PETROLEUM AFFAIRS DIVISION

DEPARTMENT OF COMMUNICATIONS, CLIMATE ACTION & ENVIRONMENT

RULES AND PROCEDURES MANUAL FOR OFFSHORE PETROLEUM EXPLORATION AND APPRAISAL OPERATIONS

APPLICATION TO CONDUCT AN OFFSHORE SURVEY

Section 1 – Basic Survey Information

a.	**Name of Operator**	Vermilion Exploration and Production Ireland Limited (VEPIL)
b.	**Authorisation (Lease/Licence, PPL Number, Other)**	Corrib Petroleum Lease
c.	**Type of Survey and details of work to be undertaken**	A campaign of inspection, repair and maintenance (IRM) tasks is planned to take place in 2021. It is the intent that this application shall cover the survey/positioning requirements for all of the following tasks: **1.** Offshore Pipeline and Subsea Structure inspection to include repair and maintenance work as necessary – *Edda Sun* **2.** Near Shore Pipeline Inspection – *Leah-C* While the tasks vary in the accuracy, and therefore complexity of the positioning solution required, they all require a selection of the same survey instrumentation to provide absolute and relative positioning of subsea infrastructure, ROV and vessels. Sensors utilised will include a suitable mix of Video camera, Sonars, Cathodic Protection, Depth of Burial, Sub-Bottom Profiler, Multi beam Echo Sounders, Bathymetric Unit (pressure sensor), Sound Velocity Probe, Stills camera, Pipe Tracker, Inertial Navigation System, Doppler Velocity Log, USBL transducers, Portable Subsea USBL Transponders, Gyros, Motion Reference Unit (MRU), Heading Sensor, Altimeter etc. All sensors to be located on Support Vessels, ROVs or other deployable assets as appropriate.

d.	**Planned date of start of survey and estimated duration**	Earliest start date between May 2021 – September 2021. Planned duration of operation is circa 20 days
e.	**Location of Survey (latitude and longitude) together with a map on an appropriate scale showing detailed line layout, sampling locations etc as appropriate**	Covers selected sections from the entire Corrib Offshore Pipeline and Umbilical system from the landfall valve site in Glengad, Co. Mayo to the Corrib Wells. General survey location map included below.
f.	**Positioning systems to be used for the survey**	GNSS, Heading sensor, Motion Reference unit (MRU) USBL, Inertial Navigation System (INS) Heading Sensor, Motion Reference Unit (MRU), Altimeter, Bathymetric unit, and Doppler Velocity Log (DVL)
g.	**Name and address of contractor performing the survey**	**1 & 3.** Fugro GB (North) Marine Limited Fugro House, Denmore Road, Bridge of Don, Aberdeen, AB23 8JW, United Kingdom Company No. SC066833 VAT No. GB 296970789 Registered Office 28 Albyn Place, Aberdeen, AB10 1YL **2.** Ultrabeam Hydrographic, Unit 3 Hayle Marine Renewables Business Park North Quay Hayle Cornwall TR27 4DD United Kingdom

h.	**Data and records expected to be obtained from survey**	Digital data showing pipelines /umbilicals / structures status, position, cathodic protection levels and depth of burial etc. Speed of sound in water column profiles.
i.	**i. Type of energy source(s) to be used;**	Acoustic signals possible from numerous devices namely: *Leah-C* • **Sub Bottom Pinger** Preferred: Neptune T335: 3 – 8kHz. Potential procurement alternative: o Geoacoustics TR-1075D: Frequency 3 to 8kHz • **Multi-Beam Echo Sounder** Preferred: R2sonic 2024: Frequency range – 200 – 400kHz, typical operating 350kHz – 400kHz (environment dependant). Possible procurement alternatives: o R2sonic 2022: Frequency range – 200 – 400kHz, typical operating 350kHz – 400kHz (environment dependant). o Reson TC2181 single head - Frequency range: 190kHz to 420kHz, typical operating 400kHz. • **Side Scan Sonar** Preferred: Edgetech 4200-MP: Dual Frequency 300and 600kHz. Potential procurement alternatives: o Edgetech 4125 – 400/900kHz. o Klein 3210 – Dual frequency 100kHz and 500kHz. o Klein 3000H – Dual frequency 445kHz and 900kHz. • **Sound Velocity Probe** Preferred: Valeport MiniSVP/SVS: Frequency 2.5MHz. Potential procurement alternative: o Reson SVP70: Frequency 2MHz (nominal)

