UK COASTAL HABITATS

Teacher Information Pack

Entry Level Units

Mapped to AQA Unit Awards Scheme and National Curriculum (KS3)

Yorkshire Marine Nature Partnership
EAST RIDING OF YORKSHIRE COUNCIL
Environment Agency
LCB Education

Teacher Information Pack

What's included in this pack:

Summary of Sections Created:

- Section 1: Overview, Curriculum Mapping, Lesson Sequence at a Glance
- Section 2: Key Concepts, Vocabulary List, Common Misconceptions
- Section 3: Resources List, Printing Notes, Preparation Checklists, Links
- Section 4: Detailed Lesson Guides for Lessons 1–3 (Coastal Habitats, Rock Pool Creatures, Human Impacts)
- Section 5: Detailed Lesson Guides for Lessons 4–6 (Coastal Defences, Ecological Enhancements, Site Visit Planning)
- Section 6: Fieldwork Guidance, Health & Safety, SEND & Accessibility, Monitoring & Citizen Science,
- Section 7: Exemplar Answer Sheets, Extension Activities

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Section 1: Overview & Curriculum Mapping

Purpose

This workbook introduces pupils to coastal habitats, ecological enhancements, and the role of citizen science in monitoring nature recovery. Through hands-on activities, fieldwork, and reflection, pupils develop understanding of how human activity impacts coastlines and how nature-based solutions can restore biodiversity.

What Pupils Will Learn

- Coastal habitats: UK rock pools, coastal defences, and the creatures that live there
- Human impact: How coastal development, erosion, and management affect ecosystems
- Ecological enhancements: What they are, why they're needed, and how they work
- Monitoring & citizen science: How to collect reliable data and contribute to real conservation projects
- Nature recovery: The importance of refugia, biodiversity, and habitat connectivity

Links to Concrete Coast Project

The Concrete Coast project focuses on enhancing ecological value of coastal defences through nature-based solutions. This workbook supports pupils to:

- Understand why ecological enhancements are needed (habitat loss, biodiversity decline)
- Recognise how monitoring informs management decisions
- Contribute real data through citizen science activities
- Connect local observation to national conservation priorities

Curriculum Mapping

National Curriculum Links (KS3 Science)

Biology:

- Ecosystems and adaptation (habitats, food webs, interdependence)
- Biodiversity and evolution
- Organisation and the distribution of organisms

Geography:

- Physical geography: coasts (coastal processes, management, human impact)
- Human geography: resource management, sustainability
- Fieldwork and map skills

PSHE/Citizenship:

- Environmental responsibility
- Sustainable development
- Community contribution

A more comprehensive national curricuum mapping is provided at the end of this section in tabular form.

Section 1: Overview & Curriculum Mapping

Chunked Lesson Sequence at a Glance:

Lesson	Title	Key Outcomes
1	UK Coastal Habitats	Identify coastal habitats; describe rock pool conditions
2	Rock Pool Creatures	Name common species; explain adaptation to rock pool life
3	Humans Affecting Coastlines	Identify human impacts; understand coastal squeeze concept
4	Coastal Defences	Compare hard/soft engineering; evaluate trade-offs
5	Ecological Enhancements	Define enhancements; explain why they're needed
6	Site Visits: Planning & Safety	Understand fieldwork procedures; identify local sites
7 & 8	Fieldwork / Local Site Visit	Collect data; observe species; photograph habitats
9	Data Analysis & Reflection	Analyse findings; reflect on citizen science role
10	Designing Solutions	Design enhancement; justify choices (KS4 focus)

Total: 4-10 hours (flexible; can be condensed or extended)

National Curriculum Mapping

This Unit is also a part of AQA Unit Award Scheme:
UK coastal habitats

Use any AQA Approved centre to get a unit award certificate for this unit.

If you need a centre to do this for you, you can email a digital copy of the finished unit worksheets to **education@littlecraftersboxes.co.uk**

	Unit Outcome	NC Links
1	Identify your nearest coastline using a map or digital tool (summary sheet and/or student completed work)	Geography KS3 - Geographical Skills and Fieldwork • "Build on their knowledge of globes, maps and atlases and apply and develop this knowledge routinely in the classroom and in the field" • "Interpret Ordnance Survey maps in the classroom and the field, including using grid references and scale, topographical and other thematic mapping" Geography KS3 - Locational Knowledge • "Extend their locational knowledge and deepen their spatial awareness of the world's countries" (UK context) Age Appropriateness: • Year 7 (11-12): Perfect introductory activity for map skills • Year 8-9 (12-14): Can extend to using digital mapping tools (GIS, Google Earth) Skills Developed: • Map reading • Use of digital tools • Spatial awareess • Locational knowledge
2	Identify at least four species commonly found in rockpools at your chosen coastline (summary sheet and/or student completed work)	Science KS3 - Working Scientifically • "Make and record observations and measurements using a range of methods for different investigations" • "Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work" Science KS3 - Biology: Relationships in an Ecosystem • "The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops" Geography KS3 - Geographical Skills and Fieldwork • "Collect, analyse and communicate with a range of data gathered through experiences of fieldwork" Age Appropriateness: • Year 7 (11-12): Identifying and naming species (observational skills) • Year 8-9 (12-14): Understanding species roles within ecosystems Skills Developed: • Observational skills • Species identification • Scientific recording • Fieldwork techniques
3	Show where each of these species is found using a model, drawing, or digital representation (summary sheet and/or student completed work)	Science KS3 - Working Scientifically • "Present observations and data using appropriate methods, including tables and graphs" • "Interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions" Geography KS3 - Geographical Skills and Fieldwork • "Interpret a range of sources of geographical information, including maps, diagrams, globes, aerial photographs and Geographical Information Systems (GIS)" • "Communicate geographical information in a variety of ways, including through maps, numerical and quantitative skills and writing at length" Art & Design KS3 • "Use a range of techniques to record their observations in sketchbooks, journals and other media as a basis for exploring their ideas" Age Appropriateness: • Year 7 (11-12): Simple drawings and labels • Year 8 (12-13): More detailed models or diagrams showing zonation • Year 9 (13-14): Digital representations, 3D models, or interactive presentations Skills Developed: • Data presentation • Visual communication • Scientific illustration • Use of digital tools

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	Unit Outcome	NC Links
4	Explain one adaptation that helps each identified species survive in its rockpool habitat (summary sheet and/or student completed work)	Science KS3 - Biology: Relationships in an Ecosystem • "How organisms are adapted to survive in their environment, including microorganisms" Science KS3 - Working Scientifically • "Apply mathematical concepts and calculate results" • "Interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions" Science KS3 - Biology: Genetics and Evolution • "Heredity as the process by which genetic information is transmitted from one generation to the next" • "Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction" Age Appropriateness: • Year 7 (11-12): Simple adaptations (e.g., "limpets have strong suction to stay attached") • Year 8 (12-13): More detailed explanations linking structure to function • Year 9 (13-14): Understanding adaptations in context of environmental pressures and evolution Skills Developed: • Scientific explanation • Linking structure to function • Understanding cause and effect • Biological reasoning
5	Describe, using notes, labels, or a short presentation, one way human activity can harm and one way it can help coastal habitats (for example, pollution, habitat loss, eco-tiles, mussel plates, or enhancement projects) (summary sheet and/or student completed work)	Geography KS3 - Human and Physical Geography • "Understand, through the use of detailed place-based exemplars at a variety of scales, the key processes in: physical geography relating to... coasts" • "Understand how human and physical processes interact to influence, and change landscapes, environments and the climate" Science KS3 - Biology: Relationships in an Ecosystem • "The importance of plant reproduction through insect pollination in human food security" (broader context: human impact on ecosystems) • "How organisms are adapted to survive in their environment" Science KS3 - Working Scientifically • "Present reasoned explanations, including explaining data in relation to predictions and hypotheses" • "Evaluate data, showing awareness of potential sources of random and systematic error" Geography KS3 - Geographical Skills and Fieldwork • "Communicate geographical information in a variety of ways, including through maps, numerical and quantitative skills and writing at length" Age Appropriateness: • Year 7 (11-12): Simple descriptions of harm (pollution) and help (beach cleans) • Year 8 (12-13): More detailed analysis of impacts and solutions • Year 9 (13-14): Evaluation of different approaches, understanding trade-offs Skills Developed: • Analytical thinking • Balanced argument • Communication skills • Understanding human-environment interactions

