

This document is an extract from *the final report*. Please see the 'full documents' section on the website for the entire report.

### Stakeholders

Following on from the semester one stakeholder list shown in the initial Summary Document, there are both continuing and new stakeholders that have showed a keen interest and have engaged with the project throughout semester two, these stakeholders are shown below in Table 1. Unfortunately, despite all the initial stakeholders being contacted after Christmas, not all have responded or were willing to be part of the project going forward. Those shown in Table 1 are the dynamic list of passionate industry professionals, representing the projects 'Engineering Community'. The project stakeholders have had frequent meetings with the team to directly inform on the structural integrity of the oil and gas platforms, the potential of reusing pipelines, overall design considerations, to offer their opinion from the initial proposal or to answer the questionnaire.

Table 1- Stakeholder List (Semester Two)

Name	Company	Position
Colin Wilson	Repsol Resources	Structural Authority/Technical Assurance
Stuart Smith	Altrad Sparrows	Head of Engineering
Mehdi Zaidi	TAQA Group	Structural Integrity Engineer
Morteza Haghghat Sefat	HWU	Associate Professor
Daniel Clancy	GDG	Civil Engineering Consultant
Campbell Keir	Energy Industry Council	President
Fiona Milligan	Milligan Communications	Stakeholder Management
Kirsten Rae	Scottish Power Renewables	Project Manager
Eamonn Cullen	Shell	Commercial Manager
James Saunderson	Jacobs	Graduate Civil Engineer
Am Noimon	Jacobs	Graduate Civil Engineer
Hannah Bewley	Jacobs	Environmental Scientist
Ethan C	Jacobs	Graduate Civil Engineer
Teo Wee	HWUM	Associate Professor
Ross Davidson	BP	Production Technician
Rachel Buttilana	SSE	Civil Engineer (Hydro)

