An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications

CORRIB FIELD: APPLICATION TO INSTALL A NEW FLEXIBLE FLOWLINE CONNECTING CORRIB WELL P6 WITH THE CORRIB CENTRAL MANIFOLD

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) SCREENING DETERMINATION

I. Project Proposal

Further to the petroleum lease granted to the Corrib Gas Partners pursuant to Section 13 of the Petroleum Act 1960 (**Corrib Petroleum Lease**), a number of additional consents have been granted in respect of the Corrib Gas Field development, the details of which can be found on the DECC website. The consents granted in respect of the Corrib Gas Field development include a consent to operate the Corrib Gas Pipeline, granted in December 2015 pursuant to Section 40 of the Gas Act 1976, which is subject to a number of conditions, including the following:-

> 20. *'Subsea facilities and flowlines will be subject to annual inspection to ensure that protection measures remain effective and any remedial measures necessary to provide additional protection will be undertaken as soon as practically possible. The first such inspection will be undertaken within the first month from the start of commercial gas production, when the flowlines are at maximum operating pressure and temperature'.*

On the 17th September 2020, Vermillion Exploration and Production Ireland Ltd (hereafter referred to as **Vermillion**) submitted an application within the Corrib Petroleum Lease to the then Department of Communications, Climate Action and Environment now the Department of Environment, Climate and Communications **(DECC)** for approval to carry out remedial works involving the replacement of the existing flexible flowline connecting the P6 subsea wellhead with the Corrib central manifold at the Corrib Field, leaving the decommissioned flowline in situ in a preserved state on the seabed. The new flexible flowline will be shorter in length (158 m) than the existing flowline (1,560 m) and will significantly reduce the unnecessary flow restrictions between the P6 wellhead and the Corrib central manifold.

The proposed works involved in the installation of the new flexible flowline at the P6 well location will consist of the following elements:-

- Mobilisation of the ROV support vessel (*Siem Spearfish) a*nd two ROVS from a UK port to the Corrib Field;
- Trials and verification of dynamic positioning (DP) system and ultra-short baseline system (USBL) to be undertaken prior to arrival within the Corrib Field exclusion zone;
- Completion of an As-Found Survey at the P6 work site, including underwater video / stills, acoustic geophysical survey and any seabed preparation works required prior to commencement;
- Depressurisation and isolation of the existing flowline from the central manifold and P6 wellhead (gas displaced into subsea process system);
- Disconnection of existing flowline from central manifold and P6 wellhead (existing flowline will be left in situ on the seabed);
- Preparation of laydown area and lay route for new flexible flowline;

- Deployment of the new flexible flowline from the support vessel and connection to central manifold and P6 wellhead using ROVs and the remotely operated ICARUS tie-in tool;
- Pressure testing and pre-commissioning activities for new flowline;
- Installation of protective concrete mattresses along length of new flexible flowline and in places along disconnected flowline to provide stability;
- Reinstatement of the worksite and completion of an As-Left Survey including underwater video / stills and geophysical survey;
- Demobilisation of the support vessel and ROVs back to UK port;
- The existing flowline will be capped and preserved in situ on the seabed for future use.

The As Found / As Left surveys will be carried out by the ROVs using a combination of survey techniques (e.g. multibeam echo sounder and underwater video / camera imagery. A range of other sensors may also be used as part of the survey / ROV operations (e.g. sound velocity probes, navigation positioning sensors including: an ultra-short baseline beacon system, obstacle avoidance sonar, an altimeter, motion reference unit, inertial navigation system and doppler velocity log.

An application to carry out these works was originally submitted in January 2020, but was subsequently withdrawn in July due to the works not proceeding in 2020. Vermillion resubmitted the application in September 2020, with revised dates for progressing the replacement works on the Corrib Field P6 Flexible Flowline between May and October in either 2021 or 2022. Planned duration of the activities is approximately 6 days.

II. DECC Assessment Process

The Environment Advisory Unit (**EAU**), a functionally separate and independent unit of DECC is responsible for carrying out environmental screening and any environmental assessments determined as being required following screening, in accordance with the requirements set out in Directive 2011/92/EU, as amended by Directive 2014/52/EU (**EIA Directive**) and Directive 92/43/EEC, as amended, (**Habitats Directive**), in the context of applications such as the within application, seeking approval to carry out replacement of an existing flexible flowline connecting an existing subsea wellhead with the central manifold for an existing gas pipeline, leaving the decommissioned flowline in situ in a preserved state on the seabed.

