

NIA Project Registration and PEA Document

Date of Submission

Aug 2026

Project Reference Number

NIA3_NGET0024

Project Registration

Project Title

TIDAL – Transforming Investigations through automated seabed Data acquisition for Anderby Landfall

Project Reference Number

NIA3_NGET0024

Project Licensee(s)

National Grid Electricity Transmission

Project Start

September 2026

Project Duration

0 years and 8 months

Nominated Project Contact(s)

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Project Budget

£836,474.00

Summary

TIDAL will evaluate the first deployment of the Ammonite seabed CPT crawler on a UK offshore transmission project. The project will demonstrate a beach-launched crawler-based methodology for nearshore geotechnical investigation at the EGL5 landfall at Anderby Creek, Lincolnshire. The survey will deliver 13 deep push cone penetration tests (CPTs), up to 52 in-situ thermal conductivity measurements and at least two vibrocore samples. The project will assess whether this approach can provide a safer, lower-cost and more efficient alternative to conventional nearshore investigations that rely on jack-up vessels and large marine spreads. Technical and operational learning will be generated on deployment, data quality, safety and efficiency. Findings will inform future investigation specifications and be shared through reports, workshops and industry dissemination activities.

Third Party Collaborators

GEOxyz

Nominated Contact Email Address(es)

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Problem Being Solved

Nearshore geotechnical conditions at offshore cable landfalls remain a significant source of uncertainty during project development and delivery. The transition zone between the onshore and offshore environment is often characterised by variable sediments, rapidly changing stratigraphy and potential seabed obstructions. Obtaining sufficient geotechnical data from this area can be challenging, resulting in reduced confidence in the nearshore ground model during the early stages of project development.

This uncertainty has a direct influence on asset design, construction planning and project delivery. Ground conditions at landfall can affect cable routing, installation methodology, burial requirements and overall constructability. Where site conditions are not sufficiently understood, projects may be required to adopt more conservative assumptions or undertake additional investigations, increasing

project costs and programme risk.

Traditional approaches for acquiring nearshore geotechnical data typically rely on jack-up vessels, large marine spreads or specialist nearshore construction equipment. Whilst these approaches are well established, they can be difficult to deploy efficiently in shallow-water and surf-zone environments. Mobilisation requirements are often complex, operational windows can be restricted by weather and tides, and the overall cost can be disproportionate when only a limited number of investigation locations are required.

As National Grid and other GB transmission owners (TOs) continue to develop offshore transmission infrastructure, there is an increasing need to identify more efficient methods of acquiring high-quality ground investigation data in nearshore environments. Improving the availability of reliable geotechnical information during early-stage project development has the potential to reduce uncertainty, improve engineering decision-making and support more efficient offshore transmission project delivery.

At present, there is limited operational experience within the UK offshore transmission sector of beach-launched crawler-based geotechnical investigation systems operating within the surf-zone and shallow-water environments. As a result, there is insufficient evidence to determine whether this approach could provide a practical, reliable and lower-cost alternative to conventional nearshore investigation techniques. Innovation funding is therefore required to validate the operational performance, data quality, safety, efficiency and wider applicability of this methodology before it can be considered for deployment on future projects.

This project therefore seeks to address that evidence gap by evaluating whether a crawler-based nearshore investigation approach can deliver equivalent or improved geotechnical data quality while reducing operational complexity, mobilisation requirements and overall investigation costs. If successful, the learning generated could inform future investigation strategies and specifications across TO's wider offshore portfolios.

Method(s)

The project will undertake a targeted nearshore geotechnical investigation at the EGL5 landfall at Anderby Creek using the GEOxyz Ammonite seabed deep push Cone Penetration Testing (CPT) crawler. The trial will evaluate the operational, technical and commercial viability of a beach-launched crawler-based investigation methodology for shallow-water and surf-zone environments.

The Ammonite system will be deployed directly from the shoreline and operated in crawler mode to undertake geotechnical and thermal investigations in the nearshore environment. The scope of the investigation comprises:

- 13 Cone Penetration Tests (CPTs) to a target depth of 30m below seabed.
- Up to 52 in-situ thermal conductivity measurements (four tests per CPT location).
- At least two vibrocore samples (and onshore laboratory testing) to provide physical samples for ground-truthing and interpretation.