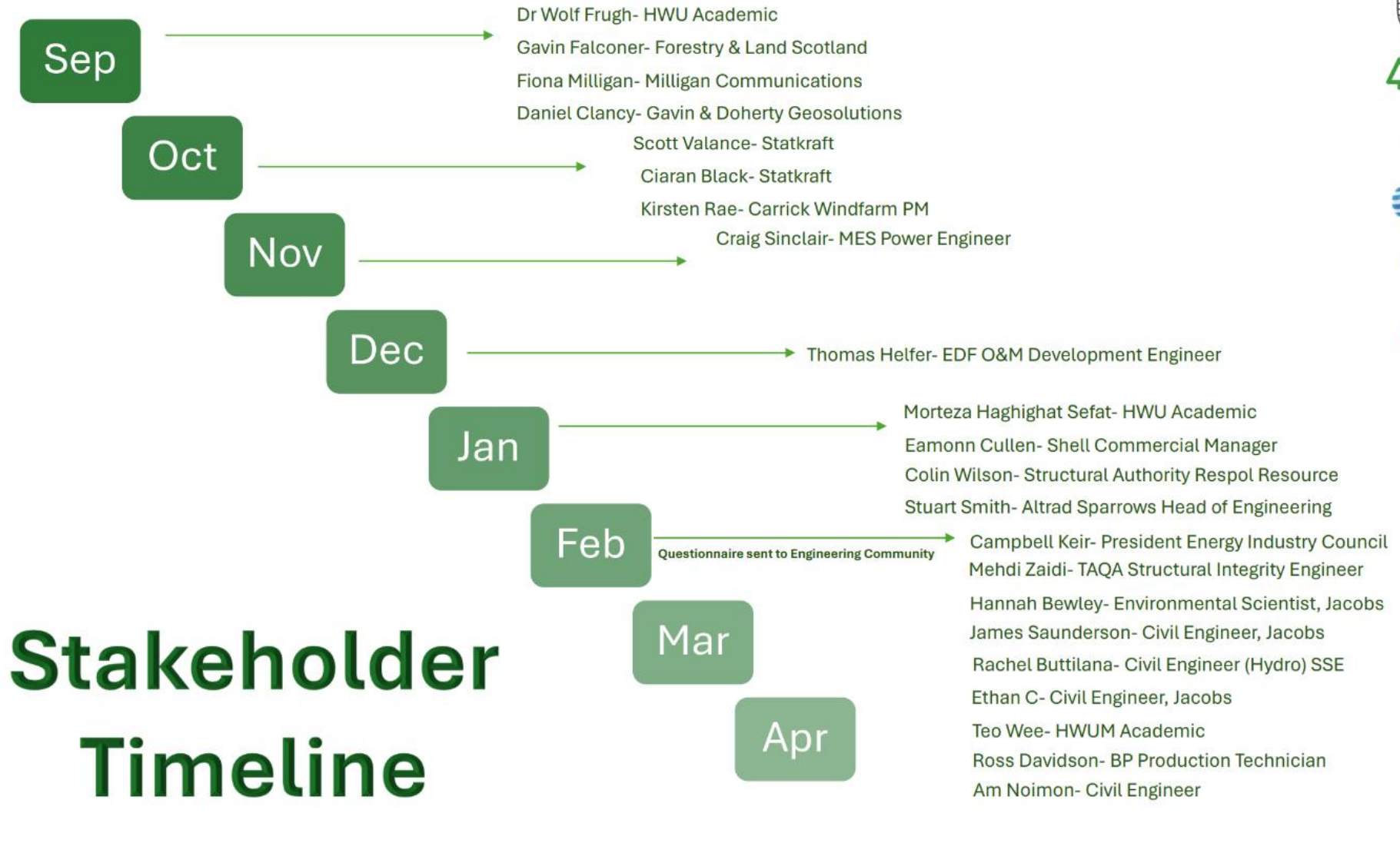
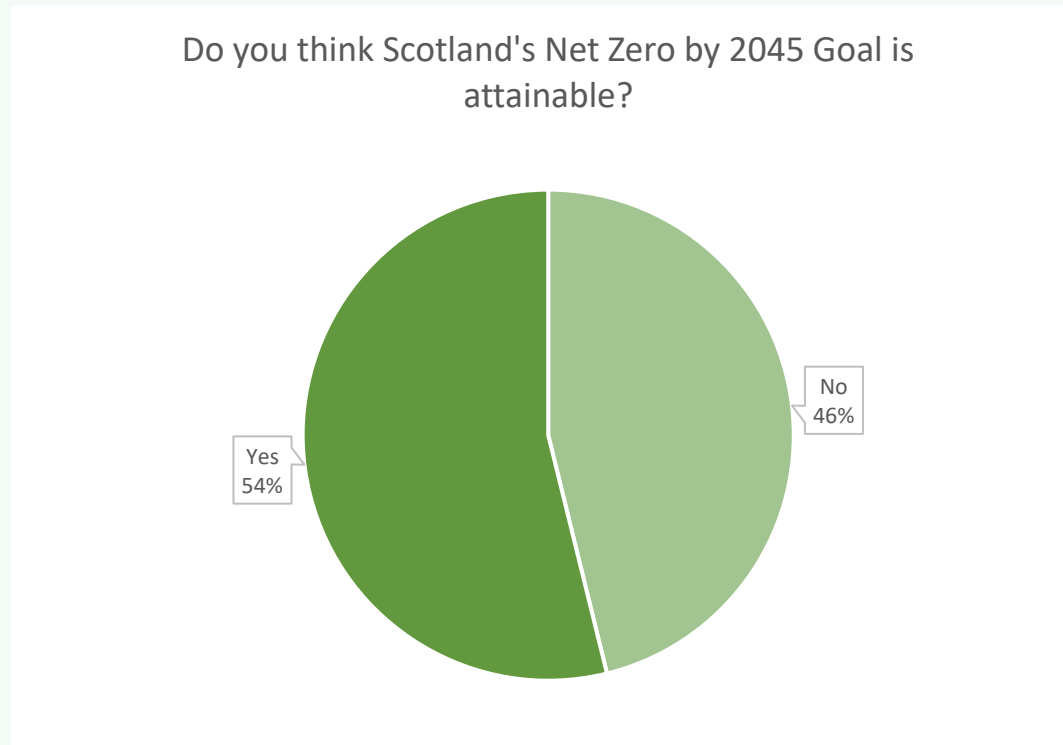