EIA – In Ireland, environmental assessments of such applications are carried out by the EAU in accordance with Directive 2011/92/EU, as amended by Directive 2014/52/EU (EIA Directive). Where the activities the subject of the application fall outside the projects listed in Annex I of the EIA Directive, an EIA Screening Assessment and Determination is carried out by the EAU in the first instance, as to whether the activities the subject of the application would, or would not be likely to have, significant effects on the environment by virtue, *inter alia*, of their nature size and location. Where it has been determined, following screening, that the activities the subject of the application, are likely to have significant effects on the environment, an environmental impact assessment is required.

AA– The European Communities (Birds and Natural Habitats) Regulations 2011 – 15 (S.I. 477 of 2011, as amended) (**Birds and Natural Habitats Regulations**) give effect to the Habitats Directive as a matter of Irish law and require, inter alia, that a public authority carry out screening for Appropriate Assessment of a plan or project for which an application for consent is received. Where a public authority determines that an Appropriate Assessment is required, the Birds and Natural Habitats Regulations require that the assessment carried out by a public authority include a determination pursuant to Article 6(3) of the Habitats Directive as to whether or not the plan or project would adversely affect the integrity of a European site. The EAU is responsible for carrying out Stage 1 AA

screening assessments, and any Stage 2 Appropriate Assessment determined as being required following screening, in accordance with the Birds and Natural Habitats Regulations, in respect of applications, such as this one, to carry out flexible flowline replacement works.

On receipt of an application, the Petroleum Affairs Division in DECC ('**PAD**') places the application on the DECC website for consultation and refers the application, and any associated responses to the consultation, to the EAU for the purposes of carrying out its assessments.

On the completion of all environmental assessments by the EAU and after incorporating any suggested conditions which may be recommended by the EAU, the application will then be evaluated by the Petroleum Affairs Division in the Department who will make a recommendation to the Minister regarding whether consent should be given for the activities applied for.

III. Independent Expert Advisors

DECC has further engaged Ramboll UK Limited (herein referred to as **Ramboll**) as independent expert environmental advisors to provide advice to the EAU with regard to the carrying out of statutory environmental assessments of applications for permission to carry out works, such as those involved in the Vermillion application.

Ramboll has conducted an independent assessment of the information provided by Vermillion, by reference to the relevant selection criteria specified in Annex III of the EIA Directive. The expert report prepared by Ramboll, having carried out an external review of the EIA Screening and Environmental Risk Assessment Report that was prepared by RSK on behalf of Vermillion in respect of the proposed works, is shown at Appendix 1 ("**Ramboll Report**").

IV. Environmental Impact Assessment Screening: Legislative Background

The EIA Directive (Directive 2011/92/EU, as amended by Directive 2014/52/EU) requires that projects that are likely to have significant effects on the environment by virtue, *inter alia*, of their nature, size or location are made subject to an environmental impact assessment.

Under Article 4 of the EIA Directive, projects listed under Annex I are automatically subject to an environmental impact assessment and for projects listed in Annex II, Member States shall determine whether the project shall be subject to an assessment and can make the determination through either one of both (a) case by case examination or (b) thresholds set by the Member State.

Article 4(4) of the Directive requires in respect of projects listed in Annex II that the developer provide information on the characteristics of the project and its likely significant effects on the environment. The list of information to be provided is set out at Annex IIA; namely:

1. A description of the project, including in particular:
(a) a description of the physical characteristics of the whole project and, where relevant, of demolition works;
(b) a description of the location of the project, with particular regard to the environmental sensitivity of geographical areas likely to be affected.

2. A description of the aspects of the environment likely to be significantly affected by the project.

3. A description of any likely significant effects, to the extent of the information available on such effects, of the project on the environment resulting from:

(a) the expected residues and emissions and the production of waste, where relevant;
(b) the use of natural resources, in particular soil, land, water and biodiversity.

Annex IIA further provides that the criteria listed in Annex III of the Directive shall be taken into account, where relevant, when compiling the information required in 1 – 3 above.

Article 4(4) further provides that the developer may also provide a description of any features of the project and/or measures designed to avoid or prevent what might otherwise have been significant adverse effects on the environment.