The project will assess the suitability of the crawler-based methodology as an alternative to conventional nearshore investigation techniques that typically rely on jack-up vessels or large marine spreads. Particular focus will be placed on deployment efficiency, operability within surf-zone conditions, data quality, safety, environmental considerations and overall project delivery performance.

Data will be acquired and monitored in real time, allowing immediate quality assurance and quality control (QA/QC) during survey operations. The resulting geotechnical, thermal and sampling data will be processed, validated and interpreted to develop a refined nearshore ground model for the EGL5 landfall. The outputs will support cable design, installation methodology selection, constructability assessments and planning of subsequent offshore geotechnical investigations.

A technical assessment of the methodology will be undertaken following completion of the fieldwork. This will evaluate survey performance against project objectives, including data quality, operational efficiency, deployment constraints, safety performance and commercial considerations. Lessons learned and recommendations will be captured in a final technical report.

The project will also evaluate the potential applicability of the methodology to future offshore transmission projects. Findings will be used to inform future National Grid geotechnical investigation specifications, survey planning activities and deployment strategies where appropriate. Knowledge generated through the project will be disseminated through technical reports, stakeholder workshops and industry engagement activities to support wider learning and potential adoption across the sector.

Scope

The project will undertake a nearshore geotechnical investigation at the EGL5 landfall at Anderby Creek using the GEOxyz Ammonite crawler system.

The scope includes:

- Mobilisation, deployment and operation of the Ammonite system.
- Acquisition of 13 Cone Penetration Tests (CPTs) to a target depth of 30 m below seabed.
- Acquisition of up to 52 in-situ thermal conductivity measurements.

Collection of at least two vibrocore samples for ground-truthing purposes .Estimated laboratory testing quantities:

- Geotechnical description and logging including colour photograph, including extrusion or liner splitting 6
- Water content 12
- Bulk density 12
- Particle size distribution (seive) 6
- Particle size distribution (sedimentation) 6
- Particle density 3
- Maximum and minimum dry densities 2
- Determination of liquid and plastic limits 4
- Organic content 2
- Carbonate content 2
- Pocket penetrometer 8
- Torvane 8
- Unconsolidated undrained triaxial (Intact) 4
- Thermal conductivity (Intact) 8
- Thermal conductivity (Reconstituted) 4
- Real-time data acquisition and quality control during survey operations.
- Processing, interpretation and reporting of geotechnical, thermal and sampling data.
- Development of a refined nearshore ground model for the EGL5 landfall.
- Evaluation of operational performance, deployment requirements and lessons learned.
- If successful integration of the operational methodology into the NGET technical standards.
- Production of a technical report and dissemination of findings to relevant stakeholders.

The project will conclude with recommendations regarding the suitability of the methodology for future nearshore geotechnical investigations and its potential incorporation into National Grid investigation specifications and survey planning processes.

Objective(s)

The objectives of the project are to:

- Evaluate the technical suitability of the Ammonite crawler system for nearshore geotechnical investigations at offshore cable landfalls.

- Demonstrate the feasibility of a beach-launched deployment methodology within shallow-water and surf-zone environments.
- Acquire high-quality geotechnical, thermal conductivity and sampling data to support development of a refined nearshore ground model for the EGL5 landfall.
- Assess the operational performance, efficiency and reliability of the crawler-based investigation approach.
- Evaluate the potential for better targeting and more effective utilisation on conventional jack-up vessels and large marine spreads.
- Generate technical and operational learning to inform future nearshore geotechnical investigations.
- Produce recommendations regarding the suitability of the methodology for future adoption within National Grid's offshore portfolio & beyond.
- Generate sufficient technical, operational and commercial evidence to support future decisions regarding business-as-usual adoption and potential integration of beach-launched crawler-based methodology into National Grid technical standards.
- Disseminate project findings through technical reports, lessons learned activities and industry engagement.

Consumer Vulnerability Impact Assessment

This project is not specifically targeted at consumers in vulnerable situations. However, it has the potential to deliver indirect benefits by supporting the efficient and sustainable expansion of offshore electricity infrastructure required for the energy transition. In the longer term, this could help lower project delivery costs, protecting consumer value. These outcomes have the potential to support an energy system that benefits all consumers, including those in vulnerable situations.

