

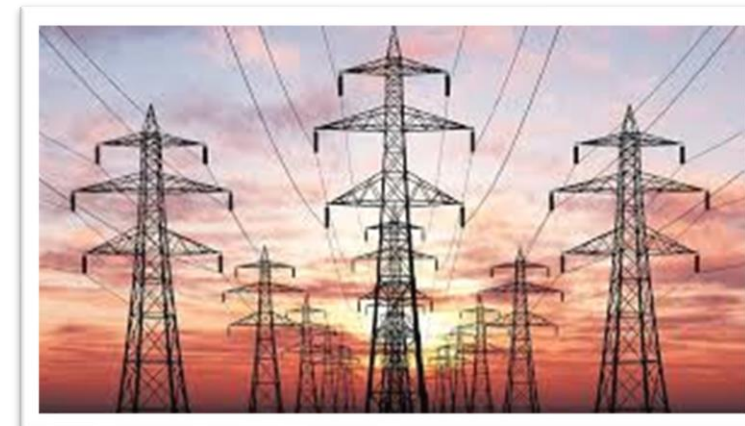
# STEM EDUCATION PROGRAMME

## Storm Session

Joe Bloggs  
Wind Turbine Engineer







# SSE Video





# A storm is coming!

Forecasters predict that a storm will hit your town in two days time. You have limited budget and time. Decide how you will prioritise protecting the following elements of the town.