The EIA Directive requires that when carrying out an EIA Screening Assessment, the relevant selection criteria as set out in Annex III shall be taken into account.

Article 4(6) of the EIA Directive requires that an EIA Screening Decision must be made as soon as possible and within a period not exceeding 90 days from the date on which the developer has submitted all the information required.

V. Vermillion Application: Assessment Process

Vermillion submitted the following documents with the application in September 2020:-

(i) Application to Conduct an Offshore Survey and Works;
(ii) Corrib P6 Flexible flowline Installation EIA Screening and Environmental Risk Assessment, dated September 2020, prepared by RSK on behalf of Vermillion
(iii) Corrib P6 Flexible flowline Natura Impact Statement, dated September 2020, prepared by RSK on behalf of Vermillion
(iv) Corrib P6 Flexible flowline Method Statement, dated August 2020.

VI. Notified Bodies

The following bodies were notified of the original application made in January 2020 and of the revised application made in September 2020:

- National Parks and Wildlife Service;
- Irish Maritime Administration, then Department of Transport, Tourism and Sport, now the Department of Transport;
- Ship Source Pollution Prevention Unit, Irish Maritime Administration, then Department of Transport, Tourism and Sport, now the Department of Transport;
- Irish Coast Guard (& National Maritime Operations Centre), then Department of Transport, Tourism and Sport, now the Department of Transport;
- Sea Fisheries Protection Authority;
- Sea Fisheries Policy Division, then Department of Transport, Tourism and Sport, now the Department of Transport;
- Department of Defence;
- Mission Support Facility, Irish Air Corps;
- Naval Headquarters;
- Marine Institute;
- Commissioners of Irish Lights

Two responses were received in relation to the original application made in January 2020 from: Maritime Services Division, Department of Transport, Tourism and Sport; and Maritime Safety Policy Division, Irish Maritime Administration, Department of Transport, Tourism and Sport

Two responses were received in relation to the revised application made in September 2020 from: Maritime Safety Policy Division, Irish Maritime Administration, Department of Transport; and the Sea Fisheries Protection Authority.

The observations received are shown in the Ramboll Report at Appendix 1.

VII. Public Consultations on Original Application

Public consultations were carried out on the originally submitted (and subsequently withdrawn) application to carry out the proposed flexible flowline replacement works at the P6 wellhead, between January and July 2020. A number of responses were received from members of the public during these consultation processes which are relevant to the assessment of the current application, in circumstances where the works proposed to be carried out are the same.

Accordingly, and in keeping with the spirit of the Directive and the objective of public participation, the observations received from members of the public during the public consultation processes in respect of the originally submitted (and subsequently withdrawn) application by Vermillion to carry out the proposed flexible flowline replacement works at the P6 wellhead have been taken into account as part of the assessment of the resubmitted application. The following observations were received during the public consultations on the originally submitted application:

- Response from a private individual (name withheld for privacy) dated 28th February 2020.
- Response from a private individual (name withheld for privacy) dated 18th June, 2020;
- Response from a private individual (name withheld for privacy) dated 2nd July, 2020.

The consultation responses received (including the project specific observations) are shown in the Ramboll Report at Appendix 1.

VIII. Public Consultation on Vermillion Application (resubmitted September 2020)

The Vermillion application to carry out the proposed flexible flowline replacement works at the P6 wellhead was resubmitted in September 2020. The resubmitted application and accompanying documents were published on the Department website on 18th September 2020 and the public invited to make submissions thereon during a 30 day public consultation period ending on 18th October 2020. One response was received to this consultation and the points raised have been considered as part of the EIA Screening process:

- Response from Irish Whale and Dolphin Group dated 16th October 2020.

The consultation responses received (including the project specific observations) are shown in the Ramboll Report at Appendix 1.

IX. Vermillion Application: EIA Screening Assessment and Determination

In carrying out the EIA Screening Assessment of the Vermillion application in accordance with the Annex III criteria, I have carefully considered the information contained in the following documents:-

- Documents provided by the Applicant:
    - Application Letter to Conduct an Offshore Survey
    - Corrib Field P6 Flexible flowline Installation EIA Screening and Environmental Risk Assessment, dated September 2020, prepared by RSK on behalf of Vermillion;
    - Corrib Field P6 Flexible flowline Installation Natura Impact Statement, dated September 2020, prepared by RSK on behalf of Vermillion ,
    - Corrib P6 Flexible flowline Method Statement, dated August 2020.

- EIA Screening Determination for Corrib Field P6 Flexible Flowline Installation prepared by Ramboll (included at Appendix 1);
- Submissions received during the public consultation processes, including those on the withdrawn application;
- Responses received from notified bodies on the original application from Maritime Services Division, Department of Transport, Tourism and Sport; and Maritime Safety Policy Division, Irish Maritime Administration, Department of Transport, Tourism and Sport; and
- Responses received from notified bodies on the resubmitted application from Maritime Safety Policy Division, Irish Maritime Administration, Department of Transport; and the Sea Fisheries Protection Authority.

In carrying out an EIA Screening Assessment of the Vermillion application to determine whether the proposed flexible flowline replacement works at the P6 wellhead (including as-found survey/positioning requirements and as-left survey requirements) would, or would not, be likely to have significant effects on the environment, it is necessary to have regard to, *inter alia*, the relevant selection criteria as outlined in Annex III of the EIA Directive.

As evidenced in the Ramboll Report, when carrying out their assessment of the proposed flexible flowline replacement works / survey and positioning requirements, Ramboll considered the different project elements by reference to the Annex III criteria.

In this context the following elements were considered:

- **Characteristics of the Project**, with particular regard to size and design of the development, cumulation with other existing or approved developments, use of natural resources (particularly land, soil, water and biodiversity), production of waste, pollution and nuisances, risk of major accidents and/or disasters relevant to the project including climate change, risks to human health.

- **Location of the Project**, with particular regard to: existing and approved land use, relative abundance, availability and regenerative capacity of natural resources in the area, absorption capacity of wetlands, riparian areas and river mouths, absorption capacity of the natural environment (paying particular attention to coastal zones and marine areas, nature reserves and parks, areas classified or protected under national legislation, areas where there has been a failure to meet environmental quality standards or in which it is considered there is such a failure, landscapes and sites of historical, cultural or archaeological significance).

- **Types and characteristics of potential impact** of the proposed flexible flowline replacement works with regard to the impact on the factors specified in Article 3(1) of the EIA Directive,

taking into account: the magnitude and spatial extent of the impact, the nature of the impact, the transboundary nature of the impact, the intensity and complexity of the impact, the probability of the impact, the expected onset, duration, frequency and reversibility of the impact, the cumulation of the impact with the impact of other existing and/or approved projects and the possibility of effectively reducing the impact.

Based on careful consideration of the above referenced documentation by reference to the Annex III criteria:

- I agree with and adopt the conclusions reached in the Ramboll Report (at Appendix 1) regarding the adequacy of the information provided by the Applicant and accordingly am satisfied that Vermillion has provided sufficient information to enable an EIA Screening Assessment of the proposed works to replace the existing flexible flowline connecting the P6 subsea wellhead with the Corrib central manifold, leaving the decommissioned flowline in situ in a preserved state on the seabed.

- I further agree with and adopt the Ramboll responses to:

    - the submissions received from Notified Bodies: Maritime Services Division, Department of Transport, Tourism and Sport; the Maritime Safety Policy Division, Irish Maritime Administration, Department of Transport; and the Sea Fisheries Protection Authority, set out in section 2.3.1 of the Ramboll Report; and
    - the project specific observations received during the public consultation process, as set out in section 2.3.4 of the Ramboll Report.

- As regards the general consultation responses, set out at section 2.3.3 of the Ramboll Report, I agree that these are outside the scope of the EIA screening assessment of the application and that the issue of reporting on the current application is addressed in the Ramboll responses to the project specific observations received at section 2.3.4 of the Ramboll Report. As also noted by Ramboll at section 2.3.3, a detailed response was issued to the member of the public who queried the duration of public consultation on applications. This explained that , an initial 30 day public consultation is carried out on the application documents and, where the EAU requests additional information from an applicant for the purposes of EIA Screening, the additional information received is published on the Department website and a supplemental public consultation of 14 days is carried out on the supplemental information received (i.e. in addition to the original 30 day consultation carried out on the application). Further, that if it is determined, following screening, that an EIA is required, a 30 day public consultation is carried out on the environmental impact assessment report submitted by the applicant (in accordance with Article 6 of the EIA Directive.