Success Criteria

The project will be considered successful if the following criteria are met:

- The Ammonite crawler system is successfully mobilised, deployed and operated within the nearshore environment at the EGL5 landfall meeting all safety and marine licensing requirements.
- The planned survey scope is completed, including:
13 Cone Penetration Tests (CPTs).
Up to 52 thermal conductivity measurements.
At least 2 vibrocore samples, plus onshore laboratory testing.
- The project delivers geotechnical, thermal and sampling data of sufficient quality to support development of a refined nearshore ground model for EGL5.
- Beach-launched deployment and recovery operations are demonstrated safely and effectively within the planned operating environment.
- The methodology is successfully assessed against conventional nearshore investigation approaches in terms of operability, efficiency, data quality and deployment requirements.
- Technical, operational and commercial lessons learned are captured and documented.
- A final technical report is completed, including recommendations regarding future deployment opportunities and potential incorporation into National Grid investigation specifications.
- Project findings are disseminated through stakeholder engagement activities, lessons learned sessions and industry knowledge-sharing initiatives.
- The project establishes an evidence base supporting consideration of the methodology for business-as-usual deployment and incorporation into National Grid technical standards.

Project Partners and External Funding

GEOxyz is an international maritime and geotechnical data company specialising in surveys, site investigations, and offshore renewable energy support. It provides hydrographic, geophysical, geotechnical, and topographical surveys, along with marine site investigations, asset integrity assessments, and crew transfer services for onshore, nearshore, and offshore industries. Their services support the design, construction, and maintenance of infrastructure, including offshore wind farms, subsea installations, and other maritime structures.

In this project, in addition to the below GEOxyz will: intend to demonstrate that the Ammonite system is a flexible and cost-effective landfall/ intertidal/ nearshore flexible solution for shallow water cable routes or Deep push foundation investigations.

- Provide planning and assurance documentation for the equipment to be used.

- Mobilise all required equipment to EGL5 Anderby Creek Cable Landing Area.
- Acquire ground investigation data in accordance with the project requirements.
- Process, interpret and report on the collected data.
- Assist with onward dissemination of findings.

Potential for New Learning

The project will generate new learning on the application of beach-launched crawler-based geotechnical investigations within nearshore, shallow-water and surf-zone environments. While similar systems have been deployed internationally, there is currently limited experience of applying this methodology within the UK offshore transmission sector.

The project will provide learning on:

- The operational feasibility of deploying and recovering a crawler-based investigation system directly from the shoreline.
- The suitability of the methodology for nearshore cable landfall investigations.
- Data quality and reliability of CPT, thermal conductivity and vibrocore data collected using the system.
- Operational performance, efficiency and productivity compared with conventional investigation approaches.
- The practical limitations, risks and constraints associated with crawler-based nearshore investigations.
- Health, safety and environmental considerations associated with the deployment methodology.
- The potential for reducing mobilisation requirements and dependence on conventional marine spreads.
- The suitability of the technology for wider deployment across future National Grid offshore projects.

The project will also generate learning on how crawler-based investigation methods could be incorporated into future survey planning, specification development and delivery strategies for offshore transmission project. Project findings, lessons learned and recommendations will be shared through technical reports, stakeholder workshops and industry dissemination activities, enabling National Grid and the wider industry to make informed decisions regarding future deployment of the methodology.

Scale of Project

This project has been deliberately scoped as a targeted demonstration of a crawler-based nearshore geotechnical investigation methodology at the EGL5 landfall. The scale of the trial is sufficient to evaluate the technical, operational and commercial viability of the approach under representative offshore transmission project conditions, whilst limiting cost and delivery risk prior to any wider deployment. The investigation scope includes Cone Penetration Tests (CPTs), thermal conductivity testing and vibrocore sampling, providing sufficient data to assess operational performance, data quality, deployment requirements and applicability to future projects. The project will also allow evaluation of beach-launched operations within a representative shallow-water and surf-zone environment where conventional investigation methods can be difficult and costly to deploy.