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	Unit Outcome	NC Links
6	Show the effect of adding an ecological enhancement (such as an eco-tile) (summary sheet and/or student completed work)	Science KS3 - Working Scientifically • "Understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas" • "Evaluate risks" Science KS3 - Biology: Relationships in an Ecosystem • "The interdependence of organisms in an ecosystem" • "How organisms are adapted to survive in their environment" Geography KS3 - Human and Physical Geography • "Understand how human and physical processes interact to influence, and change landscapes, environments and the climate" Design & Technology KS3 • "Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work" • "Understand how more advanced mechanical systems used in their products enable changes in movement and force" (broader context: understanding engineered solutions) Age Appropriateness: • Year 7 (11-12): Simple before/after comparisons • Year 8 (12-13): Understanding how design features support biodiversity • Year 9 (13-14): Evaluating effectiveness, suggesting improvements Skills Developed: • Cause and effect reasoning • Evaluation skills • Understanding conservation solutions • Design thinking
7	Locate and label at least three real UK coastal enhancement sites (for example, Scarborough, Blackpool, Brighton, or a local site) on a map or representation, and describe one key feature or intervention at each (summary sheet and/or student completed work)	Geography KS3 - Locational Knowledge • "Extend their locational knowledge and deepen their spatial awareness of the world's countries" (UK focus) Geography KS3 - Place Knowledge • "Understand geographical similarities, differences and links between places through the study of human and physical geography of a region within the UK" Geography KS3 - Human and Physical Geography • "Understand, through the use of detailed place-based exemplars at a variety of scales, the key processes in: physical geography relating to... coasts" Geography KS3 - Geographical Skills and Fieldwork • "Build on their knowledge of globes, maps and atlases and apply and develop this knowledge routinely in the classroom and in the field" • "Interpret Ordnance Survey maps in the classroom and the field, including using grid references and scale" • "Communicate geographical information in a variety of ways, including through maps" Age Appropriateness: • Year 7 (11-12): Locating and labelling sites on a map • Year 8 (12-13): Describing features with more detail • Year 9 (13-14): Comparing sites, analysing effectiveness of different interventions Skills Developed: • Case study analysis • Map skills • Comparative analysis • Understanding real-world applications

Section 2: Key Concepts and Vocabulary

Ecological Enhancement

- What it is: Adding features to a man-made structure (like a sea wall) to help wildlife live there.
- Why it matters: Sea walls protect us from flooding, but they're bare concrete. Enhancements create homes for creatures that would normally live on natural rocky shores.
- Example: Grooves, pools, or seaweed on a sea wall so crabs and starfish can hide and feed.

Coastal Squeeze

- What it is: When natural habitats (like salt marshes or shingle beaches) get trapped between rising sea levels and human structures (walls, roads, buildings).
- Why it matters: Wildlife has nowhere to go. Habitats shrink and disappear.
- Real example: A marsh that used to stretch 100 metres inland now only has 10 metres before it hits a sea wall.

Refugia (Plural: Refugium) / Habitat link

- What it is: A safe space where creatures can hide, rest, or survive tough conditions.
- Why it matters: Refugia are essential for survival—they protect animals from predators, storms, and drying out.
- Example: A rock pool is a refugium for a starfish during low tide.

Biodiversity

- What it is: The variety of different plants and animals living in one place.
- Why it matters: More species = healthier ecosystem. If one food source disappears, others exist. Ecosystems are more resilient.
- Simple measure: Count how many different species you find.

Man-Made vs Natural Habitats

- Man-made: Built by humans (sea walls, harbours, concrete defences). Natural: Created by nature (rocky shores, salt marshes, sand dunes).
- The challenge: Man-made structures are often bare and lifeless. We can make them more natural by adding features.

Desiccation

- What it is: Drying out.Why it matters: Rock pool creatures need moisture. If a pool dries up, they die.
- Real example: On a hot, sunny day, a shallow rock pool might evaporate, killing the creatures inside.

Monitoring

- What it is: Regularly checking and recording information about something over time.
- Why it matters: Monitoring tells us if enhancements are working. Is wildlife returning? Are populations growing?
- How we do it: Count species, measure pool depth, take photos, record observations.

Section 2: Key Concepts and Vocabulary

Citizen Science

- What it is: Non-scientists (like you!) collecting real scientific data that helps researchers and conservation projects.
- Why it matters: There are too many coastal sites for scientists alone to monitor. Your observations help protect nature.
- Your role: You're a real scientist contributing to the Concrete Coast project.

Nature Recovery

- What it is: Helping damaged ecosystems heal and become healthy again.
- Why it matters: Humans have damaged many habitats. We can help restore them.
- How: Protecting what's left, removing pollution, adding enhancements, reducing human pressure.

Section 2: Key Concepts and Vocabulary

Key Vocabulary (Pre-teach)

Word	Simple Defintion	Example
Adaptation	A feature that helps a creature survive in its habitat	Starfish have tube feet to grip rocks
Biodiversity	The number of different species in a place	A rock pool with 10 species has high biodiversity
Coastal defence	A structure built to protect land from flooding	A sea wall
Ecosystem	All the living things and their environment in one place	A rock pool ecosystem
Enhancement	Adding something to make it better	Grooves in a sea wall enhance it for wildlife
Erosion	Wearing away (usually by water or wind)	Waves eroding a cliff
Habitat	The place where a creature lives	A rock pool is a habitat for starfish
Hard engineering	Solid structures built to stop flooding	Concrete sea walls
Interdependence	Living things depending on each other	Crabs depend on algae for food
Monitoring	Regularly checking and recording data	Counting starfish every month
Refugium	A safe hiding place	A crevice in a rock where a crab hides
Soft engineering	Nature-based solutions to coastal problems	Planting salt marsh to slow wave energy
Species	A type of living thing	Starfish, crab, anemone
Sustainable	Can continue long-term without damaging nature	Using renewable energy is sustainable

Section 2: Key Concepts and Vocabulary

Suggested Pre-Teach Words

Teach these before starting the workbook:

- Habitat, species, ecosystem
- Adaptation, biodiversity
- Coastal defence, erosion
- Hard engineering, soft engineering

Introduce as you go:

- Refugium, desiccation, enhancement, monitoring
- Interdependence, sustainable, citizen science

Common Misconceptions

Misconception	Reality	How to Correct
"Sea walls are bad—we should remove them all"	Sea walls protect people and property. The challenge is making them wildlife-friendly too.	Explain that enhancements let us have both protection AND nature
"Rock pools are just puddles"	Rock pools are complex ecosystems with food webs and adaptations	Show the variety of creatures and explain how they depend on each other
"Starfish are plants"	Starfish are animals (echinoderms). They move, eat, and reproduce.	Observe starfish moving; discuss what makes something an animal
"All crabs are the same"	Different crab species have different sizes, colours, and behaviours	Identify different crab species in the workbook
"Monitoring is just looking"	Monitoring requires careful, repeated, consistent recording	Emphasise the importance of data quality and consistency
"One person's data doesn't matter"	Thousands of citizen scientists create powerful datasets	Explain how their observations combine with others' to show real patterns

Section 3: Resources and Preparation

Resources List

What's Included in This Pack

- Workbook: 36-page illustrated pupil workbook (pages 1–36)
- Teacher notes: Lesson-by-lesson guidance (this document)
- Vocabulary cards: Printable flashcards for pre-teaching
- Data collection sheets: Fieldwork recording templates
- Identification guides: Rock pool creatures (illustrated)
- Answer sheets: Model responses and exemplar data
- Risk assessment template: Coastal visit safety checklist

What Teachers Need to Provide

For classroom lessons:

- Projector/interactive board (for displaying workbook pages)
- Printed workbooks (1 per pupil)
- Coloured pencils, pencils, erasers
- A4 paper for sketches and extensions
- Optional: rock pool creature models or images for handling

For fieldwork:

- Transport to local coastal site (or use virtual alternatives—see below)
- Clipboards and pencils
- Measuring tapes or rulers
- Small nets (optional, for observing creatures)
- Containers for temporary observation (if catching specimens)
- Cameras/phones for photography
- First aid kit
- Risk assessment documentation

For enhancements design activity:

- Card, foam, or modelling materials
- Craft supplies (paint, glue, etc.)
- Rulers, scissors

Printing Notes

Workbook:

- Print double-sided on A4 white paper
- Colour printing recommended (photographs are key to engagement)
- 36 pages = 18 sheets double-sided per pupil
- Font: 11pt Arial (as per workbook design)
- Binding: Stapled or spiral-bound for durability

Vocabulary cards:

- Print on card stock, laminate if possible
- Colour-code by concept (e.g., blue for habitats, green for human impact)
- Size: A5 or smaller for handling

Data sheets:

- Print on A4, landscape orientation
- Consider printing on pale grey or off-white (easier on eyes, dyslexia-friendly)

Section 3: Resources and Preparation

Preparation Checklist

Before Starting the Unit

- Print workbooks (allow time necessary for colour printing)
- Review all 36 pages yourself; note any local context to add
- Pre-teach vocabulary (use vocabulary cards)
- Identify local coastal sites for fieldwork (or plan virtual alternatives)
- Contact site owners/managers if visiting (permission, access times)
- Arrange transport if needed
- Complete risk assessment for chosen site
- Gather craft materials for enhancement design activity
- Prepare projector slides (page-by-page or key images)
- Print answer sheets and data collection templates
- Brief any teaching assistants or support staff

Lesson	Preparation
1: Coastal Habitats	Print workbook pages; prepare vocabulary cards; test projector
2: Rock Pool Creatures	Print workbook pages; gather creature images/models; prepare identification guide
3: Humans Affecting Coastlines	Print workbook pages; prepare local examples (news articles, photos)
4: Coastal Defences	Print workbook pages; gather images of hard/soft engineering examples
5: Ecological Enhancements	Print workbook pages; gather craft materials; prepare design brief
6: Site Visit Planning	Print workbook pages; confirm transport; brief pupils on safety
7–8: Fieldwork	Print data sheets; check weather; prepare clipboards; brief on data quality
9: Data Analysis	Collect all pupil data sheets; prepare analysis template
10: Design Solutions	Print design brief; gather materials; prepare exemplar designs

Section 3: Resources and Preparation

Before Fieldwork (Lessons 7–8)

Two weeks before:
- Confirm site access and permissions
- Complete risk assessment
- Arrange transport
- Brief pupils on safety and expectations: Rock pool code of ethics (see citizen science workbooks)

One week before:
- Check weather forecast
- Prepare data collection sheets
- Brief teaching assistants
- Arrange first aid kit and emergency contacts

Day before:
- Confirm transport
- Check equipment (nets, clipboards, measuring tapes)
- Print data sheets
- Brief pupils on what to expect

Morning of visit:
- Check weather
- Do final safety briefing
- Distribute clipboards and pencils
- Take a register
- Take photos for evidence

Differentiation Resources by Level

Pre-Entry / Entry Level
- Simplified vocabulary cards (fewer words, larger text)
- Visual identification guides (pictures, minimal text)
- Shorter data collection sheets (fewer columns)
- Paired or small-group fieldwork
- Adult scribe for recording

Level 1 / Key Stage 3
- Full workbook as designed
- Standard data collection sheets
- Independent fieldwork with peer support
- Written reflections and analysis

Level 2 / GCSE (KS4)
- Extended design brief (justify choices with evidence)
- Advanced data analysis (graphs, statistical comparison)
- Research task: Compare two coastal management strategies
- Presentation or report writing

Section 4: Lesson Guides (lessons 1 through 3)

Lesson 1: UK Coastal Habitats

Workbook pages: 1–6
Learning objective: Pupils can identify and describe UK coastal habitats.
Success criteria:

- Name at least three coastal habitats (rock pools, salt marshes, beaches, cliffs)
- Describe conditions in one habitat (temperature, light, moisture, shelter)
- Explain why coastal habitats are important

Starter
Activity: "Habitat Detective"
Show the three photographs on page 1 (rocky shore, sandy beach, salt marsh).
Ask:

- "What do you see in each photo?"
- "What animals might live here? Why?"
- "What's different about each place?"

Key questions:

- "Which habitat looks easiest to live in? Why?"
- "Which looks toughest? What challenges would creatures face?"

Teacher prompt: Establish that different habitats have different conditions, and creatures are adapted to survive there.

Main
Activity 1: Habitat Conditions (page 3-5)
Pupils read the habitat descriptions and complete the matching activity:

- Rocky shore
- Salt marsh
- Sandy beach
- Estuaries
- Sand dunes

Support: Highlight key words (temperature, light, shelter, moisture) before they read.
Challenge: Ask pupils to rank habitats by difficulty: "Which is hardest for creatures to survive in?"
Key questions:

- "Why is a salt marsh wet all the time?"
- "What's the difference between a rocky shore and a sandy beach?"
- "Why would any of these habitats be dangerous for creatures?"

Teacher prompt: Emphasise that habitats are defined by their conditions (not just what lives there). Conditions create challenges that creatures must adapt to.

Activity 2: Learning Outcomes & Checklist
Pupils read the learning outcomes and tick what they already know. This primes them for the lesson and builds confidence.

Activity 3: Map Reading (page 6)
Pupils look at a map of the UK to find their local coastlines.
Draw their coastline.
Support: Provide a maps of different areas for close up views and to trace.
Challenge: Ask pupils to define the coastline’s habitats in their own words..

Section 4: Lesson Guides (lessons 1 through 3)

Lesson 1: UK Coastal Habitats (continued)

Plenary
Reflection activity: "Why are coastal habitats important?"
Pupils complete sentence stems:

- "Coastal habitats are important because..."
- "Creatures need coastal habitats to..."
- "Humans use coastal habitats for..."

Quick check: Ask 2–3 pupils to share their answers. Listen for understanding of habitat importance (food, shelter, breeding, human use).

Exit ticket: "Name one coastal habitat and one condition that makes it special."

Misconceptions to address:

Misconception	Reality	How to Address
"All coastal areas are the same"	Coastal habitats vary hugely (rocky, sandy, muddy, cliff)	Show the three photos; discuss differences
"Habitats are just where animals live"	Habitats are defined by physical conditions that shape what lives there	Emphasise: conditions → adaptations → which creatures survive
"Coastal habitats are only for animals"	Humans depend on coastal habitats too (food, transport, recreation, protection)	Ask: "How do we use the coast?"

Differentiation

Support:
Provide a simplified habitat table (fewer columns, larger text)
Pre-teach vocabulary on flashcards
Pair with a stronger reader

Challenge:
Compare UK coastal habitats to tropical ones (coral reefs, mangroves)
Write a short paragraph: "Why would it be hard to live in a salt marsh?"
Assessment Opportunities

Quick check: Listen to exit ticket responses
Observation: Can pupils match habitat features to definitions?
Written: Reflection activity shows understanding of habitat importance

Section 4: Lesson Guides (lessons 1 through 3)

Lesson 2: Rock Pool Creatures

Workbook pages: 7–14
Learning objective: Pupils can name common rock pool creatures and explain how they're adapted to rock pool life.
Success criteria:

- Identify at least five rock pool species
- Describe one adaptation (e.g., starfish tube feet for gripping)
- Explain why rock pools are important habitats

Starter
Activity: "Rock Pool Detectives"
Show a photo of a rock pool (page 7). Ask:

- "What creatures can you spot?"
- "How are they different from creatures in a pond?"
- "Why would a rock pool be a tough place to live?"

Key questions:

- "What happens to a rock pool when the tide goes out?"
- "What would happen if the sun was very hot?"
- "How would a creature survive being splashed by salty waves?"

Teacher prompt: Establish that rock pools are extreme habitats—creatures must be specially adapted.

Main
Activity 1: Common Creatures (pages 8–12)
Pupils read about six common rock pool creatures:

- Sea anemones
- Crabs
- Starfish
- Limpets
- Mussels
- Snails

For each creature, pupils note:

- What it looks like
- How it's adapted to rock pool life
- What it eats

Support: Provide an illustrated identification guide (laminated card with photos and labels).
Challenge: Ask pupils to research a seventh creature (e.g., shrimp, blenny fish).
Key questions:

- "Why does a starfish have tube feet?"
- "How does a mussel stay attached to a rock?"
- "What's the difference between a crab and a snail?"
- "Why do barnacles have shells?"

Teacher prompt: Emphasise adaptation—each feature helps the creature survive. Tube feet grip rocks. Shells protect from waves. Hard shells protect from predators.

Section 4: Lesson Guides (lessons 1 through 3)

Lesson 2: Rock Pool Creatures (continued)

Activity 2: Looking Closer at Adaptations (page 13)
Pupils match creatures to their adaptations:

- Starfish → tube feet for gripping
- Crab → hard shell for protection
- Anemone → tentacles for catching food
- Mussel → strong attachment to rocks

Support: Provide a word bank or visual matching cards.
Challenge: Ask pupils to explain why each adaptation is useful.

Activity 3: Fun Fact & Reflection (page 14)
Pupils read a "Did you know?" fact and answer reflection questions:

- "What surprised you about rock pool creatures?"
- "Which creature would you most like to see? Why?"

Plenary
Quick quiz:

- "Name three rock pool creatures."
- "What's an adaptation?"
- "Why is a rock pool a tough place to live?"

Exit ticket: "Draw one rock pool creature and label one adaptation."

Misconceptions to address:

Misconception	Reality	How to Address
"Rock pool creatures are just small fish"	Rock pools contain diverse invertebrates (starfish, crabs, anemones, mussels, snails, barnacles)	Show photos; discuss what makes each one special
"Starfish are plants"	Starfish are animals (echinoderms). They move, eat, and reproduce.	Observe a starfish moving; discuss animal characteristics
"All creatures in a rock pool are the same size"	Rock pools contain creatures of vastly different sizes (tiny barnacles to large crabs)	Compare sizes in photos
"Rock pools are just puddles"	Rock pools are complex ecosystems with food webs, predators, and prey	Discuss: "What does a starfish eat? What eats a starfish?"

Section 4: Lesson Guides (lessons 1 through 3)

Lesson 2: Rock Pool Creatures (continued)

Differentiation

Support:
- Provide a creature identification card (with photos and simple labels)
- Pre-teach creature names using flashcards
- Pair with a stronger reader
- Offer a simplified matching activity (fewer creatures)

Challenge:
- Research a rock pool food web (who eats whom?)
- Compare rock pool creatures to deep-sea creatures (adaptations to extreme conditions)
- Write a "day in the life" story from a creature's perspective
- Investigate: "Why do some creatures have shells and others don't?"

Assessment Opportunities:
- Quick check: Listen to quiz responses
- Observation: Can pupils match creatures to adaptations?
- Written/drawn: Exit ticket shows understanding of adaptation
- Discussion: Reflection questions reveal engagement and curiosity

Section 4: Lesson Guides (lessons 1 through 3)

Lesson 3: Humans affecting coastlines

Workbook pages: 15–18
Learning objective: Pupils can identify human impacts on coastlines and understand the implications of this.
Success criteria:

- Name at least three ways humans affect coastlines
- Describe one consequence of human impact
- Describe how we can help wildlife in coastal areas

Starter
Activity: "Before & After"
Show two images: a natural rocky shore and a developed coastline with sea walls, harbours, buildings (page 13).
Ask:

- "What's different between these two?"
- "What has changed? Why?"
- "How might creatures be affected?"

Key questions:

- "Why do humans build things on the coast?"
- "What problems might this cause for wildlife?"

Teacher prompt: Establish that humans have changed coastlines dramatically, and this affects wildlife.

Main
Activity 1: Human Activities (pages 15-16)
Pupils read about human impacts:

- Building (houses, harbours, sea walls)
- Fishing (removing creatures, damaging habitats)
- Tourism (trampling, pollution)
- Pollution (litter, chemicals, sewage)
- Climate change (rising sea levels, storms)

For each impact, pupils note:

- What humans are doing
- How it affects wildlife
- An example

Support: Highlight key impacts before they read. Use local examples (e.g., "Our nearest harbour is at...").
Challenge: Ask pupils to rank impacts by severity or research a local coastal issue.
Key questions:

- "Why do we build sea walls?"
- "What happens to creatures when their habitat is destroyed?"
- "How does pollution affect rock pools?"
- "Why is fishing a problem for coastal ecosystems?"

Teacher prompt: Establish that humans have good reasons for coastal development (protection, jobs, food), but there are consequences for nature. This isn't about blame—it's about finding solutions.

Section 4: Lesson Guides (lessons 1 through 3)

Lesson 3: Humans affecting coastlines (continued)

Activity 2: Two Ways Human Activity Can Help Coastal Habitats (pages 17-18)
Pupils read two examples:

1. Concrete Coast Project/Eco-Engineering
2. Marine Protected Areas

For each, pupils complete:

- What is it?
- How does it help wildlife?
- How can we help?
- What could we design?

Activity 3: Researching Local News Stories (page 19)
Pupils use research tools to find local news stories about their nearest coastlines.
Potential for group work.
For each, pupils complete:

- Who, what, when, where?
- Poster/presentation about their new story.
- Is the news negative or positive (try to find examples of each).