Figure 11- Stakeholder Timeline (Semester 1 and Semester 2)

### Questionnaire Results

A questionnaire was posted on LinkedIn and sent to the 'Engineering Community', comprising of stakeholders, engineers, and lecturers to gather a range of opinions on the proposal. In total, thirteen responses were collated which informed the proposal going forward. The range of response givers included Graduate Civil Engineers, Civil Engineers, a lecturer from Heriot-Watt Malaysia, a Production Technician, Commercial and Communications Managers, the Head of Engineering at Altred Sparrows, and the President of the Energy Industry Council.

The first question asked was whether our Engineering Community believed that the Net Zero by 2045 target for Scotland was achievable, to which around half believed that it is (Figure 12).



*Figure 12- Opinion on Scotland's Net Zero Targets*

The questions then centered around wind energy and energy islands, where the audience was asked what they perceived the biggest challenge with offshore wind was. The results of this are displayed in the word map below (Figure 13). Cost/funding, maintenance and environmental concerns were shown to be the biggest challenge perceived by the response givers.

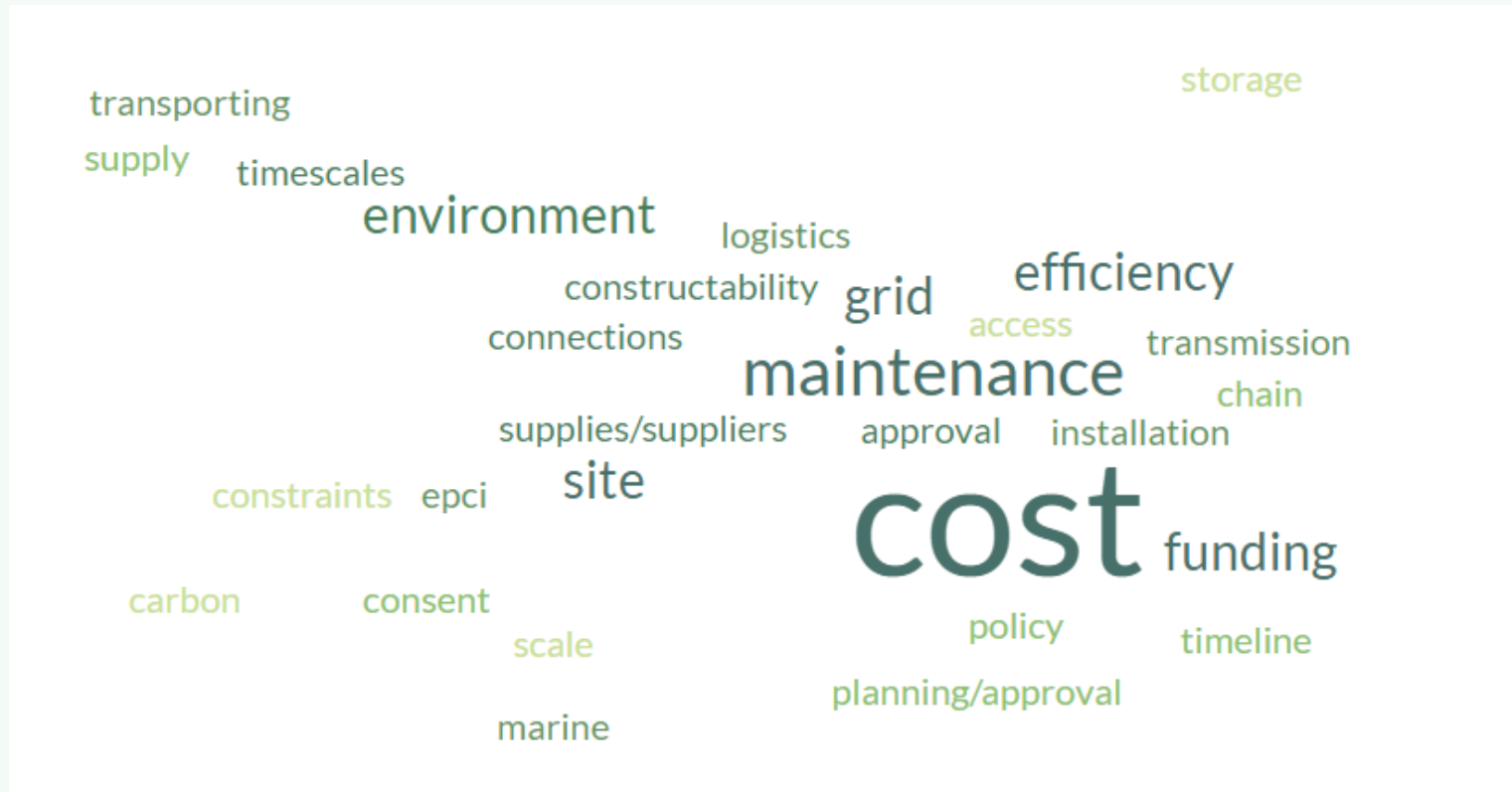


Figure 13- Biggest Challenge with Offshore Wind Opinion

Following this, the stakeholders were asked if they were familiar with the concept of an energy island, to which seven people answered yes, although two went on to say that they had only heard of the concept from this project. Therefore, this realistically results in only 31% of stakeholders being aware of the energy island concept prior to contact with SHE Engineering.

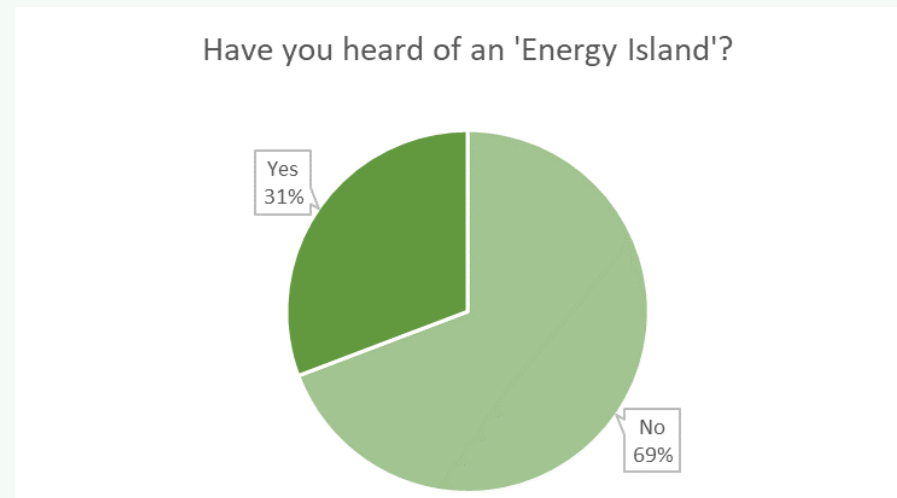


Figure 14- Energy Island Concept Response

The four who had heard of an energy island stated they had heard of this from “HWU while researching for the offshore wind foundation project”, “while in university”, “conference where presentations have been made on the European plan for the island hubs” and “Industry press articles”. Their understanding of this was-

- “A hub for electricity generation from surrounding offshore wind farms, that will be connected and distribute power between neighbouring countries.”
- “Multiple energy assets located around offshore wind turbines.”
- “An electricity generation hub located out at sea allowing for bigger more remote windfarms and supplying energy to multiple nations to meet demand changes.”