**80-100MPH winds**



**Extreme rainfall**



**Flood warning**

TRAIN TRACKS & STATION



RETIREMENT HOME



ELECTRICITY SUB-STATION



HOSPITAL



LOCAL NURSERY



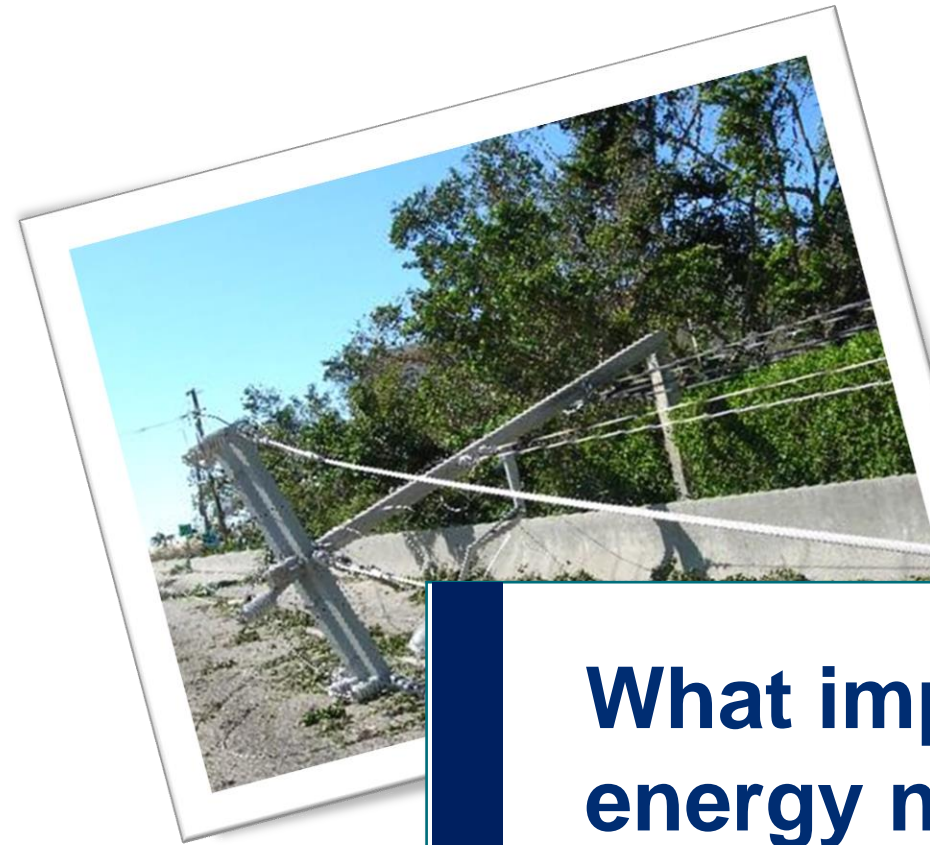
SECONDARY SCHOOL



CATHEDRAL







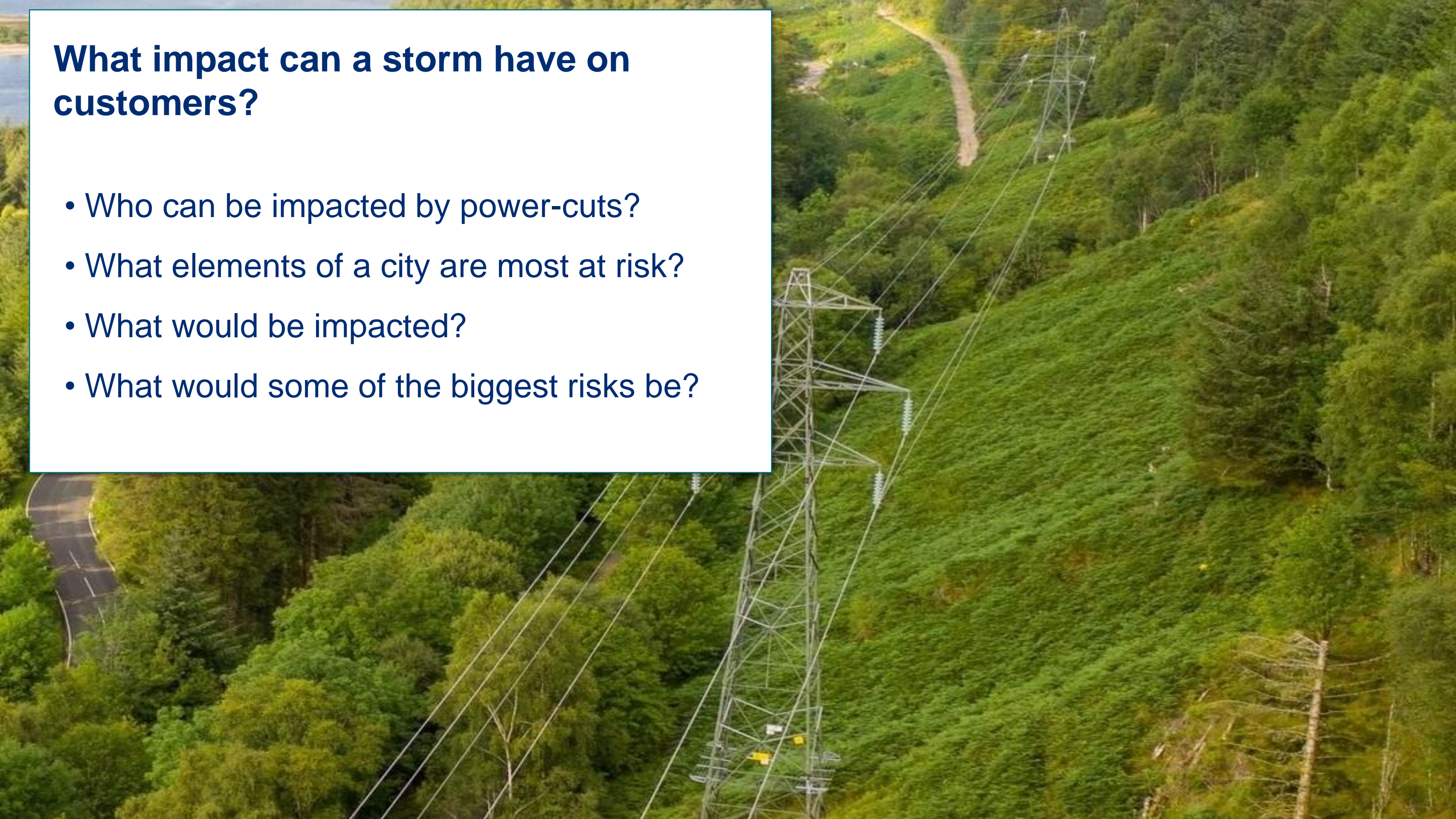
## What impact can a storm have on our energy networks?

- Trees/foliage falling on electricity lines.
- Flooding of electricity substations and foundations washed away.
- Damage to infrastructure including power stations/sub stations.
- Any damage to an electrical network can cause power outages for customers.



# What impact can a storm have on customers?

- Who can be impacted by power-cuts?
- What elements of a city are most at risk?
- What would be impacted?
- What would some of the biggest risks be?







**£20 charged for each minute that a household is off grid.**

**E.g. – There are roughly 290,000 homes in Glasgow. If every household was off grid for 1 minute, SSE would receive a penalty of £5,800,000**

## **How do SSE protect against storm damage to power?**

- Delivering vital supplies
- Providing power packs
- Repair crews on call to fix power lines/sub stations.
- Building sub-stations that are protected against storm damage.
- Customer service support
- Using Artificial Intelligence to reduce risk to network.



# Meet the people who keep you safe!



**Olivia:** Technical Support Assistant  
– keeps the electricity flowing by  
checking problems on the network!



Tree cutters to prevent trees  
from falling onto lines



## Protecting a town!



- What **five** things would you do to protect this town?
- Use the information on your worksheet to decide the **key steps** you would take to protect this city after a storm has just hit.
- You have **5 minutes** to decide! For every minute you take, a £40,000 penalty is received.

**Electricity Substation.** The towns electricity is made safe here and then delivered to homes/businesses. The water levels are starting to rise near the substation which has caused flooding to the substation.

**River.** Very heavy rain is causing river levels to rise which could cause extensive flooding.

**Secondary school** – Power cut has caused electricity in the school to go out just before lunch time.

**Old age home** near to the river is at risk of flooding. This old age home has space for 50 elderly people.

**Main road**– Some power lines have started to fall blocking the main road into the town.



**Traffic light** failure on one of the towns busiest roads. This can cause dangerous traffic accidents to occur.

**Community hospital** suffering electricity failures. Several vulnerable people from the community are looked after here.

**Metal factory** – The largest employer in the town with 1,500 workers. Electricity needed to operate the machines at the factory.



