Year Group: 4 **Term: Autumn**	**Unit Title: Living by the Severn**
Enquiry: Why is Slimbridge such a good location for the Wildfowl and Wetlands Trust?	Driver Subject/s: Geography and Science

Science – changing state

What is a **particle**?

- **Particles** are what materials are made from.
- They are so small that we cannot see them with our eyes.
- The **properties** of a substance depend on what its **particles** are like, how they move and how they are arranged
- **Particles** behave differently in **solids**, **liquids** and **gases**.

What is a solid?

- In the **solid** state, the material holds its shape.
- **Solids** have **vibrating** particles which are closely packed in and form a regular pattern.
- This explains the fixed shape of a **solid** and why it can't poured.
- **Solids** always take up the same amount of space.

What is a liquid?

- In a **liquid** state, the material holds the shape of the container it is in.
- This means that liquids can change shape, depending on the container.
- **Liquids** have **particles** which are close together but random.
- **Liquid particles** can move over each other.
- **Liquids** can be poured.

What is a gas?

- In the **gas** state, particles can escape from open containers.
- **Gases** have **particles** which are spread out and move in all directions.

What happens to the **particles** in water when it is **heated** or **cooled**?

- When water (in its liquid form) is **heated**, the particles start to move faster and faster until they have enough energy to move about more freely. The water has **evaporated** into a **water vapour**.

When water is **cooled**, the **particles** start to slow down until a solid structure (ice) is formed. The water has **frozen**.

The Water Cycle

Evaporation:

- The Sun causes the water from the Earth to **evaporate**.
- This water **evaporates** from seas, lakes, streams and even puddles.
- When it **evaporates**, water turns into **water vapour**.

Condensation:

- As the **water vapour** rises, it cools down.
- As it cools down, **condensation** happens and **water vapour condenses** to small droplets of water.
- Clouds are made from a mix of dry air and small droplets of water.

Precipitation:

- As **condensation** continues to happen, more droplets of **water vapour** are formed.
- When the droplets become heavy and large enough, they fall back to the Earth's surface in the form of rain or snow.(**precipitation**)

Runoff and **Transpiration**:

- As **precipitation** happens in the form of rain or snow falling back to Earth, water is **absorbed** into the soil.
- This water is used by plants to grow - when water from plant leaves **evaporates** back into the **atmosphere**, this is called **transpiration**.
- Water may also run off and enter oceans, seas and rivers.
- Water then **evaporates** again and the water cycle begins again!

Animals and living things

- All living things, which can also be called **organisms**, have to do certain things to stay alive. These are the life processes: **movement**, **respiration**, **sensitivity**, **growth**, **reproduction**, **excretion**, **nutrition**.
- A **classification key** is a tool that is used to group living things to help us identify them.
- **Habitats** can change throughout the year and this can have an effect on the plants and animals that live there.
- Humans can have positive and negative effects on the **environment**:
  positive effects: nature reserves, ecological parks
  negative effects: litter, **urban** development

Habitats and food chains

- Food chains and webs show the different food sources within a habitat
- They begin with a **producer** and then **consumers.**
- If one aspect is removed, reduced or increased, this has an impact on the other parts of the chain or web.

Geography – main focus on field work skills

- Explore **Ordinance Survey** maps, their keys, symbols and grid references. Study the local area with particular focus on the River Severn.
- Use Google maps to compare against the OS maps. What do you notice?
- Identify features such as hills, mountains, coasts and rivers on maps. – human and physical geography
- Use different sources to compare **rural** and **urban** locations both locally and around the UK. Include **population** density and land use maps.
- Explore the different land use around the Severn including farming and fishing

Key Vocabulary: Science – changing state

absorb - soak up or take in
atmosphere - the layer of air or other gases around a planet
condensation - small drops of water which form when water vapour or steam touches a cold surface, such as a window
cooling - lowering the temperature of something
evaporation - to turn from liquid into gas; pass away in the form of vapour.
freezing - If a liquid or a substance containing a liquid freezes, it becomes solid because of low temperatures
gas - a form of matter that is neither liquid nor solid. A gas rapidly spreads out when it is warmed and contracts when it is cooled.
heating - raising the temperature of something
liquid - in a form that flows easily and is neither a solid nor a gas.
melting - to change from a solid to a liquid state through heat or pressure
particles - a tiny amount or small piece
precipitation - rain, snow, sleet, dew, etc, formed by condensation of water vapour in the atmosphere
properties - the ways in which an object behaves
runoff - rain in excess of the amount absorbed by the ground
solid - having a firm shape or form that can be measured in length, width, and height; not like a liquid or a gas
temperature - a measure of how hot or cold something is
transpiration - evaporation of water from a plant's leaves, stem, or flowers
water cycle - the process by which water on the earth evaporates, then condenses in the atmosphere, and then returns to earth in the form of precipitation.
water vapour - water in the gaseous state, esp when due to evaporation at a temperature below the boiling point

Key Vocabulary: Living things and habitats

carnivore - an animal that eats meat
consumer – a living creature that eats another living thing
classification key - a system which divides things into groups or types
environment - all the circumstances, people, things, and events around them that influence their life
excretion - the process of eliminating waste from the body
food chain - a series of living things which are linked to each other because each thing feeds on the one next to it in the series
habitat - the natural environment in which an animal or plant normally lives or grows
herbivore - an animal that only eats plants
life processes - There are seven processes that tell us that living things are alive
nutrition - the process of taking food into the body and absorbing the nutrients in those foods
omnivore - person or animal eats all kinds of food, including both meat and plants
organism - a living thing
producer – a plant that makes its own food
reproduction - when an animal or plant produces one or more individuals similar to itself
respiration - process of respiring; breathing ; inhaling and exhaling air
sensitivity - responding to the external environment
vegetation - plants, trees and flowers

Geography:

coordinates – numbers that show a position on a grid
grid reference – a position on a map marked by vertical and horizontal lines
keys – an explanation of the symbols on a map
land use – how land is used eg: farming, industrial, nature reserve
Ordinance survey – a manufacturer of map
rural – relating to the countryside
symbols – images or simple pictures
urban - relating to city or built up areas
Wildfowl and Wetlands Trust- an international charity that looks to preserve wetlands and the birds that live there