# INVESTOR PRESENTATION September 2021





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### **Orcadian Team & History**



## ORCADIAN ENERGY

• Founded in 2014 and awarded the Pilot licence



- Financed by Shell traders and awarded the Elke & Narwhal licence in 2019 and started the concept select process for Pilot
- Switched to polymer flood and submitted report to OGA in September 2020
- Renamed Orcadian Energy and listed on AIM, with 79MMbbls of 2P Reserves and 78MMbbls of 2C Resources in July 2021;
- Committed to operating at highest ESG standards and have submitted Net Zero focussed addendum to the concept select report July 2021







### Reserves and resources summary

licopco	Accumulation	Recoverable (MMbbls)			Chance of	licence	Accumulation	Recoverable	Geolog chance
Licence		Low	Best	High	development			(MMbbls)	succe
P2244	Pilot Main		79		Classified as reserves	P2320	Pilot North Channel		50%
P2244	Pilot South	58				P2320	Pilot Central Channel	6	50%
P2482	Elke	24	44	125	79%	P2320	Bowhead	43	49%
P2482	Narwhal	5	9	17	79%	P2482	Elke (3C polygon)	23	87%
D2220	Plakonov	~	25		77%	P2482	Elke Field Updip West	18	87%
	Біакепеу			1	Ι Ζ/ο	P2482	Elke Field North		66%
P2320 Feugh		Not Yet Assessed			P2482	Elke Field Area 2 & Area 3	26	64%	
Total			157			P2482	Elke Field Main Channel	7	64%
Reserves contingent resources and							d totals	143	
prospective resources in low-risk prospects						Risked totals		92	

Reserve, resource and chance of success estimates as per Sproule 2021 CPR, except for Elke 3C polygon which is based upon the Sproule work P2244 Second Term currently expires 30/11/22; P2320 is a drill-or-drop licence which requires a well commitment, Phase A expires 14/5/22; P2482 requires seismic commitment, Phase A expires 14/7/22











## Asset highlights

- Key asset is the Pilot oilfield which has a substantial audited reserve: 79 MMbbl 2P (proven & probable)
  - Pilot field is well appraised and development ready, project NPV<sub>10</sub> \$640m at \$60/bbl, NPV<sub>10</sub> breakeven of c. \$39/bbl, based on a low salinity polymer flood, using an FPSO, two WHPs and a floating wind turbine
  - 78 MMbbl of contingent resources in Elke, Narwhal & Blakeney with an NPV<sub>10</sub> at \$60/bbl of \$458m
- Low risk exploration on licensed acreage
  - Bowhead prospect, a Pilot lookalike, 43 MMbbls with appraisal style risks (49% geological chance of success)
  - Elke appraisal and satellite exploration targets contain over 80 MMbbls with chance of success from 64% to 87%
- OGA supportive of low emission development plan







## Comparison with global oil production emissions Viscous oil doesn't have to mean high emissions



lowest 5% of global oil production

Masnadi et al (2018). Global carbon intensity of crude oil production. Science. 361. 851-853. 10.1126/science.aar6859.

## ORCADIAN ENERGY

• Pilot field comparable emissions are 1.4  $gCO_2eq/MJ$  with a single wind turbine





## A project delivering on OGA's Net Zero agenda Powered by renewable energy

- Multiple opportunities to reduce emissions adopted
- Integration of aggressive process heat management with high efficiency backup power generation and electrification has driven emissions down by over 80%
- Local wind turbine power, with highly efficient backup gas engines, reduces emissions as low as connection to a future grid with half of today's CO<sub>2</sub> intensity



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![](_page_6_Picture_9.jpeg)

## Pilot field summary

- Fully appraised, seven reservoir penetrations, two tested wells, core and fluid samples held by Orcadian, two high quality 3D seismic surveys
- Very high quality sandstone turbidite reservoir, 34% porosity, 2 to 10 darcies of permeability
- Significant oil in place: 263 MMbbls; audited 2P reserve of 79 MMbbls, based on a low salinity polymer flood of the reservoir
- Variable quality oil from 12° to 17° API, 160 cP to 1,200 cP
- Shallow water (c. 80m), 140 kms due East from Aberdeen, c. 40 kms from Gannet et al

![](_page_7_Figure_7.jpeg)

![](_page_7_Picture_8.jpeg)

![](_page_7_Picture_9.jpeg)

## Polymer flooding – a proven technique

- Polymer flooding proven to deliver positive results with oil viscosities up to c. 5,000 cP
- Proven offshore on Captain field in the Central North Sea by Chevron
  - Ithaca has recently approved Stage 2 of the project
- Well spacing optimisation is key; better when applied early in field life, see Pelican Lake field
- Offshore polymer floods use an emulsion based polymer which simplifies logistics and operations
  - >99% uptime on Captain
- Low salinity water injection can massively reduce polymer costs

## ORCADIAN ENERGY

![](_page_8_Figure_11.jpeg)

Experiment on 2,000 cP oil; oil saturation maps during flood experiments, Loubens et al, "Numerical Modeling of Unstable Waterfloods and Tertiary Polymer Floods Into Highly Viscous Oils", SPE-182638-MS, 2017

![](_page_8_Picture_13.jpeg)

![](_page_8_Picture_14.jpeg)

![](_page_8_Picture_15.jpeg)

## Polymer flooding – Captain field

- Completed in 2013, focused on a well pair in the Southern Upper Captain sand, separated by  $\approx$ I25m
- Oramatic acceleration of waterflood reserves
- Significant increment to expected waterflood recovery (16%)
- Excellent analogue to Pilot, much to learn and copy

![](_page_9_Figure_5.jpeg)

![](_page_9_Picture_9.jpeg)

![](_page_9_Picture_10.jpeg)

![](_page_10_Picture_1.jpeg)

## A highly profitable project

- Pilot low salinity polymer flood is a robust and highly profitable project with a  $NPV_{10}$ breakeven below \$40/bbl
- Next step is to secure development partners (oil company or an alliance of contractors) to deliver a fully financed FDP
  - FPSO contract is key to defining equity needs, Crondall Energy hired to secure the best FPSO deal
  - Debt capacity is determined by the robustness of the proven reserve
  - Equity can come either from industry (via farm-in) or the markets (via an equity raise)
  - We will choose the approach which maximises value for shareholders

Economic results as per Sproule 2021 CPR

![](_page_11_Figure_9.jpeg)

![](_page_11_Picture_10.jpeg)

### Potential area production

![](_page_12_Figure_1.jpeg)

Production profiles for Pilot, Elke, Narwhal & Blakeney as estimated by Sproule for the purposes of the CPR. Bowhead profile based on a Pilot profile scaled to match Bowhead resources.

## ORCADIAN ENERGY

- Bowhead success would prompt facility debottlenecking
- Scope for optimisation of development timing
- Further potential in Pilot channels and Elke satellites

Elke, Narwhal & Blakeney

Year 9 Year 11 Year 13 Year 19 Year 15 Year 17

![](_page_12_Picture_9.jpeg)

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### **Bowhead Prospect**

- reservoir far stack amplitudes
  - has been licensed
- 43 MMbbl prospective resources, 49% geological chance of success
- Orcadian intends to progress the drilling of Bowhead if the new seismic confirms prospectivity
- Funding strategy remains flexible
- Petrofac estimated well cost c. £8m

![](_page_13_Picture_7.jpeg)

![](_page_13_Picture_8.jpeg)

![](_page_13_Picture_9.jpeg)

### • Pilot look-alike on northern side of salt swell from Pilot which shows up brightly on the top

### • New seismic, which will help derisk the prospect and enable selection of the best well location available,

![](_page_13_Picture_12.jpeg)

![](_page_13_Figure_13.jpeg)

![](_page_13_Picture_14.jpeg)

![](_page_13_Picture_15.jpeg)

## **Objectives and Strategy**

- Deliver a high return for investors
- Fully finance the polymer flood project for Pilot, two parallel approaches:
  - Seek farm-in partners
  - Structure a contractor alliance to deliver the project with a minimised equity requirement
- Add value through focussed exploration and appraisal
  - Drill low risk prospects close to planned infrastructure which increase project scale
- Progress resources into reserves and onto production
- Optimise area wide development plan

![](_page_14_Picture_10.jpeg)

![](_page_14_Picture_11.jpeg)

![](_page_14_Picture_12.jpeg)

## Why Orcadian?

- Substantial Proven & Probable Reserve base with significant exploration and appraisal upside
- Pilot project well advanced and in line with OGA's Net Zero goals
- Core projects with NPV<sub>10</sub> of over \$1.0 billion at \$60/bbl and \$1.4 billion at \$70/bbl\*
- Multiple paths forward to finance the project
- Highly experienced management team, aligned with shareholders and focussed on maximising shareholder returns
- Proven capability to identify and secure developable resources at low cost

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