# Meet the people who keep you safe! Video





# Protecting a town

## WINCHESTER

**LOCATION** = Hampshire, South of England

**POPULATION** = 45,184

**NEAREST LARGE CITY** = Southampton

## ADDITIONAL INFORMATION

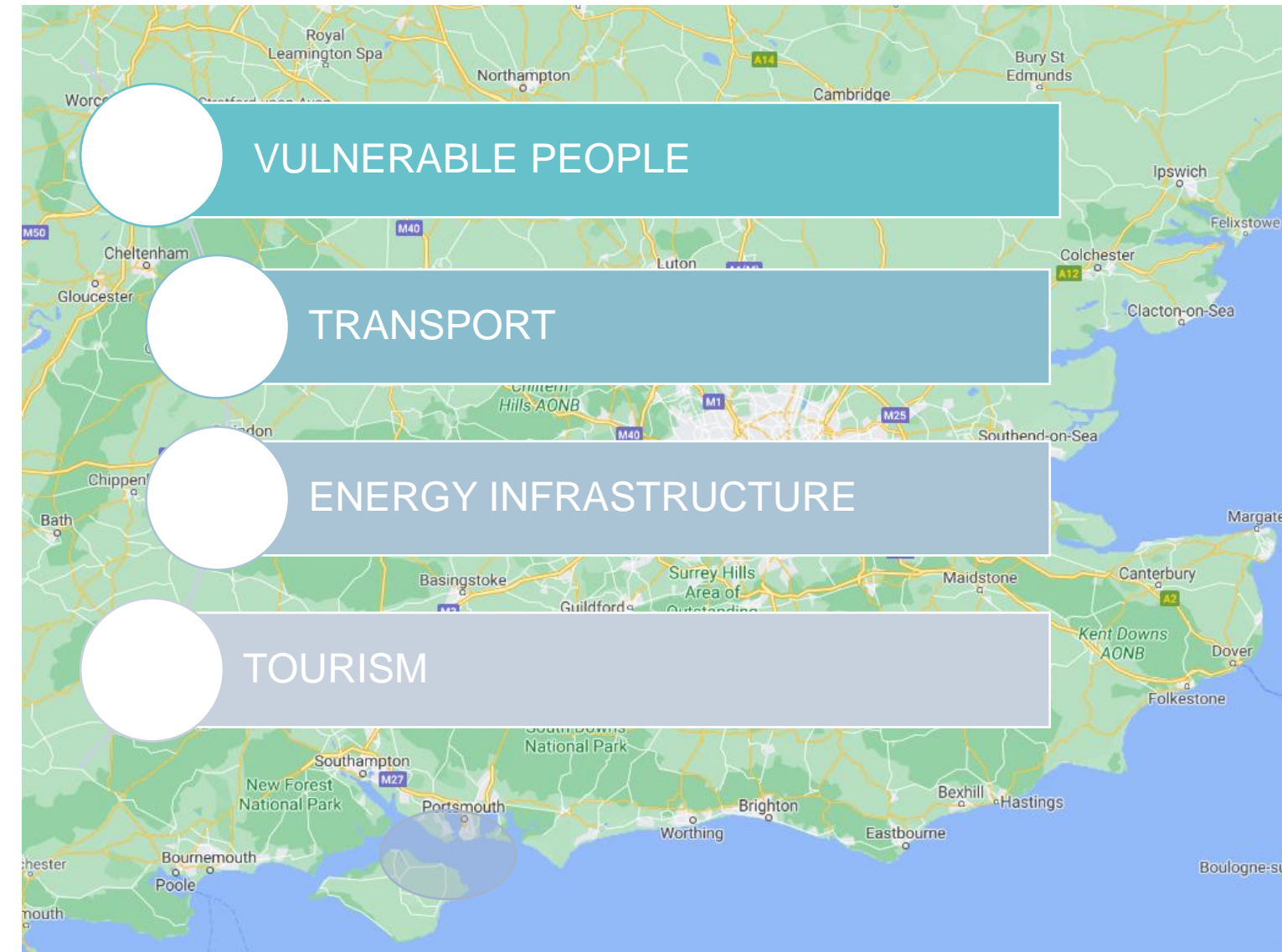
- The river Itchen runs through the city.
- On average, 5.5 million tourists visit the city.
- In 2013, tourism brought in £341 million.
- Winchester cathedral is one of the largest in Europe and has over 300,000 visitors per year.
- Large university with 900 staff and 6,500 students.



**60MPH winds**



**Possible heavy rain**



# Protecting a town

## Group activity

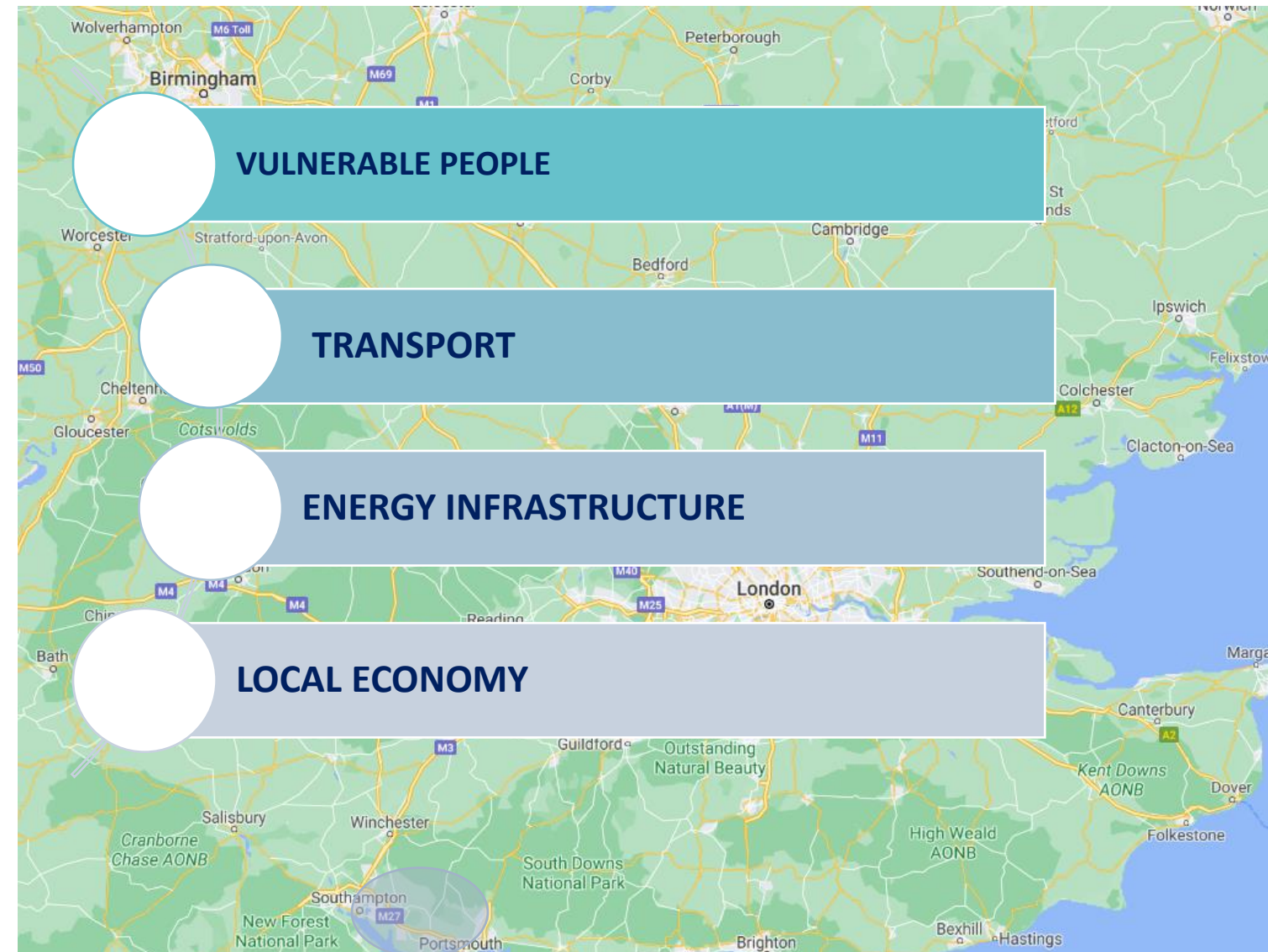
- Split into groups of **four**
- Each member of the group has a specific **responsibility** to help prepare a town for an incoming storm.
- First **ten** minutes, individually work out your specific response to your area of concern.
- You will then have **15** minutes to work out as a group what the **ten** key things you will do to protect Winchester against storm damage.
- Present your **ten** step action plan to the rest of the class.



60MPH winds



Possible heavy rain





# Individual reflection

- (1) What did you enjoy about working within a group?
- (2) What would you improve the next time you work in a group?
- (3) What was the hardest thing about preparing the city for the impact of a storm?
- (4) What have you learnt about the impact a storm can have on a local community?

Activity	Time Allocation Guide
Starter Activity	5 mins
Scenarios of a storm (individual work)	15 mins
Introduction to storm (individual and partner work)	15 mins
Protecting against Storm Damage 1	15 mins
Group Simulation	25 mins
Group presentations	15 mins
Individual Reflection	7 mins
Plenary	5 mins



# HOST FEEDBACK LINK

[Host Feedback](#)

