



**TRITON KNOLL**  
OFFSHORE WIND FARM

**Activity 3:**  
**Wind Farm**  
**Design**  
**Calculation**  
**student sheet**

Name \_\_\_\_\_

## **Activity 3: Wind Farm Design Calculation**

### **student sheet**

Greta Thunberg sets your hometown a challenge:

**Design a wind farm that will meet the electricity needs of your hometown!**

There are **198,000 homes that need electricity** in your hometown. People are using the electricity for lights, TV sets, charging phones, cooking, and many other activities. They will be very unhappy if they don't have electricity.

**An area of seabed that has been identified for a potential wind farm. It measures 35km<sup>2</sup> in total.**

Remember all the limits of the area – for example the nearby ancient underwater city that needs to be protected from disturbance. If you try building on a larger area – your neighbours, the whales, fish, skeletons, local swimmers and fisherfolk will be upset and will block your development from going ahead.

Choose from the following wind farm designs - which do you think is best and why?

**Look at the options below and decide:**

To meet the electricity needs of your hometown (**198,000 homes**)

using only the **35km<sup>2</sup> area** you have available:

**Which combination of wind turbine model and number of turbines will you build?**

#### **Big turbine model**

- Each turbine will power 18,000 homes
- Each turbine needs 3 km<sup>2</sup> to capture wind best and enable boats and wildlife to pass between them

- a) 20 large turbines
- b) 11 large turbines



#### **Smaller turbine model**

- Each turbine will power 9000 homes



- Each turbine needs 2 km<sup>2</sup> to capture wind best and enable boats and wildlife to pass between them
- c) 22 smaller turbines
- d) 15 smaller turbines

**Handy Hint!!**

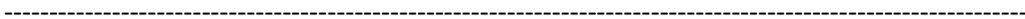
Step 1: Calculate how many homes are powered by each option

Step 2: Check if the total number of turbines can fit within the 35km<sup>2</sup> area.



**THE BIG QUESTION!**

**Which model would be best for Triton Knoll to build for this area? The Smaller Turbine model or the Larger Turbine Model?**



**CAN YOU EXPLAIN WHY?**

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