The project has been sized to generate the evidence required to determine whether the methodology is suitable for wider adoption without requiring full-scale implementation across multiple projects. A smaller trial would not provide sufficient operational and technical evidence, while a larger deployment would increase project cost before the methodology has been adequately demonstrated.

The EGL5 landing area has been chosen as initial geophysical data has already been collected allowing for targeted placement of the test sites to be investigated. While traditional data collection is planned later in 2027 (via jack-up rig), the data collected, if successful, will also provide EGL5 with additional data in the critical landing area prior to the launch of the main EPC tender, helping to de-risk the engineering solution and thus reducing commercial risk for the project. Timings do not allow for the traditional work to be conducted prior to the tender event.

The learning generated will inform future decisions regarding the use of crawler-based geotechnical investigation systems across National Grid's offshore portfolio and provide evidence to support potential updates to investigation specifications, survey planning activities and future project delivery strategies.

Technology Readiness at Start

TRL7 Inactive Commissioning

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The project will be undertaken at the EGL5 landfall at Anderby Creek on the Lincolnshire coast, where the GEOxyz Ammonite crawler system will be deployed to undertake nearshore geotechnical investigations within the shallow-water and surf-zone environment.

Revenue Allowed for the RIIO Settlement

No revenue has been allowed within the RIIO settlement for the activities proposed under this project. The project focuses on demonstrating and evaluating an innovative nearshore geotechnical investigation methodology and generating evidence relating to its technical performance, operational viability and future applicability. These activities go beyond the scope of business-as-usual project delivery and would not ordinarily be undertaken through funded project allowances. Innovation funding is therefore required to establish whether the methodology can provide benefits for future offshore transmission projects and support its potential incorporation into future National Grid specifications and standards.

Indicative Total NIA Project Expenditure

The total project expenditure is £836,474 (NIA contribution, 90%: £752,827). Costs are distributed across the work packages as follows:

WP1 - Completion of all mobilisation, assurance and survey readiness activities required to safely commence operations. This includes approval of project execution documentation, RAMS, SHEQ deliverables, marine assurance requirements and lifting compliance, together with equipment mobilisation, calibration and operational readiness verification. Survey activities may only commence following formal acceptance by National Grid.

NIA expenditure: £118,162

WP2 - Execution of the full nearshore survey programme in accordance with relevant national grid and project requirement, including data acquisition, quality monitoring and operational delivery. The work package concludes with successful completion of the approved survey scope, receipt of all survey data by National Grid, and demobilisation of all equipment and personnel from site. NIA expenditure: £354,487

WP3 - Provision of the initial survey results and assessment of data acquired during the survey campaign. This work package includes preliminary interpretation of CPT, thermal conductivity and sampling data, validation of data quality and completeness, and an initial assessment of whether the collected dataset meets project objectives, technical standards and supports subsequent detailed analysis. NIA expenditure: £29,540

WP4 - Processing, validation and interpretation of all survey, sampling and laboratory data to derive the geotechnical and thermal parameters required for engineering assessment. This work package includes quality-controlled data processing, development of final interpreted datasets and delivery of the Final Results Report to support EGL5 ground model development and future design activities. NIA expenditure: £29,541

WP 5 - Development of a comprehensive lessons learned assessment covering project performance, operational experience and technical outcomes. The work package will provide recommendations for future deployment, methodology improvements and wider application across future offshore transmission projects. NIA expenditure: £29,541

WP 6 - Support the development of final project outputs and dissemination of project findings through technical reporting, knowledge sharing and industry engagement activities. This work package will help communicate project outcomes, lessons learned and future deployment opportunities to National Grid, Network Licensees and the wider industry. NIA expenditure: £29,540

Cost account for unaccounted weather: £58,500

Internal costs: £63,844

Indirect cost: £39,672

Total NIA expenditure: £752,827

Project Eligibility Assessment Part 1

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

The project will evaluate a more efficient method of acquiring nearshore geotechnical data required for offshore transmission projects. If successful, the methodology could significantly reduce the time, cost and operational complexity associated with nearshore ground investigations, enabling earlier access to critical design information and more efficient delivery of offshore network infrastructure. Compared with a conventional jack-up based approach, the methodology has the potential to reduce survey duration from approximately 120 days to 10 days, reduce weather-related downtime from approximately 43 days to 4.5 days, and reduce offshore personnel exposure from approximately 1,680 person-hours to 70 person-hours. Estimated investigation costs could reduce from approximately £5.0m to £0.77m for comparable activities.

The project will also generate learning that could be applied across future offshore transmission projects. Current estimates indicate potential portfolio-wide benefits of between £11.5m over three years through wider adoption of the methodology, alongside improvements in project delivery efficiency, workforce safety and reduced reliance on offshore vessels.

By improving the efficiency of nearshore site investigations, the project has the potential to support the timely and cost-effective delivery of the offshore transmission infrastructure required to connect increasing volumes of renewable generation to the electricity network.

How the Project has potential to benefit consumer in vulnerable situations:

n/a

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved

n/a

Please provide a calculation and/or description of the expected benefits of the solution

The project will evaluate whether the GEOxyz Ammonite crawler system can provide a lower-cost and more operationally efficient alternative to conventional jack-up based nearshore geotechnical investigations. The primary source of value arises from reduced vessel utilisation, reduced weather exposure, reduced offshore personnel requirements and improved survey productivity.

Current benchmark estimates indicate that a comparable jack-up based nearshore investigation would require approximately:

- 120 fieldwork days
- 43 weather downtime days
- 1,680 offshore person-hours
- Total estimated cost of £5m

The equivalent investigation undertaken using the Ammonite system is estimated to require:

- 10 fieldwork days
- 4.5 weather downtime days
- 70 offshore person-hours
- Total estimated cost of £765,535

This represents an indicative saving of:

£5m - £0.766m = £4.23m per deployment

The reduction in fieldwork duration from 120 days to 10 days (~92% reduction) has the potential to significantly improve programme efficiency and accelerate the availability of geotechnical information required for engineering design and construction planning. Similarly, reducing weather downtime from 43 days to 4.5 days (~90% reduction) decreases exposure to weather-related programme delays and associated vessel standby costs.

A further benefit arises from the reduction in offshore personnel exposure. Current estimates indicate a reduction from approximately 1,680 person-hours at sea to 70 person-hours, representing a reduction of approximately 96%. This has the potential to improve safety performance by reducing the number of personnel required to work offshore whilst also simplifying survey logistics. The technology may also enable more targeted downstream ground investigations by improving the quality and spatial coverage of early-stage geotechnical information. For example, improved characterisation of ground conditions may enable optimisation of subsequent borehole locations and sampling strategies, reducing the extent of future offshore investigation activities.

The principal value of the project is expected to arise from future deployment across National Grid's offshore portfolio. Current estimated cost of a comparable investigation using the Ammonite system is approximately £0.77m, representing a saving of £3.97m per deployment compared with traditional jack-up vessel-based investigations. Assuming deployment on three offshore projects over a three-year period, cumulative savings could exceed £11.5m. Based on current assumptions, this results in an indicative Benefit Cost Ratio (BCR) of 15:1.

In addition to the quantified benefits, the project will generate evidence on the technical performance, deployment requirements and operational limitations of crawler-based nearshore investigations, supporting future specification development and deployment decisions across National Grid's offshore portfolio.

Please provide an estimate of how replicable the Method is across GB

This method could potentially be used to assess ground conditions at landing sites for most offshore cables coming ashore, including HVDC, HVAC and telecoms. The methodology is considered highly replicable across Great Britain wherever nearshore geotechnical investigations are required for offshore cable landfalls. The beach-launched crawler approach could be applied to future offshore transmission, offshore wind, telecommunications and interconnector projects, particularly in shallow-water and surf-zone environments where conventional investigation methods are costly or difficult to deploy. If successful, the learning generated through this project will support wider adoption across National Grid and other UK transmission owners.

Please provide an outline of the costs of rolling out the Method across GB.

The methodology would be deployed on a project-by-project basis where nearshore geotechnical investigations are required. Based on the current trial, a typical deployment cost is estimated to be approximately £765k per survey campaign, although costs are expected to reduce as operational experience increases and the methodology becomes more established.

No significant capital investment by National Grid is anticipated, as the technology would continue to be procured as a specialist contractor-delivered service through existing survey and site investigation procurement routes. Rollout costs would therefore primarily consist of project-specific survey delivery costs.