- Having considered the EIA Screening and Environmental Risk Assessment Report prepared by RSK on behalf of Vermillion in respect of the proposed works, I note (in particular) that the results of the EIA Screening Assessment – as presented in Table 4.1 of the Applicant Report –reaches an overall conclusion that the proposed works to replace the existing flexible flowline connecting the P6 subsea wellhead with the Corrib central manifold, leaving the decommissioned flowline in situ in a preserved state on the seabed does not require Environmental Impact Assessment. I further note the detailed mitigation commitments contained in section 6 of the RSK report, which are relevant to their assessment.

- I agree with and adopt the EIA Screening Assessment carried out by Ramboll in respect of the Vermillion application to replace the existing flexible flowline connecting the P6 subsea wellhead with the Corrib central manifold, leaving the decommissioned flowline in situ in a preserved state on the seabed (and including as-found survey/positioning requirements and as-left survey requirements) by reference to the Annex III criteria and the conclusions reached in the Ramboll Report. Having assessed the information provided by Vermillion by reference to the Annex III criteria, section 5 of the Ramboll Report goes on to set out in detail the mitigation and management commitments made by Vermillion to avoid or reduce any potential impacts on the environment. The Ramboll Report agrees with the EIA Screening Assessment carried out by RSK on behalf of Vermillion and concludes that, given the nature, size and location of the proposed project activities and the mitigation commitments made by the applicant, likely significant effects on the environment are not predicted, either from this project alone or in combination with other plans or projects.

Accordingly, I am satisfied and have decided that the proposed works to replace the existing flexible flowline connecting the P6 subsea wellhead with the Corrib central manifold, leaving the decommissioned flowline in situ in a preserved state on the seabed is not likely to have a significant effect on the environment and, consequently, an Environmental Impact Assessment is not required in respect of the proposed works the subject of the Vermillion application, subject to the implementation of the mitigation measures referred to in Section 5 of the Ramboll Report, which I adopt and set out in Table 1 of this Determination (below). This decision is contingent on the inclusion of these mitigation measures in any consent that may be granted in respect of this application.

Further, should an alternative vessel be proposed, Vermillion must seek approval from the Department prior to commencement of the proposed activities. In this event, confirmation will be required that the survey equipment and methodology on any replacement vessel are equivalent to that described in the EIA Screening Report and that the description of the development used to inform the Environmental Risk Assessment is still valid. Accordingly, this decision is further contingent on this requirement also being included as a condition of any consent granted in respect of this application.

The Applicant can be informed of this EIA Screening Determination and the public will also be informed with the Determination being published on the Department's website and notice thereof being published in a national newspaper.

Jean Clarke

Environment Advisory Unit, 16th December , 2020
Department of the Environment, Climate and Communications

Judicial Review

Please note that the validity of this EIA Screening Determination may be questioned by Judicial Review under Order 84 of the Rules of the Superior Courts (S.I. No.15 of 1986), as amended. Any application for leave to apply for judicial review must be made promptly and in any event within three months from the date of the Determination. Practical information on judicial review can be obtained from the Citizens Information Board, Ground Floor, Georges Quay House, 43 Townsend Street, Dublin 2 or online (www.citizensinformation.ie) or from the Courts Website (www.courts.ie).

Table 1: Mitigation measures required to be specified in any Consent that may be granted

