TRITON KNOLL
OFFSHORE WIND FARM

Triton Knoll Offshore Windfarm Careers Session

Lesson Plan

Topic: Offshore wind energy careers

Overview

Key Learning Areas:

- Career areas within the offshore wind energy sector.
- Basic introduction to climate change and energy
- Evaluating where to place an offshore wind farm, debating geographical information.
- Using basic math to make a decision about the most appropriate wind farm model.

Year Level: KS3 (Years 7 to 9 but more specifically Year 9)

Learning Outcomes:

By the end of this session all learners should be able to -

- Recall at least 5 job roles which are needed for an offshore wind farm project and state what is involved within each of these career paths.
- Explain how the team at Triton Knoll have to work together to choose the best location to build a successful offshore windfarm.
- Evaluate the features of different wind farm models and suggest which ones would be most effective for generating electricity to suit the demand.

Triton Knoll's Aims:

To showcase:

Diversity: Great people with a diversity of backgrounds and roles working on a fascinating project
Students of all backgrounds and abilities should be inspired by the variety of careers they will learn about. There are vocational and academic routes in and the film provides role models.

Climate impact: Working in renewables, people can make a practical difference to tackling climate change. Students will gain an introduction to climate change and how wind energy works.

STEM: Choosing triple science, geography and study of math is an entry ticket to many jobs.
Students will observe that studying STEM subjects in particular at school can open doors to interesting training, studies and exciting jobs. There is a bottleneck in UK STEM qualified workers – as a business we want to help resolve this shortage.

Skills and Resources required

Key Skills

- Communicating and working effectively in small teams and as a class. (All activities)
- Reading (All activities)
- New key vocabulary associated with wind energy production and careers. (Film & activities)
- Processing and ordering skills. (All activities)
- Math (Activity 3)

Resources

- Two adults to facilitate
- Access to Triton Knoll careers video clip (Online Resource) and means to screen it
- Printable Jobs match cards
- Printable Map Crib sheets (four different roles for four groups).
- Teacher needs to prepare Perspex map layers ahead of class.
  The teacher creates 4 maps on large (A3/A2/A1) Perspex sheets (or tracing paper).
  One map is made for each category: marine biology, archaeology, An example is provided at the end of this document. 4 different categories)

- Whiteboard Pens (for each group of 4)
- Printable maths activity sheets
- Calculators for maths activity
- Post – it notes 3 per learner

Recommended groups sizes and timings

- This lesson plan is aimed at group sizes no larger than 24 students, although certain modifications could be made to make it feasible for larger classes (use of additional Perspex map layers).
- The 'Choose the site for the windfarm' activity has been planned to be carried out by dividing the class into 4 groups of 6 learners although these groups could be larger or smaller depending.