		Edda Sun • **Multi Beam Echo Sounder (MBES) -** Reson Seabat 7125 dual head: Frequency 400KHz. • **Doppler Velocity Log (DVL) –** RDI Workhorse: Frequency 1200KHz. • **Sound Velocity Senor** – Valeport MVS: Frequency 2.5MHz. • **Obstacle Avoidance Sonar** – Kongsberg MS1000 is in use 675KHZ • **Bathymetric System c/w Altimeter** – Tritech SK704: 500kHz. • **Vessel Furuno Echo Sounder** – "Skipper GDS 101" in use on Carla. 38, 50 and 200KHZ operating frequencies. Currently in 50KHz • **Vessel USBL** – Vessel HiPAP operating in the range 21kHz to 31kHz. • **Mini USBL Transponder and Responder**: 30kHz. • **Pipe Tracker** – TSS 440: Negligible magnetic field strength. • **Vessel's doppler velocity log** which runs at 2MHz **NB:** While every effort has been made to ensure accuracy due to procured equipment specification the actual devices used may differ from those included here. Similar devices for similar tasks will, in all likelihood, use similar frequencies even if the specific type/model is different.

	ii. Length and configuration of seismic cables, depth at cables are maintained, speed when towing and what radar reflector supporting tail buoys are to be used;	N/A - No seismic cables being deployed
	iii. A risk assessment of the proposed activity in relation to the sensitivities of marine mammals in the area to the proposed operations and outlining specific impact mitigation and monitoring practices that will be applied during the survey in relation to marine mammals.	Submitted separately
k.	**Identification of vessel(s)**	1. Leah-C (Near Shore Inspection) 2. Edda Sun (Offshore IRM)
l.	**Contact details of those who will supervise survey operations:**	
	(1) In the operator's office	**1.** Alick MacAngus amacangus@vermilionenergy.com +44 (0) 77 476 34 494
	(2) In the contractor's office	**2.** Karl Daly k.daly@fugro.com +44 (0) 1224 257 660 +44 (0) 7714 159 569
	(3) On the survey vessel	**3.** Vermilion Survey Representatives present on each vessel.

Section 2 – Detailed Information on survey to be undertaken

Survey activities will provide positioning of vessel, ROV and subsea infrastructure (and any features or items found within the immediate vicinity), all to be logged in relation to real world coordinates.

Inspection and Maintenance survey will be undertaken to identify current condition of the Corrib offshore pipeline and umbilical assets/system to ascertain any requirement for maintenance works. Additionally, inspection of subsea structures will be undertaken at opportune times within the inspection program.

Provide positioning and inspection survey capacity across the 2021 vessel-based maintenance and engineering programme.

Visual and acoustic survey by means of vessel/ROV mounted sensors and cameras located on attendant survey vessels, ROVs and towed Side Scan Sonar.

The *Leah-C* will be used to undertake the inshore survey scope and the equipment will be vessel deployed.

The deep-water surveys and other IRM work will be undertaken by the Edda Sun and equipment will be vessel and/or ROV deployed.

Energy sources relating to the survey equipment are provided in Section 1 Item (i)

Survey Vessel – Details

Name	Edda Sun	
Radio call sign	LARF 7	
Flag, Port of Registry	NIS (Norway) Bergen	
Classification	DNV +1A1, SF, Comfort-C(3)-V(3), HELDK-SH, E0, DYNPOS AUTR, CLEAN, ICE-C, NAUTOSV (A), DK (+)	
Built	2009	
Maritime Mobile Service Identity (MMSI) No.	258647000	
IMO Ship Identification No.	9489651	
Length (LOA)	85.3m	
Beam	18m	
Draught	6.8m	
Tonnage	4398t	
Owner	**OWNER:** Østensjø Rederi AS	**OPERATOR:** Fugro GB (North) Marine Limited
Address	**OWNER:** Østensjø Rederi AS P.O. Box 394 5501 Haugesund Norway +47 52 70 45 45 FAX +47 52 86 67 40 post@ostensjo.no	**OPERATOR:** Fugro GB (North) Marine Limited Fugro House, Denmore Road, Bridge of Don, Aberdeen, AB23 8JW, United Kingdom Company No. SC066833 VAT No. GB 296970789 Registered Office 28 Albyn Place, Aberdeen, AB10 1YL

Name	Leah-C
Radio call sign	EI QS 5
Flag, Port of Registry	Sligo
Classification	P5
Built	2015
Maritime Mobile Service Identity (MMSI) No.	250003668
IMO Ship Identification No.	N/A
Length (LOA)	11m
Beam	4.2m
Draught	1.2m
Tonnage	8.5T
Owner	Michael Callaghan (operated Belcross Enterprises Ltd.)
Address	Michael Callaghan, Killybegs, Co. Donegal

Survey Location Map: