LONG TERM PLAN YEAR 4

To be taught throughout the year – Living things and their habitats (B) – Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year.

Autumn 1	Autumn 2	Spring 1
Domain: States of matter (chemistry) Earth and space (basic knowledge)	Domain: Living things and their habitats (biology)	Domain: Animals including humans (biology)
Key concepts: particles, the Earth's surface and its climate	Key concepts: classification, environment	Key concepts: organisms require a supply of energy, human body, food chains
End points: Students have an understanding of the key domains of knowledge and can use key concepts (knowing that: declarative/substantive knowledge) to make links between the domains Students can use declarative/substantive knowledge (knowing that) to work scientifically (knowing how: procedural/disciplinary knowledge) Students have an understanding of some of the major issues our planet is facing and what they can do to help; this is because our science curriculum has a focus on sustainability Students appreciate the importance of science in our ever-changing, complex world		
Broken down knowledge covered Know why substances are classified as solids, liquids or gases Know how temperature can affect a material's state (heating/cooling). Example to be used: water (ice-water-water vapour) Know how evaporation and condensation form a part of the water cycle	Broken down knowledge covered Know reasons for grouping animals (e.g., vertebrates, invertebrates) Know how to use a classification key to group, identify and name plants (flowering including grasses and non-flowering such as ferns and mosses) and animals Know dangers posed to animals based on environmental change (population, development, litter, deforestation) and the positive effects of nature reserves, garden ponds or ecologically planned parks	Broken down knowledge covered Know the functions of body parts linked to the digestive system: mouth, tongue, teeth, oesophagus, stomach, small and large intestine, anus Know different types of teeth in humans and their functions: incisors (cut), canines (tear/rip), premolars and molars (grind/chew) Know how to construct food chain diagrams that identify producers, predators and prey
Key vocabulary: solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle	Key vocabulary: classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate, vertebrate, invertebrate, flowering, non-flowering	Key vocabulary: digestive system, digestion, mouth, tongue, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, producer, predator, prey

Common misconceptions • 'solid' is another word for hard or opaque • solids are hard and cannot break or change shape easily and are often in one piece • substances made of very small particles like sugar or sand cannot be solids • particles in liquids are further apart than in solids and they take up more space • when air is pumped into balloons, they become lighter • water in different forms - steam, water, ice - are all different substances	Common misconceptions • an animal's habitat is like its 'home' • plants and seeds are not alive as they cannot be seen to move • fire is living • the death of one of the parts of a food chain or web has no or limited consequences on the rest of the chain • there is always plenty of food for wild animal • animals are only land-living creatures • animals and plants can adapt to their habitats, however they change • all changes to habitats are negative.	Common misconceptions • arrows in a food chains mean 'eats' • the death of one of the parts of a food chain or web has no, or limited, consequences on the rest of the chain • there is always plenty of food for wild animals • your stomach is where your belly button is • food is digested only in the stomach • when you have a meal, your food goes down one tube and your drink down another • the food you eat becomes "poo" and the drink becomes "wee"
Previous knowledge No direct previous knowledge as this domain just comes up in Year 4. Some links can be made to the Materials domain in Years 1 and 2. In EYFS: Things are made of different materials. / Different materials have different properties. / Sometimes a material can be changed (e.g. when burnt/ cooked)	Previous knowledge EYFS: there many types of animals and they live in different places Year 2: Know the terms 'living', 'dead' and 'never been alive' / Know the meaning of the terms 'habitat' and 'microhabitat' / Know how habitats vary and how specific animals and plants are suited to specific ones / Know and example of a simple food chain (e.g., grass - cow - human)	Previous knowledge EYFS: Animals (including humans) grow and change and as things grow and change, they have specific needs. / There are many different animals and they live in different places. / Names and information about different animals. Year 1: Identify and name a range of common animals and know their key characteristics: fish, amphibians, reptiles, birds, mammals (incl. pets) / Know the diets of carnivores, herbivores and omnivores / Know the key parts of the human body (head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) and the sense associated to them (taste, hearing, sight, smell, touch) Year 2: Know that animals produce offspring that grow into adults / Know that animals need food, water and air to survive / Know the importance of diet, exercise and hygiene for humans Year 3: Know that animals and humans get nutrition from the food they eat (they cannot make their own food) / Know the importance of a balanced diet for health and survival / Know the five main food groups: vitamins and minerals (fruits and

		vegetables), carbohydrates (potatoes, bread, pasta), proteins (meat, fish, eggs, beans), dairy (cheese, milk) and fats (oils and spreads) / Know that skeletons and muscles within different animals aid support, movement and protection. *Skull: protects the brain* *Ribcage: protects lungs and heart* *Backbone: protects the spinal cord*
Previous key vocabulary EYFS: Liquid, solid, gas. Dissolving, mixing, diluting Steam, smoke, boil, fire. Cooking, rising (cooking activities)	Previous key vocabulary EYFS: names of different types of animals, some names of places where animals live. *See EYFS Science Educational Programme document for more information.* Year 2: living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied	Previous key vocabulary EYFS: names of pets, farm animals, zoo animals, mini beasts, names of animal young, names of animals and groups of animals from different habitats around the world. *See EYFS Science Educational Programme document for more information.* Year 1: head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue, carnivore, herbivore, omnivore Year 2: offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, kitten/cat, caterpillar/butterfly), survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy Year 3: nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine

Spring 2	Summer 1	Summer 2
Domain: Sound (physics)	Domain: Electricity (physics)	Domain: Plants (biology) - revisit of previous knowledge
Key concepts: energy	Key concepts: energy	Key concepts: organisms require a supply of energy
End points: Students have an understanding of the key domains of knowledge and can use key concepts (knowing that: declarative/substantive knowledge) to make links between the domains Students can use declarative/substantive knowledge (knowing that) to work scientifically (knowing how: procedural/disciplinary knowledge) Students have an understanding of some of the major issues our planet is facing and what they can do to help; this is because our science curriculum has a focus on sustainability Students appreciate the importance of science in our ever-changing, complex world		
Broken down knowledge covered Know the link between the vibrations and sound Know how the pitch and volume of a sound can be changed Know what happens when sound passes through different mediums to the ear Know that sounds get fainter as the distance from the sound source increases	Broken down knowledge covered Know electrical safety hazards Know the difference between mains and battery Know common conductors (metal (not all metals), liquids) and insulators (wood, paper, plastic) Know how to create a simple circuit: bulb, cell/battery, wire, buzzer, motor, switch Know that a switch opens or closes a circuit and that links to whether the bulb will light up or not Know why a bulb may not light (e.g., switch, broken circuit)	Broken down knowledge covered No 'Plants' domain in Year 4. Revisit previous knowledge from Years 1-3.
Key vocabulary: sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation	Key vocabulary: electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol	Key vocabulary: see 'previous key vocabulary' section
Common misconceptions	Common misconceptions • electricity flows to bulbs, not through them	Common misconceptions

• Pitch and volume are frequently confused, as both can be described as high or low. • sound is only heard by the listener • sound only travels in one direction from the source • sound can't travel through solids and liquids • high sounds are loud and low sounds are quiet	• electricity flows out of both ends of a battery • electricity works by simply coming out of one end of a battery into the component	• plants are flowering plants grown in pots with coloured petals and leaves and a stem • trees are not plants, all leaves are green, all stems are green • a trunk is not a stem, blossom is not a flower • plants are not alive as they cannot be seen to move • seeds are not alive, all plants start out as seeds • seeds and bulbs need sunlight to germinate, plants eat food • food comes from the soil via the roots • flowers are merely decorative rather than a vital part of the life cycle in reproduction • plants only need sunlight to keep them warm • roots suck in water which is then sucked up by the stem
<u>Previous knowledge</u> No previous knowledge on sound as this domain appears for the first time in Year 4. However, children should have a basic knowledge from Year 2 and EYFS.	<u>Previous knowledge</u>	<u>Previous knowledge</u> EYFS: Plants grown and change and as they do, they have specific needs. Year 1: Know specific types of plans and trees of the following groups: garden flower, wildflower, deciduous tree, evergreen tree (e.g., rose, dandelion, oak, conifer) Know the difference between deciduous and evergreen plants Know the basic parts of flowering parts and trees: roots, stem, trunk, leaves, flowers (blossom), petals, fruits and bark Year 2: Know that plants produce offspring that grow from seeds or bulbs into mature plants (introduce children to the terms 'germination', 'growth' and 'survival')

		Know that plants need water, light and a suitable temperature to grow and stay healthy *Note: seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them* Year 3: Know the functions of different parts of flowering parts: roots and stem/trunk (nutrition and support), leaves (nutrition) and flowers (reproduction), including water transportation. Know additional plant needs (from Y2) for growth and survival: air, nutrients from soil and room to grow Know the role of flowers in the life cycle of flowering plants: pollination, seed formation and seed dispersal *Note: children can be introduced to the idea that plants can make their own food, but do not need to understand how this happens*
Previous key vocabulary	Previous key vocabulary	Previous key vocabulary EYFS: seed, plant, water, soil, dig, harvest, caterpillars, butterflies, change, seedling, roots, leaves, water, food, grow, change, warmth, shoot, acorn, conker, disperse, names of fruits and vegetables, names of plants in our school and local environment including trees, flowers, herbs (mint, chives, rosemary, oak, hazel, willow, wild cherry, maple, silver birch, dandelion, daisy, daffodil, rose, poppy, cornflower) Year 1: leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, names of trees in the local area, names of garden and wild flowering plants in the local area, deciduous, evergreen

		Year 2: light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling Year 3: photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport