Tender for Fate of Pipelines

Introduction to requirement

The INSITE Programme is an innovative European-wide research programme that has so far attracted nearly £10 million total funding and delivered 18 projects, with 17 research institutions from the UK, Netherlands, Germany Belgium and Norway. Since 2015, INSITE has established a model of collaboration between the scientific community and the oil and gas industry.

INSITE Phase 2 is due to end in August 2025 and has produced research on biochemical processing of contaminants and seabed community effects (Functionality and Ecological Connectivity of Man-Made Structures project (FuECoMMS[1]), Subsea Plastics Project, and review of decommissioning studies (Decommissioning – Relative Effects of Alternative Management Strategies project; DREAMS[2]). This call is to continue Phase 3 of this critical work. INSITE Phase 3 is also partnered with the Natural Environment Research Council-funded Value of the Marine Artificial Structures (ValMAS[3]) programme, which is looking to develop an enhanced understanding of the environmental effects and ecological consequences of MAS in the North Sea basin.

INSITE Phase 3 research is looking to align with this by focusing on the effects of decommissioning Marine Artificial Structures (MAS) structures to provide evidence to inform decommissioning strategies, individual asset decommissioning, environmental risk associated with topics of interest (e.g. fates of contaminants), and engagement with regulators and advisory bodies.

INSITE Phase 3 has two operational stages: the **project phase** (19 months) and the **impact phase** (6 months). During the project phase, successful projects are expected to commence research activity in September 2025 and to deliver their research outputs by March 2027. During the impact phase, commencing April 2027, project and wider-programme activity will focus on dissemination of research findings, stakeholder and policy engagement until the end of the programme in September 2027.

Background of the project

A project to investigate the fate of materials from rigid oil and gas pipelines decommissioned in place and their potential for impact in the marine environment over the long-term, i.e. over the next 100s of years. The current assumption is that the final fate of pipeline materials is dissolution and/or breakdown to smaller particles, be that metals and metal oxides or degradation products of other constituents. These smaller particles may be transported away from the decommissioned structures they originated from. However, there is limited information on breakdown mechanisms, particle size distributions and potential transport distances, so little understanding of the final contaminant concentrations, whether particles and associated contamination move

[1] https://insitenorthsea.org/project/functionality-and-ecological-connectivity-of-man-made-structures-fuecomms/
[2] https://insitenorthsea.org/project/decommissioning-relative-effects-of-alternative-management-strategies-dreams/
[3] https://www.ukri.org/opportunity/value-of-marine-artificial-structures-valmas/

large or small distances, or if there are areas of accumulation on the seafloor, and so limited understanding of the significance of such contamination.

The aim of this project is to enhance our understanding of the fate and transport of breakdown products from rigid pipelines left in-situ, which is to be achieved through understanding degradation particle size, particle movement dynamics and potential to disperse from the original in-situ decommissioning site. The project must also evaluate the risks and significance of findings and consider how this relates to relevant policies, such as the OSPAR North-East Atlantic Environment Strategy (NEAES)[4], UK Marine Strategy Programme of Measures 2025[5] (Department for Environment, food and Rural Affairs (Defra), and guidelines for Decommissioning of Offshore Oil and Gas Installations and Pipelines[6] (Offshore Petroleum Regulator for Environment and Decommissioning (OPRED).

The project will consist of degradation studies to mimic long-term corrosion and abrasion of pipeline materials and evaluate the particle size distribution of breakdown products. Lab-based studies will evaluate particle movement dynamics and modelling to understand the fate of breakdown products. The project will be supported by desk-based studies but mainly informed by monitoring data (requiring industry support) collected from sediments in-situ over full MAS lifecycles, including after decommissioning. The desk-based and monitoring information will be combined with modelled information of contaminant impact pathways, geological processes, hydrodynamics and microbial bioremediation to evaluate the significance of the dispersal of breakdown products from rigid pipelines left in-situ.

Scope of project requirements

All objectives and their stated requirements must be addressed in your proposal.

1. **Objective 1: Preliminary literature review**
   The project will carry out a preliminary literature review to determine the breadth and depth of the evidence base on the consequences of rigid pipeline decommissioning, focusing on the breakdown processes of pipeline materials and the fate of those materials over **short-** (0-5 years), **medium-** (5-30 years) and **long-term** (30-100s years) periods. This should be undertaken alongside industry engagement so that relevant knowledge and industry reports are included in the process. Topics to be reviewed should include but not be exhausted to:

   a. The **types of materials rigid pipelines** are comprised of or contain, with quantities in appropriate units that may be considered for material breakdown studies to include (non-exhaustive list):
      - Residual process fluids, such as hydrocarbons and persistent chemicals, e.g. wax, in water, sediments and structures;
      - Heavy metals;

[4] https://www.ospar.org/convention/strategy
[5] https://assets.publishing.service.gov.uk/media/67990f039a6dc0352ab341e1/Marine_strategy_part_three_-_2025_UK_programme_of_measures.pdf
[6] https://assets.publishing.service.gov.uk/media/5c00f3f3e5274a0fdaaaa0f7/Decom_Guidance_Notes_November_2018.pdf

    - Mercury, e.g. methylmercury (INSITE Programme team to support collaboration with Industry to share relevant work relating to methylmercury);
  - Steel and metal oxides;
  - Concrete, mattresses and rock armour;
  - Paints and coatings, e.g. coal tar enamel, plastics, asbestos;
  - Naturally Occurring Radioactive Materials (NORM);

b. The **physical and chemical characteristics of the breakdown products** from rigid pipelines;

c. **Material degradation, particle and biochemical breakdown pathway** studies of identified materials that consider how far they disperse over time from oil and gas structures;

d. Possible **environmental effects of pipeline-associated breakdown products** over time and space, including but not limited to:

  - Changes to contaminant levels of key substances in sediments;
  - Physical changes to sediment properties;
  - Water quality, hydrographic changes and plankton;
  - Benthic habitats, biodiversity and biomass changes on structures and seabed;
  - Fish assemblage changes, with implications for commercial stocks;
  - Endangered, threatened or protected species changes.

It is expected that a broad range of sources will be consulted in this review in order to inform the evidence gaps in Objective 2 and enable a suitable synthesis of information in Objective 6. Useful sources to be included in this review, but not limited to, are:

- Environmental Impact Assessments (EIAs);
- Strategic Environmental Assessments (SEA[7]);
- Academic research (especially those from the INSITE Plastics project, the National Decommissioning Centre (NDC) Nuclear industry and waste evidence project[8], the National Decommissioning Research Initiatives (NDRI) accelerated breakdown studies (Potential contaminants released in the marine environment if structures remain in-situ projects[9]) and Environmental Risk Assessment framework for the offshore decommissioning of NORM and mercury contaminated oil and gas infrastructure;
- Data from the North Sea Environmental Portal[10];

[7] https://www.gov.uk/government/collections/offshore-energy-strategic-environmental-assessments
[8] https://www.ukndc.com/research/current-projects/
[9] https://ndriaustralia.org/research
[10] https://www.northseaenvironmentportal.eu/

- Data from industry partnerships (INSITE Programme team to support collaboration with Industry to share relevant work, e.g. International Association of Oil and Gas Producers (IOGP) Plastics Joint Industry Partnership).

2. **Objective 2: Gap analysis and prioritisation**

   The project will carry out a gap analysis of the literature review results to prioritise areas of study where evidence is lacking, so that these can be targeted by activities in this project. There are three expected outcomes of this first objective:

   - To identify the evidence base where findings in the literature can be consolidated to represent material breakdown processes and pathways sufficiently and accurately for the purposes of this project;
   - To identify gaps in the evidence base to be targeted by this project;
   - To identify the evidence that is not relevant to this project and can be dropped from further analysis.

3. **Objective 3: Material breakdown studies of key materials**

   Conduct accelerated degradation studies of materials lacking reliable evidence of breakdown processes, pathways and products, as identified in Objective 2. Test different breakdown pathways, such as corrosion and abrasion, that mimic the breakdown of pipeline materials over **short-** (0-5 years), **medium-** (5-30 years) and **long-term** (30-100s years) time frames, and evaluate the particle size distribution and chemical nature of breakdown products.

4. **Objective 4. Geospatial movement of key breakdown products**

   Using environmental modelling and supporting lab-based studies, if needed, evaluate particle movement dynamics and geospatial transport of breakdown products from rigid pipelines over **short-** (0-5 years), **medium-** (5-30 years) and **long-term** (30-100s years) time frames. Priority must be given to breakdown products lacking reliable evidence of their particle movement dynamics and geospatial transport, as identified in Objectives 2 and 3. Factors such as hydrodynamics, bathymetry, sediment transport, temperature regimes and biologically-assisted dispersal will need to be considered to model the dispersal and sinks/burial locations of end products relative to their original sources, i.e. decommissioned rigid pipelines in situ.

5. **Objective 5: Effects and risks of material breakdown and dispersal**

   Using the combined understanding of material breakdown (Objective 3) and breakdown product dispersal (Objective 4), describe the potential environmental effects of rigid pipeline material breakdown over **short-** (0-5 years), **medium-** (5-30 years) and **long-term** (30-100s years) time frames. These effects should be evaluated against a **suitable environmental baseline** that can be used to track changes in the

environment, such as against the descriptor status assessments in the OSPAR Quality Status Report 2023. Effects should be estimated for at least the following environmental receptors:

- Changes to contaminant levels of key substances in sediments;
- Physical changes to sediment properties;
- Water quality, hydrographic changes and plankton;
- Benthic habitats, biodiversity and biomass changes on structures and seabed;
- Fish assemblage changes, with implications for commercial stocks;
- Endangered, threatened or protected species changes.

A **risk assessment** must also be carried out to capture risks of combined effects of breakdown pathways and products to understand significance of potential impacts of breakdown products and how this relates to current policies, including the OSPAR's NEAES 2030 and UK Marine Strategy Programme of Measures 2025, and OPRED's Decommissioning of Offshore Oil and Gas Installations and Pipelines guidelines.

6. Objective 6: Evidence synthesis of findings

Collate findings from material breakdown study (Objective 3), movement of breakdown products (Objective 4), effects and risks of breakdown products (Objective 5), all of which investigated evidence gaps, and combine with evidence-rich topics from the literature review (Chapter 1) to create a comprehensive synthesis of the **short-** (0-5 years), **medium-** (5-30 years) and **long-term** (30-100s years) implications of decommissioning rigid pipelines in-situ. Suggested chapters for the report are as follows:

Suggested chapter	Description
Summary of key findings	Key take-away messages for rapid dissemination
Background context	Summarise decommissioning challenge for rigid pipelines, policy landscape and literature review highlights
Rigid pipeline materials, breakdown processes, pathways and dispersion (short-, medium- and long-term)	Descriptions of rigid pipeline constitution, materials, breakdown process and dispersion over short-, medium- and long-timeframes
Short-term environmental effects and risks	Combining evidence-rich sources from the literature review (Chapter 1) with findings from this study report the most significant short-term effects (0-5 years) to the environmental receptors from chapter 5
Medium-term environmental effects and risks	Combining evidence -ich sources from the literature review (Chapter 1) with findings from this study report the most significant medium-term effects (5-30 years) to the environmental receptors from chapter 5

Long-term environmental effects and risks	Combining evidence-rich sources from the literature review (Chapter 1) with findings from this study report the most significant long-term effects (30-100s years) to the environmental receptors from chapter 5
Recommendations for policy and evidence gaps	Summarise recommendations for proposed changes to policy areas, highlight areas of policy alignment and misalignments and identify remaining key evidence gaps
Bibliography	List of all literature and policies reviewed in this study

7. **Objective 7: Work in collaboration with the other INSITE projects**

   The project will work collaboratively with the INSITE programme team and INSITE project teams, including the "Value of Marine Artificial Structures" programme (ValMAS[11]), to co-deliver the objectives of the INSITE programme and projects (as stated in INSITE website[12]).

   The project team will need to attend programme co-ordination meetings (approx. twice a year) to share updates and actively contribute to programme discussions. There is an expectation that findings from all INSITE projects, including this one, will be communicated with the other INSITE projects, where appropriate, to create greater cohesion across the programme. Note that academic credit and acknowledgement of any shared findings will be ensured where this happens.

   During the impact phase of INSITE, March 2027-September 2027, the project will work with the INSITE programme team to co-deliver a range of activities that best communicate findings, engage with stakeholders and policy makers using effective impact pathways.

Deliverables and expected outcomes of the project

All expected deliverables and outcomes must be addressed in your proposal.

Expected deliverables

- **Preliminary literature review report/ gap analysis** (Objective 1 and 2)
- **Main project report (synthesis of findings)** following suggested chapter structure (Objective 6) but to be determined in inception meeting after project award.
- **Policy brief –** a summary (2-4 pages) of the key findings from this project intended for communication with regulator and policy-focused audiences (for examples see INSITE policy briefs[13]).
- **Conference presentations** at the INSITE Structures in the Marine Environment conference (SIME), held in May/June 2026 and 2027
- **Project webinar** to communicate key findings, with a panel question session for discussion. Webinar will be recorded and posted on YouTube for added viewing afterwards.

[11] https://www.ukri.org/opportunity/value-of-marine-artificial-structures-valmas/
[12] https://insitenorthsea.org/
[13] https://insitenorthsea.org/webinars/

- **Content updates for INSITE webpage** to present key findings as project progresses and to keep stakeholders up-to-date.
- **Key stakeholder briefings** to communicate key findings to selected stakeholders, e.g. regulators, policy makers, SNCBs, targeting areas of policy need.

Although not a stated deliverable for this project the publication of articles in scientific journals is strongly encouraged for all INSITE projects.

Expected impact outcomes

1. Essential evidence is created to better understand short-, medium- and long-term effects of the breakdown pathways, products and consequences of materials from rigid pipelines left in situ.
2. The importance of factors such as bioremediation, temperature, current flows, sediment transport and disturbance are better understood in the breakdown of materials left in situ.
3. There is greater potential for this evidence to influence management approaches in the marine environment, leading to optimum decommissioning management of pipelines.
4. Project findings may have high relevance to other sea users and offshore industries, e.g. fishing and offshore wind, potentially influencing future approaches taken in those industries.

Commissioning process

The INSITE Programme currently has 3 live invitations for tender. Interested parties are invited to tender for any or all of these opportunities. The cost of any submission should be in the range of £50,000 to £500,000. Bids at the upper end of this range should address more than one of the invitations to tender. You must declare any third-party funding being used to supplement this research.

A copy of the Research Contract you as the Research Provider will be asked to sign upon award is attached to this call, by submitting an application to INSITE Phase 3 you agree to the terms within that contract without variation. If there are any variations you as Research Provider would require to enable participation in INSITE Phase 3, these must be stated within your application.

This commissioning process will be carried out in two stages:

1. An open call for **outline proposals** goes live on 17 April 2025 and will close on 25 May 2025 (5 weeks). Any documents submitted after this will not be considered. The assessment for outline proposals will be within 5 weeks of this date, any clarifications and/or notification of invitation to the next stage will be provided by 26 June 2025. Failure to respond to clarifications within this period may result in your proposal being removed from consideration.

2. The second stage of commissioning will be closed to only selected proposals, who will be invited on or before 27 June 2025 to submit a full, **detailed proposal** by 3 August 2025 (5 weeks). Any documents submitted after 3 August 2025 will not be considered. Assessment of the detailed proposals will be from 4 August to 11 September 2025. Any clarifications and/or notification of award will be within 6 weeks of final submission. Failure to respond to clarifications within this period may result in your proposal being removed from consideration.

Dates for these two commissioning stages are summarised here:

Commissioning stage	Dates
Open call for outline proposals	17 April – 25 May 2025
Assessment and feedback for outline proposals	26 May – 26 June 2025
Closed call for detailed proposals (to successful outline proposals only)	27 June – 3 August 2025
Assessment and feedback for outline proposals	4 August – 11 September 2025
Project awards	From 12 September 2025

Preparation of project tenders

1. **Outline call proposals**

   The requirements for outline call proposals are to submit the following by 25 May 2025:

   - 500-word summary of the proposed project and how it answers the 'challenges',
   - The core team with assigned roles,
   - 500 words on their capability to deliver,
   - 1000 words on the outline vision and how it aligns with the 'Expected Outcomes & Impact'
   - 1000 words on the approach,
   - A timeline for proposed delivery and a table of outline costs.

2. **Detailed call proposals**

   The requirements for detailed call proposals are to submit the following by 3 August 2025:

   - A maximum of 5000-word project proposal which summarises the project, shows the vision of the project, details the approach they will take.
   - A maximum of 1000 words as to how the outputs for this project proposal will achieve impact.

- Up to 500-word mini-CVs for the core applicant delivery team, showing they have relevant experience, and balance of skills.
- List of any project partners and their contributions, with letters of support to be uploaded alongside the application as a separate PDF.
- A full project delivery plan, with clearly defined milestones for payment.
- A full cost breakdown of the proposed project including any subcontractor, facility, additional funding, partner contributions and equipment needs.
- A project risk assessment including if there are any ethical or responsible research and innovation concerns relating to the proposed project.
- Quality standards of the lead organisation
- Data Management and sharing approach

Tender evaluation process

Project proposals will be assessed in a two-step process. First, they will be assessed against **scientific excellence and engagement criteria**. This will be carried out by the INSITEs independent Science Advisory Group. All proposals must pass this first assessment to be considered for the second assessment.

The second step assesses against **industry relevance criteria**. This assessment will be carried out by INSITEs Industry Executive Committee. The final decision to award a project will be made in this second assessment step, after a project has demonstrated scientific excellence and engagement, as well as industry relevance.

The following describe the INSITE assessment criteria against which project proposals will be assessed.

Project assessment criteria:

Step 1 - Science excellence & engagement (Pass 55/80)

Category	Description	Score
Approach	The proposal must demonstrate how the proposed work: - Is the project design appropriate, valid, and reliable for addressing the research question? - Is the proposed budget and timeline realistic? - Are the proposed data collection methods accurate and reliable? - Is there strong Quality Management Processes built into the proposal? - Are the proposed methods for data analysis appropriate and statistically sound? - Is the research is designed in a way that allows for replication and verification by other researchers? - Is the proposal clearly written and easy to understand? - Is the proposed project logically structured? Do you think it will successfully address the requirement?	40 (Pass 30/40)

	- Does the proposal summarise any relevant previous work by the Research Team and describes how this will be built upon and progressed? - Will the research outputs be effectively communicated to deliver project impact?	
Vision	The proposal must demonstrate how the proposed work: - Does the proposed research address the questions in the project tender document? - Is the proposed solution novel, does it have the potential to advance current understanding, or generate new knowledge, thinking or discovery within or beyond the field? - Does the proposed research contribute to the outcomes in the project tender document? - Does the proposed research have the potential to influence future research, practice, society, the economy or the environment? - Does the proposed research demonstrate it is of excellent quality and importance within or beyond the field of decommissioning science?	20 (Pass 15/20)
Capacity to deliver	The proposal must provide evidence of how the delivery team have: - Do the proposed Research Team have the right skill sets to deliver this work? - Do the proposed Research Team have the right background, experience and expertise to address the research question? - Do the proposed Research Team have the appropriate leadership and management skills to deliver the work and their approach to develop others?	20 (Pass 10/20)

Step 2 - Industry relevance (Pass 15/20)

Category	Description	Score
Industry Relevance	- Does the proposal address the Research Question? - Do the proposed project deliverables provide something of value to you? - Does the proposal approach clearly demonstrate what the impact of the project will be once complete? - As a member of the IEC do you feel this proposal delivers to the tender requirements the IEC approved?	20 (Pass 15/20)
	Total	100 (Pass 70/100)