of the PetroChina's 3D that extends into Block XX, the Heron-1 and Gazelle-1 discovery wells were drilled in 2019. Only the northern part of the Heron closure is covered by the 3D, however, where the 2D data to the south suggests the closure extends into a large undrilled hanging wall trap. This lies immediately updip of oil recovered on test from Petro Matad's DT-4 well, now interpreted to have been drilled on a fault terrace. The Heron closure alone is estimated able of containing between 160-200 MMbo STOILP. The discoveries now require a southerly extension of the 3D seismic to fully map the structures and optimally locate additional appraisal and development wells. Following award of an Exploitation Licence (EL) covering the area, the initial plan, however, is to drill several production wells within the existing 3D footprint targeting rapid first oil while at the same time acquiring a new 250km<sup>2</sup> 3D survey over the southern area costing US\$ 4-5 million. Once merged with the existing data, advanced interpretation will help locate additional drilling locations. Full field development will establish cash-flow ahead of near-field appraisal and exploration to define the overall field size, which could easily double. Existing oil production from the region, including Block XIX, is currently trucked to a rail terminal further south that feeds refineries just across the Chinese border. A new Mongolian refinery is being built, which in time will have sufficient capacity for all likely Mongolian production. Petro Matad would like to identify a strategic partner to join them in the planned development programme and earn material equity in the new EL Licence by contribution to the planned 3D seismic and drilling programme. Wells can be drilled for around US\$ 2 - 4 million each.

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## EUROPE



### GERMANY

Onshore / Renewable

Envoi has been mandated by TREDIC Corporation (a specialist infrastructure & real estate company), in partnership with a private geothermal developer to assist in the search for investors to participate in the development of an initial 35MW geothermal power project, the first of several planned in the Bavarian region of Southern Germany.

The region is already an established hotspot for several large deep geothermal energy installations due to the favourable geological conditions. Significantly, several municipalities, including that of Munich, have plans under way to significantly increase their geothermal energy usage for renewable heat and power. The positive political moves towards geothermal energy in Germany are clearly evidenced by the Renewable Energy Sources Act ('EEG') passed in 2016 that guarantees geothermal generated power is subsidised at €0.25 cents/kWh for 20 years on projects completed prior to 2021 (meaning investment is sought with immediate effect). Geothermal producers are also not subject to the auction process imposed upon other forms of renewable energy generation.

The TREDIC-led partnership is very experienced in geothermal drilling and production, both nationally and international, having been successfully involved in several other geothermal projects in the Alpine foreland Molasse Basin. Here, the fractured Late Jurassic carbonate aquifer target deepens southwards in the Alpine foreland to between 2,800 to 4,500 metres and typically provides water temperatures of between 110° to 140° C, with boreholes recording flow rates between 150 to 280 litres per second. The Concession area is therefore estimated capable of generating some 10,000 MW of geothermal power, which in turn is sufficient to generate more than 500 Megawatts (MW) of electrical power, so more than enough to supply the proposed initial 35MW geothermal power station being planned. Of around 55 operating boreholes in this part of Bavaria, there have been no dry holes drilled, with 90% of the boreholes producing above the temperatures and flow rates needed.

Standard oil and gas drilling techniques are ideal to target, drill and complete the wells, which can be located using the existing 3D seismic survey over the area. Electricity would be generated using a hydrothermal power plant, which can be purchased as a turnkey build with manufacturer's guarantees. Formal application for the mining licence and property lease would be followed by reprocessing and interpretation of the existing 3D seismic. This would be used to effectively locate the four production and three re-injection wells proposed. Local connection to existing infrastructure at two locations ensures immediate access to market, sales and cash flow. From a licence being granted, followed by drilling and power plant construction, first cash flow would be expected within two years. The water produced also meets the very high German standard for drinking water, so the project can also be used to supply aquaculture and other applications to generate additional revenues.

The maximum capital investment of the project is estimated to be €180 million, with a first drawdown requirement of €35 million, comprising €30 million for drilling and exploration, €5 million for set up plus €145 million for construction and build. The economics show this would generate consistent gross annual revenues of €49.5 million for 20 years with the subsidised tariffs. Depending on the structure of the investment up to a 60% interest in the project is being offered in return for funding the drilling where the construction phase funding is already secured. An investor is only required to show an initial €5 million of physical funds and proof of the remaining €30 million exploration drilling costs to satisfy the Bavarian authorities in order to issue the mining licence.

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