The 69% which had not heard of this before gave their understanding of what an energy island may be. The responses are as follows-

- “An island or offshore location where energy transfer takes place.”
- “Above sea-level man-made structure housing an energy source.”
- “Artificial Island solely used to produce energy.”
- “A self-contained facility to generate or process energy.”
- “My first thought is a floating island. But based on your recommendation of using the recommissioned old platform, it is close to my initial thought.”
- “Similar idea to an offshore platform, an island with connections to mainland Scotland to transport energy produced along with means of getting personnel to and from to carry out maintenance and operations.”
- “I had assumed it would be a large cluster of generation units, e.g. offshore wind turbines.”

The stakeholders were then asked what their biggest concern would be if Scotland were to approve the construction of an energy island in The North Sea? The results of this (Figure 15) show that economic cost is the biggest concern for the audience.

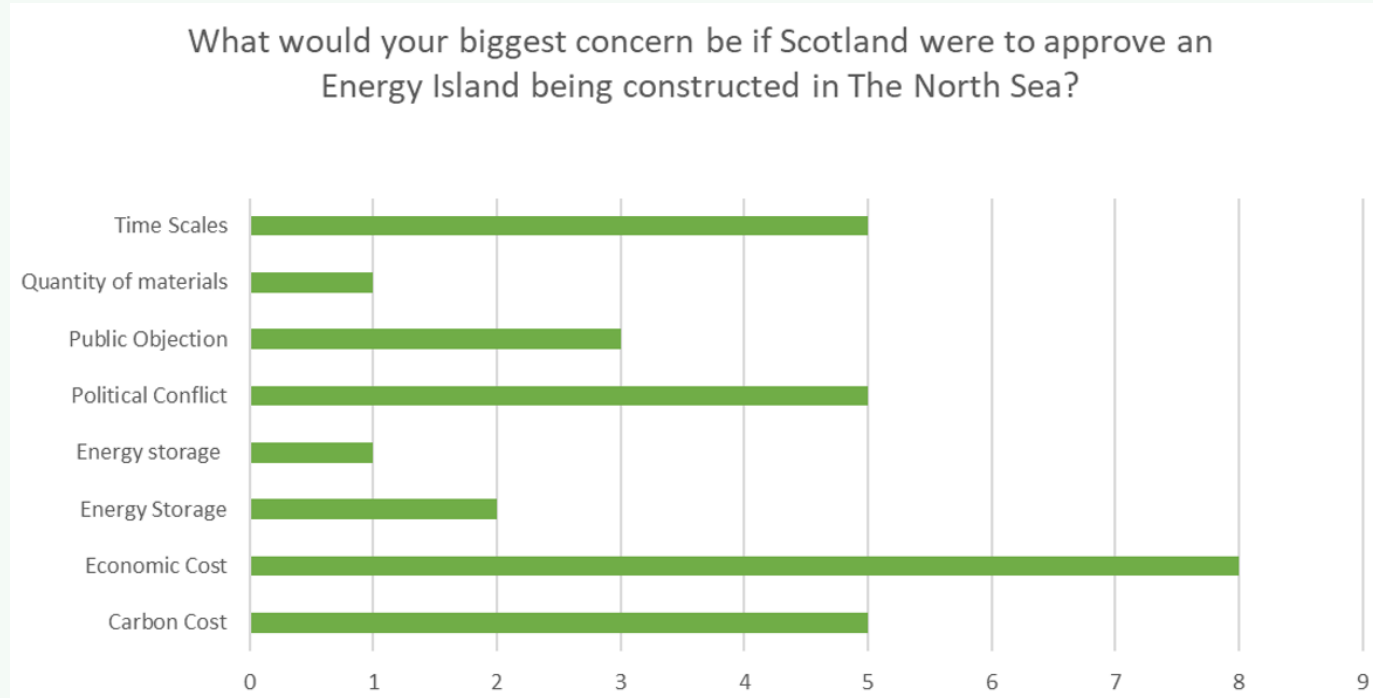


Figure 15- Biggest Concern

The questionnaire then focused on the proposal, asking what the strongest aspect was, their main concerns based on the proposal and what they might change. The responses are shown in Table 2 below.