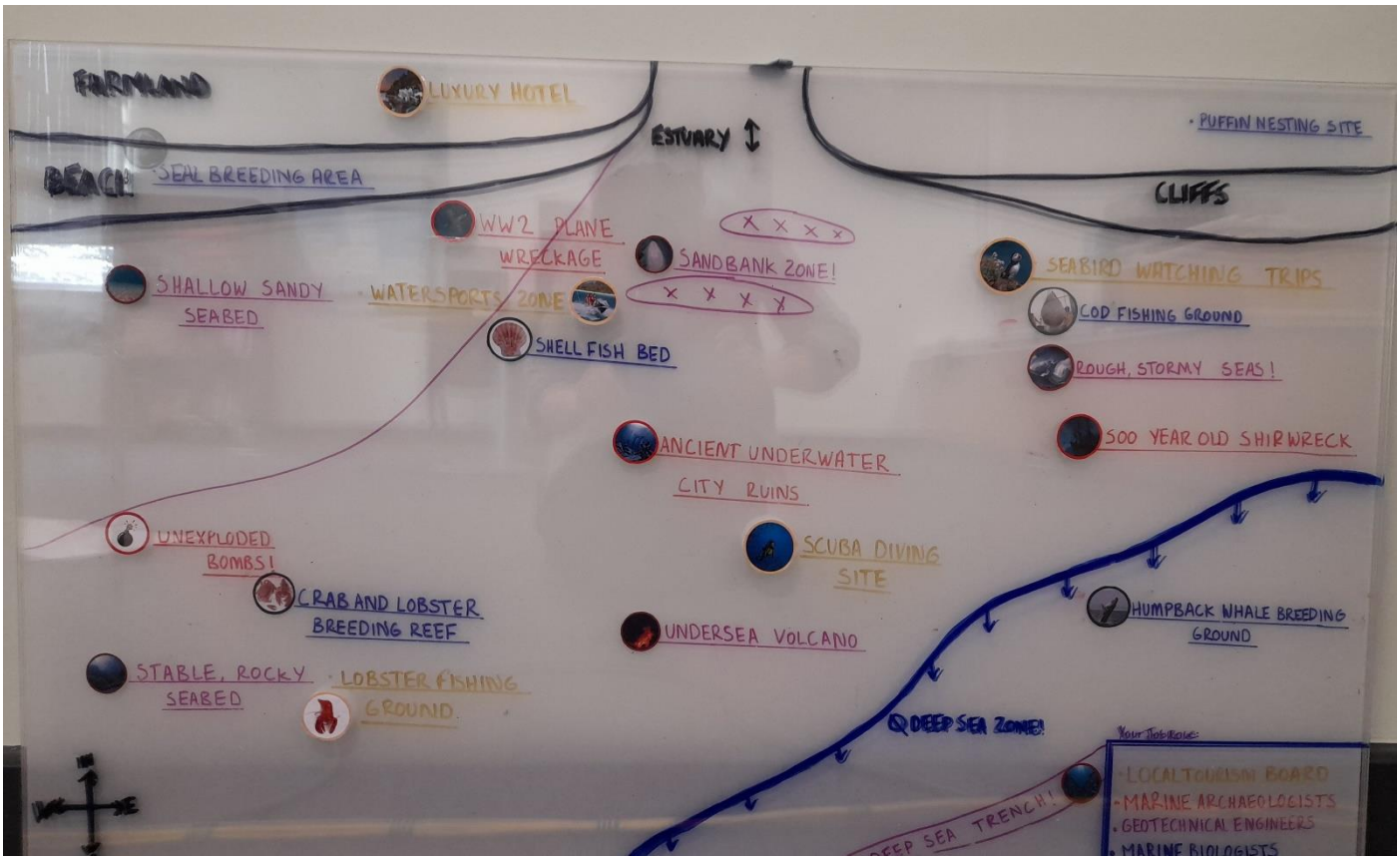
- The entire session is designed to be completed either as an enrichment session:
  within 2.5 minimum for the complete package – 3 hours including break times.
  OR
  It can be easily r reduced by only completing Activities 1 & 3 to form a shorter session.
  OR
  Could be delivered in a series of short sessions – form classes or as a careers enrichment series.

Minimum Time:	Main Content:	Teaching Approaches
40 mins	**BASE ACTIVITY** **VIDEO AND INTRODUCTION** Introduction to the project and displaying of the Triton Knoll careers video to the group. • Teachers oral questioning – whole class Pause and ask questions after animation to check they can name: - Wind turbine - Wind turbine foundation - Offshore substation - Electricity cables - Onshore substation Pause after the different blocks of job interviews: 'planning', 'construction', 'operations' and check they are following general process of building a wind farm.	USE: Triton Knoll Careers video (20mins). *Whole class activity* Teacher starts by giving a brief introduction of what the class will learn and do throughout the session An easy warmup question is to ask how many of the students have seen an offshore wind farm from the beach…and how many of them know what it is doing? (generating electricity) Play film Pause the video regularly to check understanding via oral questioning.
25 mins	**ACTIVITY 1** **JOBS MATCH ACTIVITY** Learners to Match the job role cards to the job description pictures.	USE: Jobs match card cut-outs *Groups or individual activity* Answers and progress should be checked after and during this stage. This could be done via a tutor led group discussion at each stage and also circulating around groups, offering support and prompts if needed.
45 mins	**ACTIVITY 2** **A) GROUP MAPPING ACTIVITY** • Each group will be provided with one of 4 different job roles relating to key features that need to be considered in where to geographically site an offshore wind farm. • The teacher/ careers advisor/ guest speaker reads out the 'Facilitator's paper' background story. • Each group is given their own version of the perspex map (all of the same location). The map can already have icons on or the students can stick the 'key icon pictures' onto where the features are labelled in writing. • On each map, there will be varying features that each group will have to discuss from the perspective of their given job role to decide where the wind farm should be placed. Their preferred options can be marked onto Perspex by the team.	USE: Perspex maps, map key icon cut outs and bluetac (1 set per group) Crib sheet – 1 type per group. Whiteboard pens *Group activity* • Assistance will be provided through the use of additional resources such as the Map Crib sheets and tutor support where required. • Tutor to ensure that all learners are participating and completing the Map feature worksheets. • Whiteboard pens should be made available for each group for annotations.