Discipline	Mitigation Measure Proposed	Industry Standard	Project Specific
Physical Presence	The work will be scheduled so as to minimise the duration of the project activities and to confine activities to as small an area as possible (i.e. directly over the pipeline and umbilical route, and other seabed assets being surveyed).		X
	Dedicated MMO and vessel crew will monitor for any interactions with Annex IV species that cause concern	X	
	Acoustic Survey equipment will be mounted directly on ROV reducing the likelihood of interaction (such as entanglement) with Annex IV species.		X
	Other equipment such as the replacement flexible flowline, rock gabions and concrete mattresses will be lowered to the seabed using a taut vertical cable, reducing the likelihood of interaction (such as entanglement) with Annex IV species.		X
	The degree of physical presence of equipment and material on the seabed during construction will be confined to as small an area as possible in order to limit the spatial extent of disturbance. Works will also be undertaken over a short duration.		X
	The ROV support vessel will be largely stationary and confined to the immediate area of operations at the Corrib Field.		X
Physical Disturbance	The existing flexible flowline will be moved only at the ends where it joins to the P6 wellhead and at the Corrib Central Manifold in order to minimise disturbance to the seabed and limit the degree of resuspension of seabed sediments.		X
	At the end of the installation works, the work site on the seabed will be reinstated and where possible equipment and materials will be removed. An As-Left survey will be undertaken to confirm that the work site has been left in as good a state as possible prior to departure.	X	
	The existing flowline will be preserved for future use in situ on the seabed, thus minimising the disturbance to the seabed environment that would be caused by its removal, but also ensuring that it can be reused in the future.		X
Interactions with Other Sea Users	Fisheries liaison procedures in place to mitigate interaction with fisheries and other users. This liaison will include relevant fisheries and other maritime organisations to communicate the operations and survey schedule and enable activities to be planned accordingly.	X	
	All works will be within the fisheries exclusion zone at the Corrib Field and a Notice to Mariners should be issued prior to the works commencing.	X	
Under water Noise	At the start of proposed activities, power will increase slowly from a low intensity (a 'soft start') to encourage avoidance reactions by marine mammals, fish and marine	X	

Discipline	Mitigation Measure Proposed	Industry Standard	Project Specific
	reptiles.		
	The ROV support vessel operator must provide a report (including a daily log) on the operation of survey equipment that will indicate the soft starts and their duration to the Marine Mammal Observer (MMO, see Mitigation for Marine Megafauna below). This information will be made available to the NPWS	X	
	Following NPWS Guidance (2014) This includes pre-start monitoring, soft start, and guidance on breaks in sound output.		X
	A qualified and experienced Marine Mammal Observer (MMO) will be present onboard the ROV support vessel. The MMO will have undergone marine mammal observation training (JNCC or equivalent) and have spent a minimum of six weeks of marine mammal survey experience at sea over a three-year period	X	
	The MMO must submit a report, as outlined in the NPWS code of practice, within 30 days of completion of the proposed activities to the relevant Licencing Authority, and copy the report to the NPWS	X	
	The MMO must use a distance measuring stick, reticle telescope or binoculars to ascertain distances to marine mammals.	X	
	Pre soft start scans (pre-start monitoring) Sound-producing activities will only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, has been achieved. Where effective visual monitoring is not possible, the sound producing activities shall be postponed. • Effective visual monitoring determines the presence or absence of megafaunal species before sound-producing activities commence, and should be undertaken in good weather conditions, where the sea state is low and visibility is good (no fog, heavy rain). • MMOs should survey the area for the presence of species 30 minutes before the onset of the soft start. • A minimum distance of 500 m is required between the centre of the sound source and the nearest species before soft start can commence. • If species seen within 500 m of the centre of the sound source the start of the sound source(s) should be delayed until they have moved away, allowing adequate time after the last sighting for the animals to leave the area (30 minutes). If species do not leave the area it is recommended that the vessel alters course to ensure that the animals are outside the 500 m exclusion zone when soft start commences (This measure may not be implementable, as survey operations will be undertaken while the vessel is	X	

Discipline	Mitigation Measure Proposed	Industry Standard	Project Specific
	stationary with equipment deployed to the seabed at the Corrib Field). • An agreed and clear on-site communication signal must be used between the MMO and the Works Superintendent as to whether the relevant activity may or may not proceed, or resume following a break (see below). It shall only proceed on positive confirmation with the MMO. • Soft start should commence after a 500 m area around the vessel has been confirmed clear of species for 30 minutes.		
	Soft Start/Ramp up procedure • In commencing an acoustic survey operation, the following soft start (or ramp up) must be used, including during any testing of acoustic sources, where the output peak sound pressure level from any source exceeds 170 dB re: 1µPa @1m: a. Where it is possible according to the operational parameters of the equipment concerned, the device's acoustic energy output shall commence from a lower energy start-up (i.e., a peak sound pressure level not exceeding 170 dB re: 1µPa @1m) and thereafter be allowed to gradually build up to the necessary maximum output over a period of 20 minutes. b. This controlled build-up of acoustic energy output shall occur in consistent stages to provide a steady and gradual increase over the ramp up period (e.g., output peak sound pressure level of 170 dB→ 180 dB→ 190 dB→ 200 dB→ 200+ dB over 20 minutes). c. Where the acoustic output measures outlined in steps (a) and (b) are not possible according to the operational parameters of any such equipment, the device shall be switched "on" and "off" in a consistent sequential manner over a period of 20 minutes prior to commencement of the full necessary output. • In all cases where a ramp up procedure is employed the delay between the end of ramp-up and the necessary full output should be minimised to prevent unnecessary high-level sound introduction into the environment. • Once the ramp up procedure commences, there is no requirement to halt or discontinue the procedure at night-time, nor if weather or visibility conditions deteriorate nor if species occur within a 500 m radial distance of the sound source, i.e., within the Monitored Zone.	X	