Plenary
Reflection: "Why do humans affect coastlines?"
Pupils complete sentence stems:

- "Humans affect coastlines because..."
- "This is a problem for wildlife because..."
- "We could help by..."

Quick check: Listen for understanding that human impact is real but solvable.

Exit ticket: "Name one way humans affect coastlines and one consequence for wildlife."

Section 4: Lesson Guides (lessons 1 through 3)

Lesson 3: Humans affecting coastlines (continued)

Misconceptions to address:

Misconception	Reality	How to Address
"Sea walls are bad—we should remove them all"	Sea walls protect people and property. The challenge is making them wildlife-friendly.	Explain: "Sea walls protect us from flooding. But we can make them better for wildlife."
"Humans are destroying the coast on purpose"	Most human activities have good intentions (protection, jobs, food) but unintended consequences	Discuss: "Why do we build sea walls? Is it bad to want protection?"
"Pollution is the only problem"	Multiple human impacts combine (building + fishing + pollution + climate change)	List all impacts; discuss how they interact
"Coastal squeeze only affects one habitat"	Coastal squeeze affects all natural coastal habitats (marshes, beaches, cliffs, rocky shores)	Show examples of different habitats being squeezed

Differentiation

Support:
Provide a simplified impact table (fewer impacts, larger text)
Use local examples and photos
Pair with a stronger reader

Challenge:
Research a local coastal issue (e.g., erosion, pollution, development)
Compare human impacts in two different UK coastal areas
Write a persuasive paragraph: "Why should we protect coastal habitats?"
Investigate: "What would happen if we removed all sea walls?"

Assessment Opportunities
Quick check: Listen to exit ticket responses
Observation: Can pupils explain human activity along coastlines?
Written: Reflection activity shows understanding of human impact and solutions
Discussion: Responses to key questions reveal depth of understanding

Section 5: Lesson Guides (lessons 4 through 6)

Lesson 4: Coastal Defences

Workbook pages: 20–26
Learning objective: Pupils can compare hard and soft engineering approaches and evaluate trade-offs.
Success criteria:

- Define hard engineering (concrete structures) and soft engineering (nature-based)
- Name at least two examples of each
- Explain one advantage and one disadvantage of each approach

Starter
Activity: "Defence Detective"
Show images of different coastal defences (page 19):

- Hard engineering: sea wall, groynes, rock armour
- Soft engineering: salt marsh restoration, beach nourishment, dune planting

Ask:

- "What's the difference between these structures?"
- "Why would we build one instead of the other?"
- "Which looks more natural? Which looks stronger?"

Key questions:

- "If you were protecting a town from flooding, what would you choose?"
- "What might be the problems with each approach?"

Teacher prompt: Establish that there are different ways to protect coastlines, each with pros and cons.

Main
Activity 1: Hard Engineering (pages 20–21)
Pupils read about hard engineering approaches:

- Sea walls: Concrete barriers that stop waves
- Groynes: Structures that trap sediment
- Rock armour: Large rocks that absorb wave energy

For each, pupils note:

- What it is
- How it works
- Advantages (protects land, lasts a long time)
- Disadvantages (expensive, ugly, bad for wildlife, can cause erosion elsewhere)

Support: Provide a simplified table with key points highlighted.
Challenge: Ask pupils to calculate the cost-benefit ratio or research a real example.
Key questions:

- "Why is a sea wall effective at stopping waves?"
- "What's the problem with groynes?"
- "Why is rock armour better than concrete for some creatures?"

Teacher prompt: Hard engineering works, but it's expensive and often harms wildlife. It's a short-term solution.

Section 5: Lesson Guides (lessons 4 through 6)

Lesson 4: Coastal Defences (continued)

Activity 2: Soft Engineering (pages 22–23)
Pupils read about soft engineering approaches:
- Salt marsh restoration: Planting native plants to slow waves
- Beach nourishment: Adding sand to build up beaches
- Dune planting: Planting grasses to stabilise dunes

For each, pupils note:
- What it is
- How it works
- Advantages (cheaper, supports wildlife, looks natural)
- Disadvantages (slower, needs maintenance, might not work in extreme storms)

Support: Provide a simplified table with key points highlighted.
Challenge: Ask pupils to compare cost and effectiveness or research a real example.
Key questions:
- "How does a salt marsh slow down waves?"
- "Why is beach nourishment cheaper than building a sea wall?"
- "Why might soft engineering be better for wildlife?"

Teacher prompt: Soft engineering works with nature, not against it. It's often cheaper and supports wildlife, but it's slower and needs ongoing management.

Activity 3: Key Terms Matching (page 21)
Pupils match defence types to definitions:
- Hard engineering → solid structures built to stop flooding
- Soft engineering → nature-based solutions that work with natural processes
- Coastal defence → any structure or approach to protect land from flooding

Plenary
Reflection: "Which approach is best?"
Activity: Students make a table to compare/contrast advantages and disadvantages of soft and hard engineering.
Quick check: Ask pupils: "Would you use hard or soft engineering to protect your town? Why?"

Exit ticket: "Name one hard engineering approach and one soft engineering approach."

Section 5: Lesson Guides (lessons 4 through 6)

Lesson 4: Coastal Defences (continued)

Misconceptions to address:

Misconception	Reality	How to Address
"Hard engineering is always better because it's stronger"	Hard engineering is effective but expensive, ugly, and harms wildlife. Soft engineering is cheaper and more sustainable.	Discuss: "What's the cost? What about wildlife?"
"Soft engineering doesn't work"	Soft engineering works, but more slowly and requires ongoing management	Show examples of successful salt marsh restoration
"We should use one approach everywhere"	Different coastlines need different approaches. Often a mix works best.	Discuss: "Why might a town need a sea wall but a nature reserve needs soft engineering?"
"Coastal defences protect everyone equally"	Defences protect some areas but can cause erosion elsewhere (downdrift erosion)	Explain: "A groyne stops erosion here but causes it there"

Differentiation

Support:
Provide a simplified comparison table
Use local examples (e.g., "Our coast has...")
Pair with a stronger reader
Offer visual cards showing each defence type

Challenge:
Research a real coastal defence project (cost, effectiveness, wildlife impact)
Design a mixed approach for a fictional coastline
Calculate cost per metre of protection for different approaches
Debate: "Should we prioritise protection or wildlife?"

Assessment Opportunities
Quick check: Listen to exit ticket responses
Observation: Can pupils complete the comparison table?
Written: Reflection activity shows understanding of trade-offs
Discussion: Responses to key questions reveal critical thinking

Section 5: Lesson Guides (lessons 4 through 6)

Lesson 5: Ecological Enhancement

Workbook pages: 22-26
Learning objective: Pupils can define ecological enhancements and explain why they're needed.
Success criteria:

- Define ecological enhancement
- Name at least two examples
- Explain why enhancements are needed (habitat loss)
- Describe one benefit of enhancements

Starter
Activity: "Barren vs Beautiful"
Show two images:

1. A bare concrete sea wall (lifeless)
2. A sea wall with enhancements (grooves, pools, seaweed)

Ask:

- "What's the difference?"
- "Which one would creatures prefer? Why?"
- "How could we make the bare wall better for wildlife?"

Key questions:

- "Can we protect ourselves AND help wildlife?"
- "What would creatures need to survive on a sea wall?"

Teacher prompt: Establish that enhancements solve a problem: how to have coastal protection AND wildlife.

Main
Activity 1: What Are Enhancements? (pages 22–23)
Pupils read about ecological enhancements:

- Adding features to man-made structures (sea walls, harbours) to help wildlife
- Examples: grooves, pools, seaweed, rock crevices
- Why they're needed: habitat loss, bare structures

Key concepts:

- Sea walls protect us from flooding (good)
- But they're bare concrete (bad for wildlife)
- Enhancements create homes for creatures (solution)

Support: Provide a visual diagram showing a bare wall → enhanced wall.
Challenge: Ask pupils to design their own enhancement or research a real example.
Key questions:

- "Why is a bare sea wall bad for wildlife?"
- "What features would help creatures survive on a sea wall?"
- "How is an enhancement different from a sea wall?"

Teacher prompt: Enhancements are the answer to protecting us *and* wildlife.

Activity 2: Examples of Enhancements (pages 24)
Pupils read about specific enhancement features:

- Grooves: Provide shelter and hiding places
- Pools: Create refugia for creatures during low tide
- Seaweed: Provides food and shelter
- Rock crevices: Natural hiding places
- Varied surfaces: Different textures for different creatures

Section 5: Lesson Guides (lessons 4 through 6)

Lesson 5: Ecological Enhancement (continued)

For each, pupils note:
- What it is
- How it helps creatures
- What creatures might use it

Support: Provide photos and labels.
Challenge: Ask pupils to explain the science (e.g., "Why do creatures need shelter?"). Draw their own enhancement.
Key questions:
- "Why would a crab prefer a groove to a flat wall?"
- "How does a pool help starfish survive low tide?"
- "Why is seaweed important?"

Teacher prompt: Each enhancement feature addresses a specific need (shelter, food, water, hiding from predators).

Activity 3: Why Are Enhancements Needed? (page 25)
Pupils read about why enhancements are needed and complete a reflection:
- Problem: Habitat loss
- Solution: Enhancements (create new habitat on sea walls)
- Benefit: Wildlife returns, biodiversity increases

Support: Provide a pre-drawn diagram with labels to fill in.
Challenge: Ask pupils to explain the full chain: "Why is habitat loss happening? Why do we need enhancements? What will happen if we add them?"

Plenary
Quick quiz:
- "What's an ecological enhancement?"
- "Why are enhancements needed?"
- "Name two features of an enhancement."

Exit ticket: "Draw a sea wall with one enhancement and explain why it helps wildlife."

Section 5: Lesson Guides (lessons 4 through 6)

Lesson 5: Ecological Enhancement (continued)

Misconceptions to address:

Misconception	Reality	How to Address
"Enhancements are just decoration"	Enhancements are functional—they provide shelter, food, and refugia	Discuss: "What does a groove do for a crab?"
"Enhancements are expensive"	Enhancements add cost but are cheaper than replacing lost natural habitats	Compare cost of enhancement to cost of habitat loss
"We should just remove sea walls"	Sea walls protect people and property. Enhancements let us keep them AND help wildlife	Explain: "We need protection. Enhancements make walls better for nature."
"One enhancement works everywhere"	Different creatures need different features. Effective enhancements have variety.	Show: "Starfish need pools, crabs need grooves, snails need rough surfaces"

Differentiation

Support:
Provide simplified descriptions of each enhancement
Use photos and labels
Pair with a stronger reader
Offer a pre-drawn enhancement diagram to label

Challenge:
Design an enhancement for a specific creature (e.g., "Design a sea wall for starfish")
Research a real enhancement project and evaluate its success
Compare enhancements in different countries
Investigate: "What would be the perfect sea wall for maximum biodiversity?"

Assessment Opportunities
Quick check: Listen to quiz responses
Observation: Can pupils explain why enhancements are needed?
Written/drawn: Exit ticket shows understanding of enhancement function
Discussion: Responses to key questions reveal understanding of the problem-solution relationship

Section 5: Lesson Guides (lessons 4 through 6)

Lesson 6: Site Visits: Planning and Safety

Workbook pages: (Site Visits section)
Learning objective: Pupils understand fieldwork procedures and can identify local sites.
Success criteria:

- Understand fieldwork safety procedures
- Know what to observe and record
- Can identify a suitable local site

Starter
Activity: "Where Will We Go?"
Show a map of your local coastline. Ask:

- "Where could we visit to see rock pools?"
- "What would we look for?"
- "What safety rules would we need?"

Key questions:

- "Why is fieldwork important?"
- "What's the difference between observing in the classroom and in the field?"

Teacher prompt: Establish that fieldwork is real science. We're going to collect real data that helps the Concrete Coast project.

Main
Activity 1: Fieldwork Procedures
Pupils read about site visit procedures:

- Before: Check weather, plan route, brief on safety
- During: Observe carefully, record data, take photos, stay together
- After: Analyse data, reflect on findings

Key rules:

- Stay with your group
- Don't touch creatures unless instructed
- Return creatures to their habitat
- Wear appropriate clothing
- Follow adult instructions

Support: Create a visual checklist of safety rules.Challenge: Ask pupils to research tide times and plan the visit timing.
Key questions:

- "Why do we need to stay together?"
- "Why shouldn't we keep creatures?"
- "Why is timing important?"

Teacher prompt: Fieldwork is exciting but requires responsibility. We're scientists collecting real data.

Activity 2: What to Observe & Record
Pupils read about data collection:

- Observations: What creatures do you see? Where? How many?
- Descriptions: What do they look like? What are they doing?
- Photos: Take pictures of habitats and creatures
- Sketches: Draw what you see
- Measurements: Pool depth, temperature, salinity (if equipment available)

Section 5: Lesson Guides (lessons 4 through 6)

Lesson 6: Site Visits: Planning and Safety (continued)

Support: Provide a simplified data sheet with pictures and prompts.
Challenge: Ask pupils to design their own data collection method.
Key questions:

- "What makes good data?"
- "Why take photos?"
- "Why sketch as well as write?"

Teacher prompt: Good data is careful, detailed, and consistent. Your observations matter.

Activity 3: Local Site Identification
Show pupils photos of potential local sites. Discuss:

- Is it safe to access?
- Does it have rock pools or coastal features?
- What time should we visit (tide times)?
- How long will it take to get there?

Support: Provide a site evaluation checklist.
Challenge: Ask pupils to research the site beforehand (geology, species, history).

Plenary
Reflection: "Are you ready for fieldwork?"
Pupils complete:

- "I'm excited to see..."
- "I'll be careful to..."
- "I'll record data by..."

Exit ticket: "Name one thing you'll observe and one safety rule you'll follow."

Misconceptions to address:

Misconception	Reality	How to Address
"Fieldwork is just a trip"	Fieldwork is real science. We're collecting data that helps conservation.	Explain: "Your observations will be submitted to the Concrete Coast project."
"We can keep creatures as pets"	Creatures need to stay in their habitat. We observe and return them.	Discuss: "How would the creature survive in a container?"
"Safety rules are boring"	Safety rules keep us safe so we can do science properly.	Emphasise: "Safe fieldwork = good science"
"One person's data doesn't matter"	Every observation counts. Thousands of citizen scientists create powerful datasets.	Explain: "Your data combines with others' to show real patterns."

Section 5: Lesson Guides (lessons 4 through 6)

Lesson 6: Site Visits: Planning and Safety (continued)

Differentiation

Support:
- Provide a visual safety checklist
- Pair with a buddy
- Use a simplified data sheet
- Assign a specific role (e.g., photographer, recorder)

Challenge:
- Research the site beforehand (geology, species list, history)
- Design a data collection method
- Plan the visit (route, timing, equipment)
- Predict what creatures you'll find

Assessment Opportunities
- Quick check: Listen to exit ticket responses
- Observation: Can pupils follow safety procedures?
- Written: Reflection activity shows understanding of fieldwork importance
- Discussion: Responses to key questions reveal readiness for fieldwork

Section 6: Fieldwork, Health & Safety, and SEND Guidance

Fieldwork & Off-Site Guidance

Before the Visit
Risk Assessment (complete 2 weeks before):
- Identify hazards (cliffs, rocks, water, weather, traffic)
- Assess risk level (high/medium/low)
- Control measures (supervision, equipment, briefing, timing)
- Emergency procedures (first aid, evacuation, contacts)
- Parental consent forms signed

Site Reconnaissance:
- Visit the site yourself beforehand
- Check access points and parking
- Identify safe areas for observation
- Note tide times and weather patterns
- Locate first aid facilities and emergency exits
- Take photos for briefing pupils

Practical Arrangements:
- Confirm transport (coach, minibus, walking)
- Brief driver on route and timing
- Arrange adult supervision (1 adult per 10 pupils minimum)
- Brief all adults on procedures and emergency contacts
- Prepare equipment (clipboards, pencils, nets, containers, cameras)
- Print data collection sheets
- Prepare packed lunches/snacks if needed

During the Visit
Safety Briefing (before leaving school):
- Stay with your group at all times
- Follow adult instructions immediately
- Don't run or climb on rocks
- Wear appropriate footwear (non-slip soles)
- Don't touch creatures unless instructed
- Return creatures gently to their habitat
- Report hazards to an adult
- Emergency meeting point: [specify location]
- Emergency contact: [teacher name and phone]

On Site:
- Do a final headcount
- Assign pupils to small groups (4–6 per adult)
- Demonstrate safe handling of creatures
- Supervise all observations
- Take photos for evidence
- Record data carefully
- Monitor weather and tide times
- Watch for fatigue or distress

Section 6: Fieldwork, Health & Safety, and SEND Guidance

Fieldwork & Off-Site Guidance (continued)

Data Collection Tips:

- Use a clipboard to keep sheets dry
- Take photos of habitats and creatures
- Sketch what you see (helps memory)
- Write clear labels and measurements
- Record time and location
- Note weather conditions
- Be consistent (same method each time)

After the Visit

Back at School:

- Debrief pupils (what did you see? what surprised you?)
- Collect all data sheets
- Organise photos
- Discuss findings
- Reflect on citizen science role

Data Submission:

- Check all data for completeness
- Organise by site and date
- Submit to Concrete Coast project (see Citizen Science brief)
- Keep copies for school records

Section 6: Fieldwork, Health & Safety, and SEND Guidance

Virtual Fieldwork Alternatives

If a coastal visit isn't possible:

Option 1: Virtual Rock Pool Tour
- Use museum websites or YouTube videos of rock pools
- Pupils observe creatures and habitats on screen
- Record observations on data sheets
- Discuss findings as if they were there

Option 2: Local Alternative Site
- Pond, stream, or canal with invertebrates
- Observe adaptations to freshwater (different from salt water)
- Compare to rock pool creatures
- Discuss: "Why are freshwater creatures different?"

Option 3: Aquarium tour
- Observing adaptations of animals on exhibit
- Compare to natural environment videos
- Pupils observe and record
- Discuss: Animals in captivity versus in nature

Option 4: Classroom Simulation
- Set up a model rock pool with sand, rocks, water
- Add creatures (if available) or use models
- Pupils observe and record
- Discuss limitations of simulation vs real fieldwork

Option 5: Data Analysis from Existing Studies
- Use open-access coastal monitoring data
- Pupils analyse real datasets
- Create graphs and draw conclusions
- Discuss: "What does this data tell us?"

Section 6: Fieldwork, Health & Safety, and SEND Guidance

Health & Safety Checklist

Coastal Visit Safety

Before the visit:
- Risk assessment completed and approved
- Parental consent obtained
- All adults briefed on procedures
- Emergency contacts confirmed
- First aid kit prepared
- Weather forecast checked
- Tide times noted
- Equipment checked (nets, clipboards, etc.)

During the visit:
- Headcount before leaving and on arrival
- All pupils supervised at all times
- Safety briefing given
- Appropriate footwear worn
- No running or climbing on rocks
- Creatures handled gently
- Weather monitored
- Pupils hydrated and rested
- Children to wear high visibility vest or armband if near the water

After the visit:
- Final headcount
- Debrief with pupils
- Any incidents recorded
- Equipment cleaned and stored
- Data collected and organised

Classroom Practicals Safety

General:
- Pupils wear appropriate clothing (closed shoes, tied-back hair)
- Wash hands before and after handling creatures
- Use hand sanitiser if water unavailable
- No eating or drinking near specimens
- Dispose of materials safely

Handling Creatures:
- Demonstrate gentle handling first
- Supervise all handling
- Use nets or containers (don't grab)
- Return creatures to water/habitat quickly
- Wash hands after handling

Section 6: Fieldwork, Health & Safety, and SEND Guidance

Health & Safety Checklist (continued)

Classroom Practicals Safety
Allergies & Health:

- Check for shellfish/seafood allergies
- Note any respiratory conditions (salt spray sensitivity)
- Have inhalers available if needed
- Provide sun protection (cream, hats)
- Ensure adequate hydration

Safeguarding Reminders

- All adults should have DBS clearance
- Maintain appropriate adult-pupil ratios
- Never be alone with a pupil
- Report any concerns to designated safeguarding lead
- Take photos/videos only with permission
- Follow school's safeguarding policy

Section 6: Fieldwork, Health & Safety, and SEND Guidance

SEND & Accessibility Guidance

Low-Demand Language Options

Instead of: "Identify the species and describe its adaptations"Use: "What creature is this? What helps it survive?"
Instead of: "Analyse the data to determine ecological significance"Use: "Look at the numbers. What do they tell us?"
Instead of: "Evaluate the effectiveness of coastal defences"Use: "Do sea walls work? What are the problems?"

Visual Supports

For all pupils:

- Illustrated identification guides (photos, not drawings)
- Visual data sheets (pictures + words)
- Colour-coded vocabulary cards
- Diagrams with labels
- Photos of coastal features

For pupils with visual processing difficulties:

- Large, clear fonts (11pt minimum)
- High contrast (dark text on pale background)
- Avoid cluttered layouts
- Use pale grey or off-white paper (not white)
- Dyslexia-friendly fonts (Arial, Comic Sans, Verdana)

Chunking & Scaffolding

Break tasks into smaller steps:

- Instead of "Complete the habitat table," try:
    a. Read about rocky shores
    b. Write three words to describe it
    c. Draw one creature that lives there
    d. Share with a partner

Provide sentence stems:

- "A rock pool is..."
- "Starfish have tube feet so they can..."
- "Humans affect coastlines by..."

Use timers:

- 5 minutes: Read and discuss
- 5 minutes: Complete one activity
- 5 minutes: Share findings
- Pupils know what's coming next

Alternatives to Writing

Instead of written answers, pupils can:

- Draw or sketch
- Speak to an adult (scribed)
- Use photos
- Create a poster
- Make a model
- Record audio
- Use symbols or pictures

Section 6: Fieldwork, Health & Safety, and SEND Guidance

SEND & Accessibility Guidance (continued)

Sensory Considerations
For pupils with sensory sensitivities:
- Warn about salt spray, seaweed smell, slimy textures
- Provide gloves if touching creatures
- Offer ear defenders if noise is an issue
- Allow breaks in quiet spaces
- Provide fidget tools during lessons

For pupils with ASD:
- Provide visual schedule of the day
- Warn about changes to routine
- Use consistent language
- Avoid sudden transitions
- Offer a safe space to retreat

Fieldwork Adaptations
For pupils with mobility difficulties:
- Choose accessible sites (flat, firm ground)
- Arrange transport close to observation area
- Provide seating for observation
- Allow rest breaks
- Consider one-to-one support

For pupils with anxiety:
- Visit the site beforehand (if possible)
- Use photos to familiarise them with the space
- Assign a trusted adult
- Provide a quiet space if overwhelmed
- Allow them to observe from a safe distance

For pupils with communication difficulties:
- Use visual supports (photos, symbols)
- Pair with a communication partner
- Allow extra time to respond
- Use AAC devices if needed
- Record observations in alternative formats

Neurodivergent-Friendly Approaches
For pupils with ADHD:
- Provide movement breaks
- Use timers for activities
- Assign specific roles (photographer, recorder, timer-keeper)
- Offer fidget tools
- Keep instructions brief and clear

Section 6: Fieldwork, Health & Safety, and SEND Guidance

SEND & Accessibility Guidance (continued)

For pupils with dyslexia:

- Use dyslexia-friendly fonts and colours
- Provide pre-printed labels and vocabulary
- Offer alternatives to written recording
- Use colour-coded materials
- Allow extra time for reading

For pupils with dyscalculia:

- Provide number lines or counting tools
- Use visual representations of data
- Offer pre-made graphs to complete
- Allow alternative ways to show quantity (drawings, photos)

Section 6: Fieldwork, Health & Safety, and SEND Guidance

Monitoring & Citizen Science Guidance
What to Record
At each observation:

- Date & time: When did you observe?
- Location: Where exactly (GPS coordinates if possible)?
- Weather: Sunny/cloudy/rainy? Temperature? Wind?
- Tide: High/low/mid-tide?
- Creatures observed: What did you see? How many?
- Habitat features: Pools? Rocks? Seaweed?
- Photos: Take pictures of habitats and creatures
- Sketches: Draw what you see

How to Record
Data sheet format:

- Date:
- Time:
- Location:
- Weather:
- Tide:
- Species observed: (list with numbers)
- Habitat features: (tick or describe)
- Photos taken: (yes/no, how many)
- Sketches: (yes/no)
- Notes:

Data Quality Tips
Good data is:

- Accurate: Record exactly what you see, not what you think you should see
- Consistent: Use the same method each time
- Complete: Fill in all fields
- Clear: Write legibly, use labels
- Honest: If you're unsure, say so

Common mistakes:

- Guessing numbers instead of counting
- Forgetting to record the date/time
- Writing illegibly
- Missing fields
- Changing methods between visits

Photo Guidance
Take photos of:

- The whole habitat (context)
- Individual creatures (identification)
- Enhancement features (if present)
- Hazards or damage (erosion, pollution)
- The team at work (evidence)

Section 6: Fieldwork, Health & Safety, and SEND Guidance

Monitoring & Citizen Science Guidance (continued)

What to Record
Good photo tips:

- Focus on the subject
- Include a scale (ruler, hand, coin)
- Take multiple angles
- Label photos with date and location
- Avoid shadows and glare

Data use:

- Your observations help monitor coastal habitats
- Data informs management decisions
- Results are shared with conservation partners
- You'll receive feedback on findings

Section 7: Example Answer Sheets and Extensions

Lesson 1: UK Coastal Habitats

Habitat Conditions Table:

Habitat	Temperature	Light	Moisture	Shelter
Rocky shore	Cool (splashed by cold sea)	Bright (exposed)	Wet (splashed by waves)	Rocks provide shelter
Salt marsh	Cool to warm	Bright	Very wet (flooded)	Plants provide shelter
Sandy beach	Warm (sun heats sand)	Bright	Damp (wet sand)	Limited (open)
Cliff	Cool (exposed to wind)	Bright	Dry (exposed)	Crevices provide shelter

Reflection examples:
"Coastal habitats are important because they're home to many creatures and provide food, shelter, and breeding areas"
"Creatures need coastal habitats to survive, find food, hide from predators, and raise their young"
"Humans use coastal habitats for food (fishing), transport, recreation, and protection (sea walls)"

Lesson 2: Rock Pool Creatures

Matching Adaptations:
- Starfish → Tube feet for gripping rocks
- Crab → Hard shell for protection
- Anemone → Tentacles for catching food
- Mussel → Strong attachment to rocks
- Snail → Shell for protection
- Barnacle → Shell for protection from waves

Reflection (examples):
- Pupils' own responses (celebrate diversity of ideas)
- Examples: "I was surprised starfish don't have eyes," "I'd like to see a crab because they're cool," "Anemones look like flowers but they're animals"

Section 7: Example Answer Sheets and Extensions

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Section 7: Example Answer Sheets and Extensions

Lesson 3: Humans Affecting Coastlines

Human Impacts:

- Building: Houses, harbours, sea walls → Habitat destroyed, creatures lose homes
- Fishing: Removing creatures → Food webs broken, populations decline
- Tourism: Trampling, pollution → Habitats damaged, creatures stressed
- Pollution: Litter, chemicals → Toxic environment, creatures poisoned
- Climate change: Rising seas, storms → Coastal squeeze, erosion

Coastal Squeeze Diagram:

- Natural habitat (marsh/beach) between rising sea level and sea wall
- Habitat shrinks as sea level rises and wall blocks inland movement
- Creatures have nowhere to go → extinction locally

Two Ways Human Activity Harms Habitats:

1. Coastal squeeze: Rising seas + sea walls = trapped habitat
2. Pollution: Litter, chemicals, sewage = toxic environment

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Extension & Enrichment Ideas with Cross-Curricular Links

English:
- Write a persuasive letter: "Why should we protect coastal habitats?"
- Create a newspaper article: "Local coastal project brings wildlife back"
- Write a story from a creature's perspective: "A day in the life of a starfish"
- Poetry: "The coast" (acrostic, haiku, or free verse)

Maths:
- Data handling: Create graphs of species counts
- Statistics: Compare biodiversity between sites
- Measurement: Calculate coastal erosion rates
- Ratio: Cost per metre of different coastal defences

Art & Design:
- Design an enhancement for a sea wall
- Create a model rock pool with creatures
- Paint or draw coastal creatures
- Design a poster for coastal conservation

Geography:
- Compare UK coasts (rocky vs sandy vs muddy)
- Research coastal management in other countries
- Map local coastal features
- Investigate climate change impacts on coastlines

Citizenship:
- Debate: "Should we prioritise protection or wildlife?"
- Research local coastal issues
- Contact local council about coastal management
- Organise a beach clean-up

Research Tasks (KS4)
- Compare two coastal defence projects (cost, effectiveness, wildlife impact)
- Investigate the history of a local coastal feature
- Research a specific rock pool creature in depth
- Analyse real coastal monitoring data
- Design an ideal sea wall for maximum biodiversity

Presentation Ideas
- Create a poster about rock pool creatures
- Make a video tour of a rock pool
- Design an infographic about coastal defences
- Prepare a presentation for the school
- Create a social media campaign for coastal conservation