Following successful demonstration, additional activities would include the production of technical guidance, lessons learned documentation and updates to National Grid's nearshore geotechnical investigation specifications and survey planning processes. These activities would be delivered through existing engineering, asset management and project governance processes and are not expected to require material additional investment. Wider deployment would be considered initially on future EGL and offshore transmission projects, with adoption guided by technical performance, commercial outcomes and suitability for individual project

requirements.

Requirement 3 / 1

Involve Research, Development or Demonstration

Projects must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

- ☐ A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).
- ☐ A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)
- ☐ A specific novel operational practice directly related to the operation of the Network Licensees system
- ☐ A specific novel commercial arrangement

Involve Research, Development or Demonstration - Please select all that apply

- ☒ A specific piece of new equipment (including monitoring, control and communications systems and software)
- ☒ A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven
- ☒ A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)
- ☐ A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology
- ☐ A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution
- ☐ A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

The project will generate technical and operational learning on the use of crawler-based geotechnical investigation systems within nearshore, shallow-water and surf-zone environments. The learning will help Network Licensees assess whether similar methodologies can be used to obtain high-quality ground investigation data at offshore cable landfalls whilst reducing reliance on conventional jack-up vessels and large marine spreads.

The project will provide evidence on:

- The suitability of beach-launched crawler systems for nearshore geotechnical investigations.
- Operational constraints, deployment requirements and safety considerations associated with crawler-based investigations.
- The quality and reliability of CPT, thermal conductivity and sampling data collected using the methodology.
- The impact of the approach on survey duration, mobilisation requirements, weather exposure and offshore personnel requirements.
- The applicability of the methodology to different landfall environments and project requirements.

This learning will enable Network Licensees to make informed decisions regarding future nearshore investigation strategies, procurement approaches and survey specifications. Where appropriate, it could support the development of alternative investigation methodologies that improve project efficiency, reduce operational complexity and lower investigation costs.

The project findings will be documented in technical reports and lessons learned outputs. Subject to a successful trial, the learning will be shared with other transmission owners, including SEN and SPT, through existing industry forums, workshops and conference presentations. The intention is to provide sufficient evidence for Network Licensees to determine whether the methodology should be considered within future offshore transmission project planning, specification development and geotechnical investigation activities. The project will also provide a practical case study demonstrating how a crawler-based approach can be integrated into real project delivery. This will help Network Licensees understand not only the technical performance of the methodology, but also the commercial,

operational and assurance considerations associated with wider deployment.

n/a

Is the default IPR position being applied?

☒ Yes

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed. Networks must explicitly mention similar projects that they have considered and how these differ.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

The project will not duplicate existing innovation activity within National Grid or the UK offshore transmission sector. Whilst the GEOxyz Seafloor Geotech Ammonite system has been successfully deployed on international projects, including offshore investigations in Japan, there is currently no evidence demonstrating the suitability of the methodology for UK offshore transmission landfalls or its application within National Grid projects.

The purpose of the project is therefore not to redevelop or revalidate the underlying technology, but to generate project-specific evidence on the operational performance, deployment requirements, data quality and commercial viability of a beach-launched crawler-based investigation methodology within a UK nearshore environment. This evidence does not currently exist and is required before the methodology can be considered for future deployment.

The project has been aligned with planned EGL5 investigation activities to ensure that the data collected delivers direct project value whilst simultaneously generating learning relating to the methodology. As a result, the work complements existing geotechnical investigation activities rather than duplicating them.

The project will generate new learning relating to:

Beach-launched deployment and recovery operations within UK nearshore environments.

Application of crawler-based CPT and thermal conductivity investigations at offshore cable landfalls.

Operational performance and productivity compared with conventional nearshore investigation approaches.

Suitability of the methodology for incorporation into future National Grid investigation specifications and survey planning processes.

Potential for wider deployment across future offshore transmission projects.

The project team will continue to engage with transmission owners, project stakeholders and industry forums throughout delivery to ensure that learning is shared and any overlap with future innovation activities is avoided. The outputs will be disseminated through technical reports, lessons learned workshops and industry presentations, maximising the value of the learning generated from a single demonstration project.

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

N/A

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

The innovation does not lie in the Ammonite system itself, which while being relatively new to the market has been successfully deployed from a vessel on a small number of offshore projects internationally, including investigations in Japan. Prior to this potential project, GEOxyz will be conducting a demonstration of the beach launched crawler in Ostende, Belgium. The innovation lies in the application of the technology to UK offshore transmission landfalls through a beach-launched, crawler-based investigation methodology. To date, there is limited evidence within the UK offshore transmission sector demonstrating the use of a seabed CPT crawler deployed directly from the shoreline to undertake nearshore geotechnical investigations within shallow-water and surf-zone environments.

The project seeks to evaluate whether this deployment approach can provide a practical and lower-cost alternative to conventional

nearshore investigations that typically rely on jack-up vessels or large marine spreads. It will assess the operational feasibility of beach launching, the ability of the crawler to operate effectively within the nearshore environment, and the quality of geotechnical and thermal data obtained using the methodology. The project will also evaluate the integration of multiple investigation techniques, including CPT testing, thermal conductivity measurements and vibrocore sampling, within a single crawler-based deployment strategy. This has the potential to improve survey efficiency and provide a more comprehensive dataset for landfall assessment.

Whilst similar technologies have been used internationally, this would represent the first deployment of the Ammonite system in the UK and the first evaluation of its suitability for UK offshore transmission landfall investigations. The project will therefore generate new evidence on operational performance, data quality, safety, efficiency and commercial viability that is not currently available to National Grid or the wider UK offshore transmission industry.

The learning generated will help determine whether crawler-based geotechnical investigations can be incorporated into future National Grid investigation specifications and deployed more widely across offshore transmission projects.

Relevant Foreground IPR

The project is expected to generate technical knowledge, operational learning and deployment methodologies associated with the application of crawler-based nearshore geotechnical investigations within the UK offshore transmission sector.

Foreground IPR is anticipated to include:

- Planning and Consent lesson learned, including dissemination of guidance and lessons learned.
- Technical assessment of the suitability of beach-launched crawler-based investigations for offshore cable landfalls.
- Operational procedures and lessons learned associated with deployment, recovery and survey execution in nearshore and surf-zone environments.
- Performance assessment of the methodology, including operational efficiency, data quality, safety and deployment constraints.
- Refined approaches for the acquisition of CPT, thermal conductivity and vibrocore data in nearshore environments.
- Recommendations for the incorporation of crawler-based investigations into future National Grid geotechnical investigation specifications and survey planning processes.
- Final technical reports, lessons learned reports, deployment guidance and dissemination materials generated as part of the project.

The project will not develop new crawler technology or geotechnical investigation hardware. Any existing technology, software, equipment designs, operational procedures and know-how associated with the GEOxyz/Ammonite system will remain Background Intellectual Property and should be declared separately by the supplier. The primary value of the Foreground IPR will be the creation of a unique evidence base, operational methodology and deployment guidance for crawler-based nearshore geotechnical investigations within the UK offshore transmission sector. This learning will support future decision-making regarding investigation specifications, survey planning, procurement approaches and the adoption of lower-cost nearshore site investigation techniques across National Grid's offshore portfolio. The Foreground IPR generated through the project will primarily comprise the learning, methodologies and deployment knowledge associated with the use of the technology within UK offshore transmission projects.

Background IPR from the contractor

The project will utilize crawler-based nearshore geotechnical investigation technology (the "Ammonite" platform) supplied to GEOxyz by its technology subcontractor, who holds the existing Background IPR in this system, comprising:

- The Ammonite seabed crawler vehicle design, including its beach-launch and nearshore deployment configuration.
- The Ammonite coiled-tubing system comprising coiled tubing, bender/straightener mechanism, and thruster.
- Proprietary control systems, software, and telemetry used to operate the crawler and manage data acquisition during survey

execution.

- Existing operational procedures, deployment methodologies, and know-how developed through prior use of the crawler-based system in nearshore and surf-zone environments.
- Existing sensor and instrumentation integration for Cone Penetration Testing (CPT), patent-pending thermal conductivity module, and crawler based vibrocore data acquisition as currently configured on the platform.