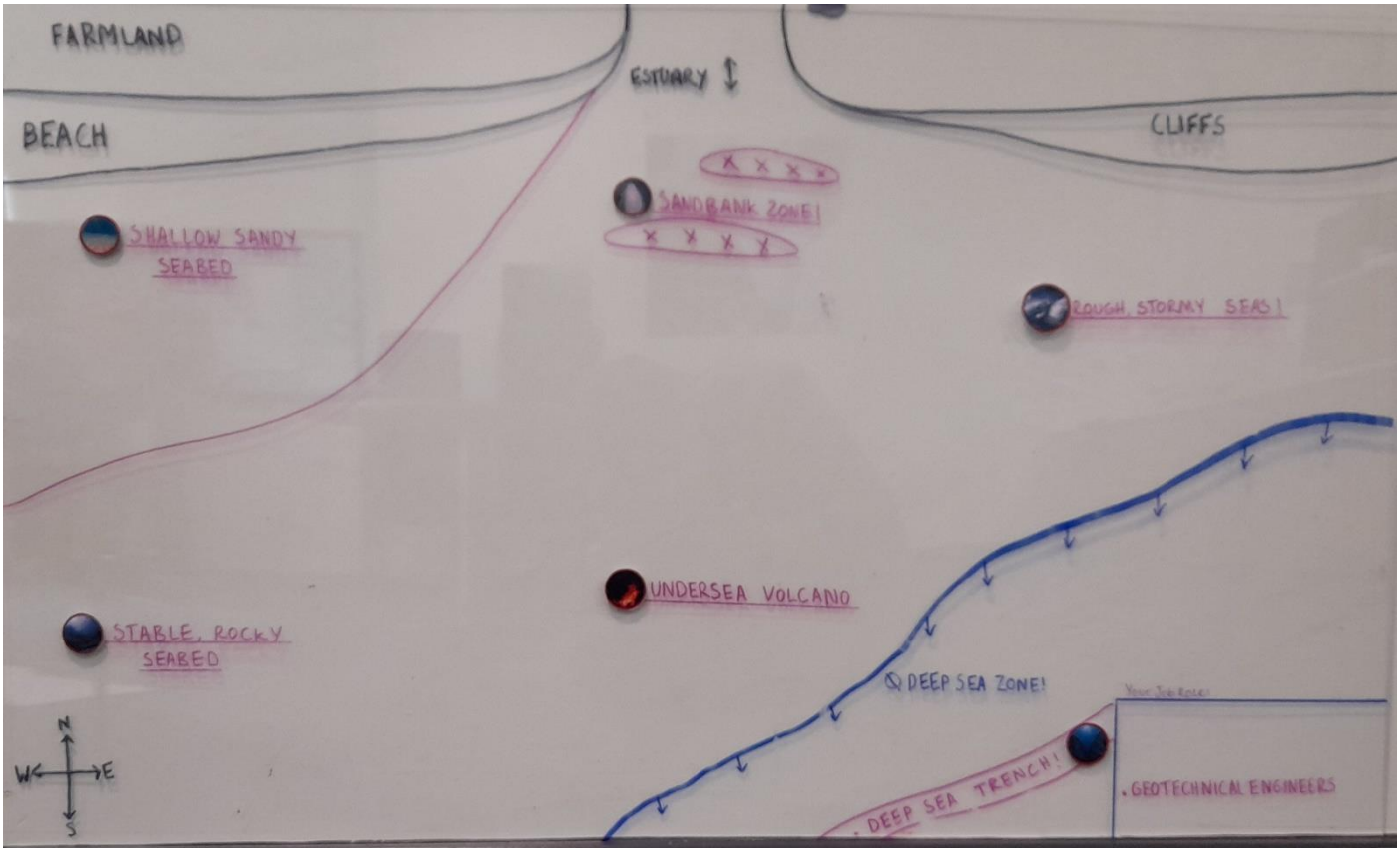
Time	Main content	Teaching Approaches
Approx. 10 mins	**ACTIVITY 2** **B) PRESENTATION OF EACH GROUP'S MAPPING DECISION** • A spokesperson from each group should be nominated by the group to display their map to the class and explain the reasoning behind where they thin their windfarm should be placed. This should last no longer than 2 minutes per group.	• Teachers facilitate verbal presentations and the selection of the final site considering the variety of factors to be considered
5 mins	**ACTIVITY 2** **C) THE FINAL DECISION** • All groups to overlay their Perspex maps and observe and discuss as a class where the windfarm should ultimately be placed.	Tutor should oversee this activity and manage the discussion, making the ultimate decision and marking it on the map.
30 minutes	**ACTIVITY 3** **WINDFARM MODEL MATHS ACTIVITY** • All students will require a windfarm model maths activity sheet. From the information given on the sheet, students should work independently to solve the problems on the worksheet to ultimately decide which windfarm model would be most suitable for the site.	USE Facilitator's note Activity 3 worksheet Calculators *Individual activity* Using the Facilitator's note remind them of Greta's challenge and set out what the question is. Ensure learners work independently and also have calculators. Answers should also be discussed and checked upon group completion.
10 minutes	**CLOSING ACTIVITY** **SUMMARY AND FEEDBACK** Students: • Write down the name of one new job role you learnt about today • Write down the most interesting thing you learnt today • What did you enjoy the most about activities Explore further final note: https://www.tritonknoll.co.uk/careers-case-studies/ Teacher will show the students the triton knoll careers and education website and advise them to explore case studies on individual jobs that they might be intertested in.	• USE post-it notes • Optional homework activity can be set regarding exploring the website. • **Please email us a photo of the collection of post-it notes to: Fruzsina.kemenes@rwe.com** **We would also welcome your feedback as a teacher!**