Table 2- Questionnaire Responses

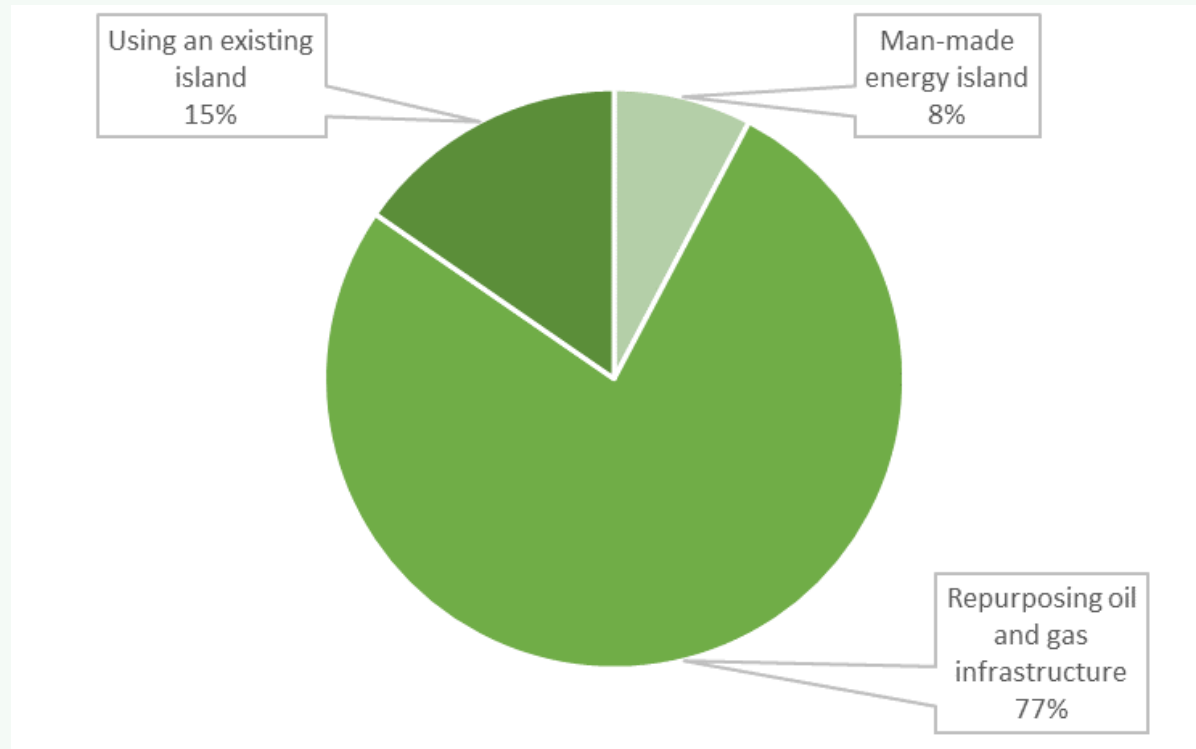
What is the strongest aspect of our proposal, in your opinion?	From our proposal, what would be your main concern?	What, if anything, would you change about our proposal?
Security of energy supply for Scotland, aids in establishing self sufficiency	Objections from the general public and other countries. Myths and disinformation impacting the project.	Mention what the scale of the energy provided by this island will roughly be, would the proposed islands supply enough energy to service the entirety of Scotland? Is there potential to supply other countries such as England and Wales?
N/A	The man-made island would only work in shallow water, while the offshore wind energy is now moving to deeper water.	N/A
Using repurposed oil and gas infrastructure is a really good concept. Decommissioning and conversion may be more amenable to stakeholders than building from scratch.	Environmental impacts / compliance, economic costs and getting the general public on board	Maybe include more information on benefits to the economy, climate, environment etc.
Reusing decommissioned oil and gas infrastructure	Converting an existing island - will this impact wildlife or the local environment? e.g. migration of birds	Talk more about the UNSDGs and how your solution can tackle specific SDGs
location - infrastructure planned or in place already to aid delivery	Grid timelines and fishermen!	nothing currently, but always be open to change and innovation down the line.
Allows for larger more remote wind farms generating more energy than in shore windfarms.	Economic and Carbon cost of building an entire Island	More Clarity on carbon emissions.
In my opinion. I like the idea of converting an existing island. Would be	Getting approval to even start concept design of this project even before prefeed, feed and detailed design.	Rather than making an island you can use preexisting vessels for energy and hydrogen storage.