Data Access Details

Data for this project and all other projects funded under the Network Innovation Allowance (NIA), Network Innovation Competition (NIC) or the new Strategic Innovation Fund (SIF) can be found or requested in a number of ways:

- A request for information via the Smarter Networks Portal at: <https://smarter.energynetworks.org>, to contact select a project and click 'Contact Lead Network'. National Grid already publishes much of the data arising from our innovation projects here so you may wish to check this website before making an application.
- Via our Innovation website at: <https://www.nationalgrid.com/uk/electricity-transmission/innovation>
- Via our managed mailbox: box.NG.ETInnovation@nationalgrid.com

Please identify why the Network Licensees will not fund the project as a part of it's business and usual activities

The project will evaluate a novel application of an existing geotechnical investigation technology that has not previously been deployed within the UK offshore transmission sectors. Whilst nearshore geotechnical investigations are routinely undertaken as part of offshore transmission projects, the use of a beach-launched crawler-based methodology for acquiring CPT, thermal conductivity and sampling data at cable landfalls is not currently included within National Grid's approved investigation specifications or established delivery processes. There is currently insufficient evidence regarding the operational performance, deployment requirements, data quality, safety implications and commercial viability of the methodology under UK offshore transmission project conditions. Before the approach can be considered as part of business-as-usual activities, it is necessary to demonstrate that it can deliver the required geotechnical information safely, reliably and cost-effectively within a representative project environment.

Funding the project through normal project delivery mechanisms would expose Network Licensees to the risks associated with trialling an unproven methodology without first establishing whether the expected benefits can be realised. Innovation funding is therefore required to reduce this uncertainty by generating evidence and learning that would not otherwise be obtained through conventional project delivery.

The primary purpose of the project is to evaluate and demonstrate a new investigation methodology, generate technical and operational learning, and assess its suitability for wider deployment. These activities go beyond the scope of business-as-usual geotechnical investigations and are specifically intended to support future decision-making, specification development and potential adoption across National Grid's offshore portfolio.

If the trial is successful, the resulting evidence and lessons learned will be used to determine whether the methodology should be incorporated into future National Grid geotechnical investigation specifications and delivered through standard project funding routes.

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks (e.g. commercial, technical, operational or regulatory) associated with the project

The project can only be undertaken with support from the Network Innovation Allowance (NIA) because its primary purpose is to evaluate and generate evidence for a new investigation methodology rather than deliver a business-as-usual geotechnical survey. The project is intended to assess whether a beach-launched crawler-based approach can provide a viable alternative to conventional nearshore investigation methods and generate learning that can be applied across future offshore transmission projects.

Without NIA support, there would be limited justification for a project team to accept the additional risks associated with trialling an unproven methodology when established investigation techniques are available and capable of delivering the required data. The project therefore seeks to reduce uncertainty and establish an evidence base before any wider deployment is considered.

The project carries a number of risks that would not normally be accepted as part of business-as-usual delivery activities, including:

Technical Risk

The methodology has not previously been deployed on a UK offshore transmission project, and there remains limited evidence of its

applicability to UK offshore transmission landfall environments. There is uncertainty regarding operational performance and the ability of the system to consistently acquire data of sufficient quality to meet project requirements.

Operational Risk

The project relies on deployment within a shallow-water and surf-zone environment where weather, tides and site access can affect operations.

As this is the first deployment of its kind within the sector, operational procedures, deployment constraints and lessons learned are still being established.

Commercial Risk

There is currently insufficient evidence to demonstrate that the anticipated reductions in cost, programme duration and vessel utilisation can be achieved consistently across future projects.

Without trialling the methodology, National Grid cannot justify incorporating it into future specifications or procurement strategies.

Regulatory and Adoption Risk

The methodology is not currently included within National Grid's nearshore geotechnical investigation specifications or established project delivery processes.

Evidence is required before future projects, technical authorities and stakeholders can consider wider adoption of the approach.

NIA funding is therefore required to enable National Grid to undertake the trial, evaluate the risks and benefits of the methodology, and generate the technical, operational and commercial evidence required to support future deployment decisions. If successful, the learning generated will reduce uncertainty, support updates to investigation specifications and provide a pathway for adoption across future offshore transmission projects.

This project has been approved by a senior member of staff

☒ Yes