Examples of Maps to be prepared by teacher on Perspex:
1)= Combination of all layers placed on top of one another 2) = Geophysical features 3) = Marine Biology features 4) = Tourism map 5) = Archaeological features

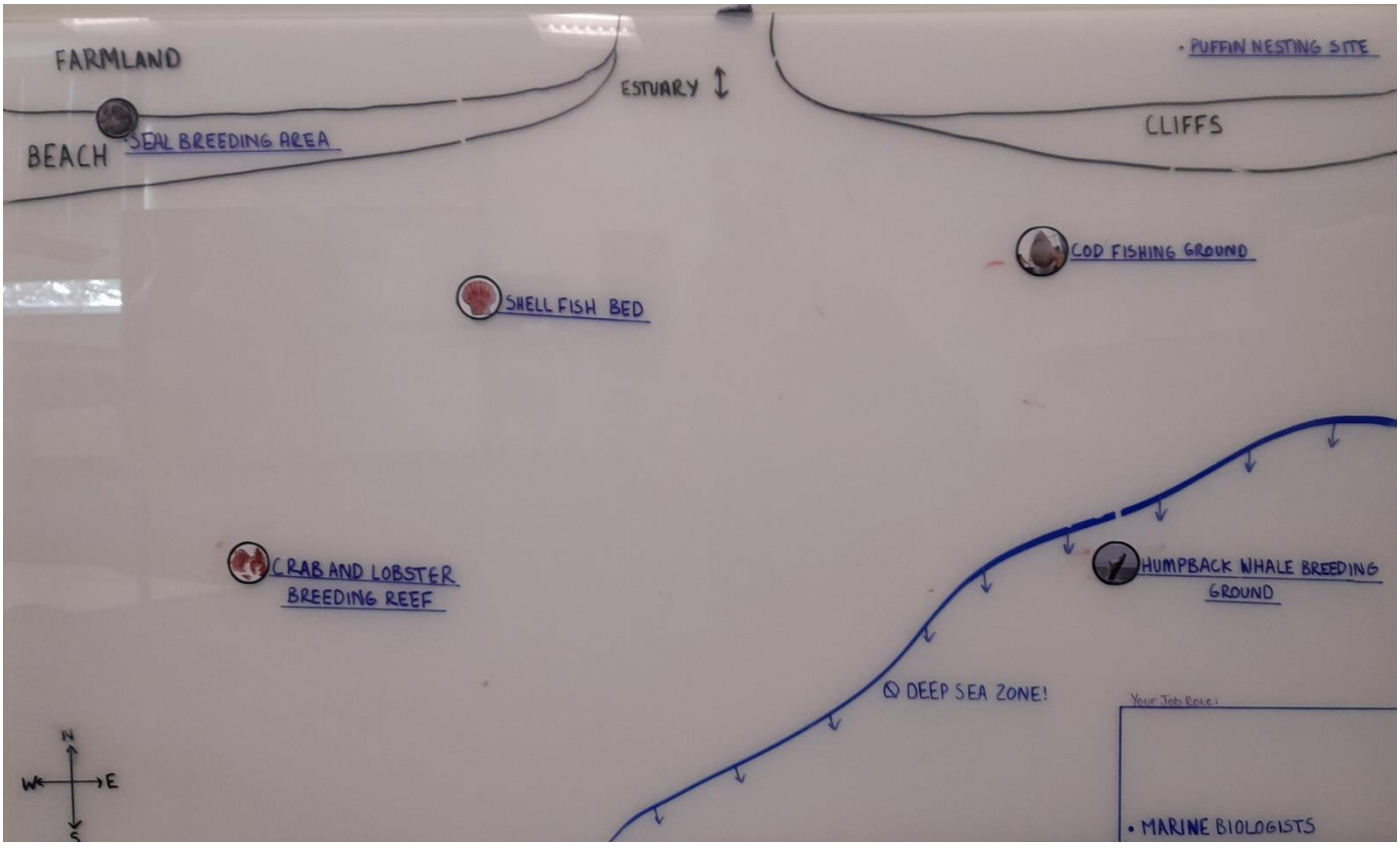
Example Map 1



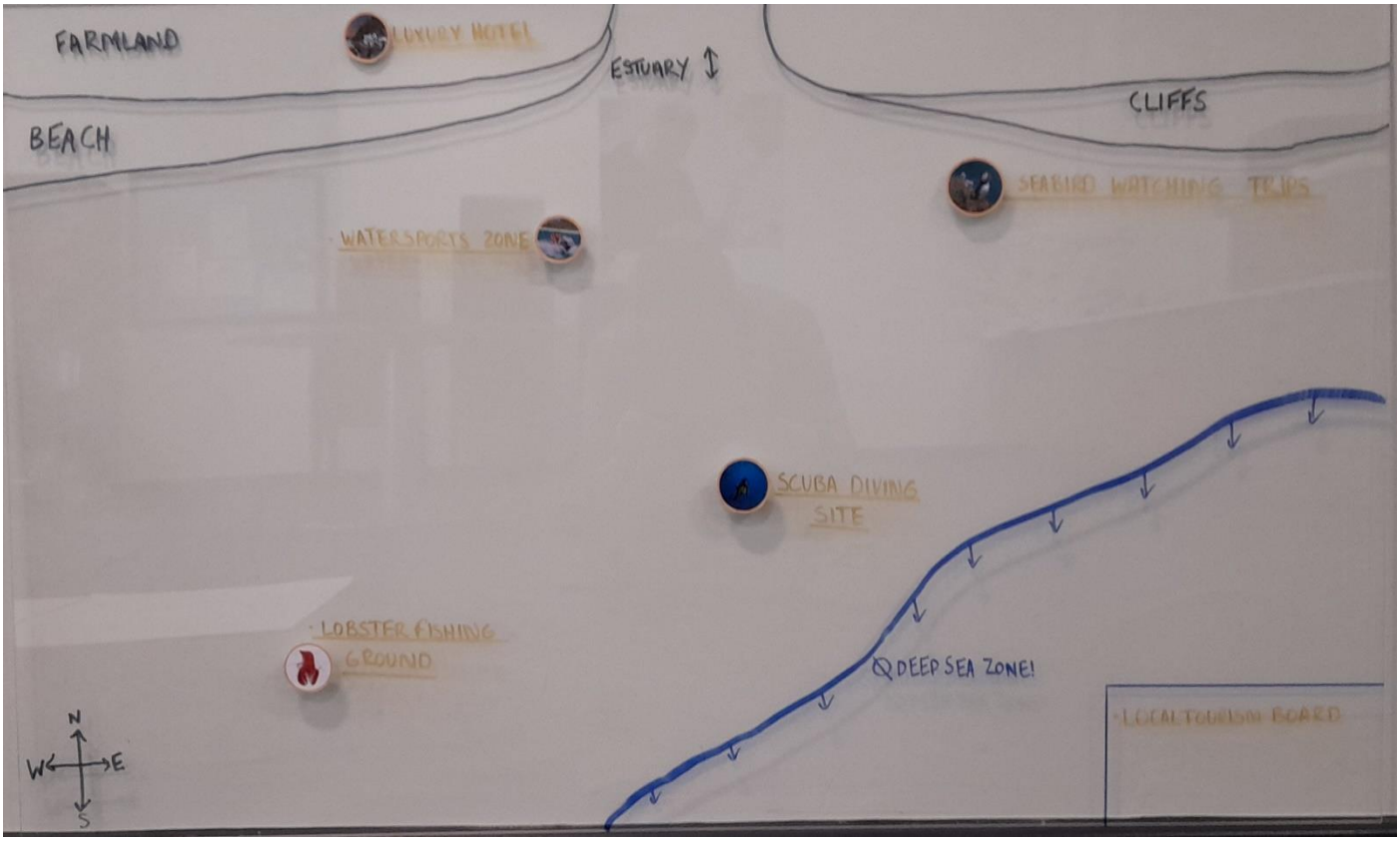
Example Map 2



Example Map 3



Example Map 4



Example Map 5