Discipline	Mitigation Measure Proposed	Industry Standard	Project Specific
	Break in sound input • If there is a break in sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down, survey line or station change) then all pre-start monitoring and a subsequent ramp up procedure (where appropriate following pre-start monitoring) must be undertaken. • For higher output survey operations which have the potential to produce injurious levels of underwater sound a shorter 5 - 10 minute break limit is required after which period all pre-start monitoring and a subsequent ramp up procedure (where appropriate following pre-start monitoring) shall recommence as for start-up.	X	
Atmospheric Emissions	Regular maintenance of onboard engines in line with MARPOL 73/78 Annex VI; Maritime Registry of Shipping (MRS); and any other similar requirements.	X	
	The use of a modern vessel that complies with the Clean Design class requirements for fuel efficiency and emissions control.	X	
Discharges to the Sea	Shipboard waste disposed of in accordance with MARPOL 73/78 Annex V with the biochemical oxygen demand of sewage and galley waste discharges reduced to 50 mg/l and macerated to less than 25 mm, using a treatment process before release	X	
	Material Safety Data Sheets (MSDS) will be made available for any chemicals to be used. Chemicals used will be where possible PLONOR listed or registered on the OCNS and assessed under the OSPAR HMCS based on their toxicity in the aquatic environment. Chemicals considered for use as part of this work scope are assessed as having the least impacts in the aquatic environment based on toxicity, biodegradation and bioaccumulation. In addition, the volumes of chemicals that are to be discharged should be kept to a minimum.	X	
Accidental release	Refuelling of the vessel will not be undertaken at sea but in port where spills, although unlikely to happen, can be responded to more easily, and will reduce the risk of any exposure to marine life.		X
	The vessel will operate with strict safety, navigational, operating and communications procedures in place in order to avoid collisions. This will include the use of Automatic Identification System (AIS) tracking, adherence to the Collision Regulations, communication with other vessels and 24 hour look ahead plans.		X
	The fuel to be used by the vessel is regular marine grade oil (MGO) and not heavy fuel oil (HFO) that could represent a greater environmental hazard if spilled.		X

Discipline	Mitigation Measure Proposed	Industry Standard	Project Specific
	Onboard the vessel, the valves between fuel tanks will be kept closed, thereby minimising the potential for complete fuel loss. Refuelling will occur according to a specific procedure.		X
	The vessel is built according to Clean Design class requirements and as such is of double-hulled design, further reducing the likelihood of a loss of inventory of fuel oil in the event of a collision or grounding.		X
	Maintenance, audit and inspection plans will be in place to mitigate the potential risk of an oil leak at an early stage.	X	
	Shipboard Oil Pollution Emergency Plans (SOPEP), spill mitigation equipment and other facilities are kept onboard the vessel in order to contain or minimise spills, the vessel crew will be trained in the use of the plans and equipment.	X	
	The Emergency Response Plan will set out how spill response resources (personnel, command structure, equipment etc.) will interface, including co-ordination between other operational and survey operators, if applicable.	X	
Archaeology	Not applicable since there are no features of archaeological significance present, based on the previous work undertaken by the applicant.		
General	Use of the lowest equipment output possible in order to obtain the desired data quality	X	
	Vessel(s) working on the Corrib Project will operate in accordance with the Vessel Code of Conduct for Inspection and Maintenance Surveys (Document No. COR-14-SH-0227, 2018). This document forms part of the Operators Environmental Management Plan (EMP) and details specific measures for vessel operators to avoid impacts to marine mammals (particularly small cetaceans). Where at all possible when operating acoustic geophysical survey equipment as part of the As-Found and As-Left surveys the principles of the vessel Code of Conduct will be followed as a matter of good environmental practice.	X	