significantly more cost effective and possibly much easier to get approved.		
The UK grid has severe limitations on how new power generation can be plugged in - there aren't enough nodes. With multiple big OSW projects in the pipeline - the projects are challenge to access the grid. Offshore island would help manage the problem.	N/A	Nothing. Worth going for.
Utilization of offshore structures due for decommissioning; deferring decommissioning & restoration (D&R) expenditures and sustainably utilizing existing infrastructure for longer	Approval would be needed from - local government, North Sea authorities, maybe SEPA, cross border agreements (Norway, Denmark and Netherlands)	Do not have a proposal dependent on Government investment; seek Joint Venture Participants such as: turbine or electrolysis equipment manufacturers, other similar investors to SHE Engineering. then plan to dilute or sell out to Pension or Infrastructure funds.
Using old existing or abandoned platforms certainly has the lowest carbon/environmental impact compared to other options such as existing islands or man-made islands.	I think it is a good project to consider. 1) I would not exclude the reuse of oil and gas facilities but many of them are old, and it could be expensive to repurpose them. You also get into the complex tax and legal issue of who decommissions the facilities at the end of the day and how (remember Brent spar and the huge row with Greenpeace). 2) I think that there would be a real concern about using a remote island in terms of wildlife. Probably many of the remote islands in North Sea are home to unique/rare/endangered wildlife. Worth engaging one of the NGO's. 3) you would need to do some thorough mapping of all the issues and the impact on your project.	Nothing, but it will be good to explore (if you have time) the option of floating island. Is it sensible in Scotland?
the two shortlisted options of Shetland and Aberdeen seem worth investigating.	Cost of the Value Chain to produce Green Hydrogen vis-a-vis the price, market and hence	Nothing, I see this proposal as being a worthwhile feasibility study.

	margin for such Green Hydrogen. A high cost, technically challenging, unproven Value Chain.	
The energy island (man-made or constructed on an existing island) is a strong proposal because it would be custom built for the requirements of the energy production to be carried out. Using an existing platform structure would mean significant modification being required as well as being restricted by weight, footprint etc.	Nothing I can think of. But since you have the option to use recommissioning of the old platform. You may need to find out what existing standards or codes are available to deal with these kinds of matters.	I wouldn't change anything about the proposal.
Looks good. Well worth considering all 3 (existing / new / ex-O&G) options	If this is a completely new man-made island (excluding the repurposing O&G platform jackets), the quantity of materials, and where these will source from.	Energy storage is key for our future power supplies. But you are addressing this.

Finally, the respondents were asked to give their opinion on which option out of repurposing an existing land island, utilizing existing oil and gas infrastructure, or constructing a man-made island was the strongest proposal.



*Figure 16- Strongest Proposal*

The results clearly indicated that repurposing oil and gas infrastructure or using an existing island was the most favored solution. The justification for the responses suggested that this is mainly due to the economic and carbon cost which will be significantly reduced by not constructing a man-made island. Additionally, some believed this would be more environmentally friendly to avoid more habitats being destroyed and reduce stakeholder objection.

From our questionnaire, it was evident that conducting a feasibility study for the construction of a man-made island was not going to be effective if the stakeholders had already suggested their concerns for this. Therefore, the options appraisal and feasibility study will focus on an island made by repurposing oil and gas infrastructure and using an existing island.