



Government of **Western Australia**
School Curriculum and Standards Authority

Humanities And Social Sciences: Geography

Teaching, learning and assessment exemplar

Year 10

Environmental change and management



Acknowledgement of Country

Kaya. The School Curriculum and Standards Authority (the Authority) acknowledges that our offices are on Whadjuk Noongar boodjar and that we deliver our services on the country of many traditional custodians and language groups throughout Western Australia. The Authority acknowledges the traditional custodians throughout Western Australia and their continuing connection to land, waters and community. We offer our respect to Elders past and present.

Background

This teaching, learning and assessment exemplar (the exemplar) has been developed by the School Curriculum and Standards Authority (the Authority) as part of the *School Education Act Employees (Teachers and Administrators) General Agreement 2017* (Clause 61.1–61.3).

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Disclaimer

Any resources such as texts, websites and so on that may be referred to in this document are provided as examples of resources that teachers can use to support their learning programs. Their inclusion does not imply that they are mandatory or that they are the only resources relevant to the course. Teachers must exercise their professional judgement as to the appropriateness of any they may wish to use.

This resource utilises electronic web-based resources, such as videos and image galleries. Teachers should be present while an electronic resource is in use and close links immediately after a resource, such as a video has played to prevent default ‘auto play’ of additional videos. Where resources are referred for home study, they should be uploaded through Connect, or an equivalent system, that filters advertising content.

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The Western Australian Curriculum

The *Western Australian Curriculum and Assessment Outline (the Outline – <https://k10outline.scsa.wa.edu.au/>)* sets out the mandated curriculum, guiding principles for teaching, learning and assessment, and support for teachers in their assessment and reporting of student achievement. The *Outline* recognises that all students in Australian schools, or international schools implementing the Western Australian curriculum, are entitled to be given access to the eight learning areas described in the *Alice Springs (Mparntwe) Education Declaration*, December 2019.

The Humanities and Social Sciences curriculum

The mandated curriculum is presented in the year level syllabus documents.

The Humanities and Social Sciences curriculum delivers a sequential and age-appropriate progression of learning with the following key elements:

- a year level description that provides an overview of the context for teaching and learning in the year
- a series of content descriptions, populated through strands and sub-strands, that sets out the knowledge, understanding and skills that teachers are expected to teach and students are expected to learn
- an achievement standard that describes an expected level that the majority of students are achieving by the end of a given year of schooling. An achievement standard describes the quality of learning (e.g. the depth of conceptual understanding and the sophistication of skills) that would indicate the student is well placed to commence the learning required in the next year.



This exemplar

This Humanities and Social Sciences exemplar articulates the content in the *Outline* and approaches to teaching, learning and assessment reflective of the Principles of Teaching, Learning and Assessment. This exemplar demonstrates a sequence of teaching and learning, including suggested assessment points, for 16 lessons.

Catering for diversity

This exemplar provides a suggested approach for the delivery of the curriculum and reflects the rationale, aims and content structure of the learning area. When planning the learning experiences, consideration has been given to ensuring that they are inclusive and can be used in, or adapted for, individual circumstances. It is the classroom teacher who is best placed to consider and respond to (accommodate) the diversity of their students. Reflecting on the learning experiences offered in this exemplar will enable teachers to make appropriate adjustments (where applicable) to better cater for students' gender, personal interests, achievement levels, socio-economic, cultural and language backgrounds, experiences and local area contexts.



Using this exemplar

This teaching, learning and assessment exemplar provides suggestions to support the delivery of the mandated curriculum content. The exemplar provides:






- a teaching and learning sequence
- the mandated curriculum content to be taught at each point of the teaching and learning sequence, suggested resources, a sample assessment task and marking key
- the number of lessons to deliver the teaching and learning experiences
- learning intentions and support notes that may provide focus questions and additional information and/or examples to assist with the interpretation of curriculum content
- support notes to assist teachers to unpack the content and support teaching and learning experiences
- teaching and learning experiences that outline the structure of the lesson. These explicitly state each activity that the lesson will progress through and the key focus area for that activity.

Links to electronic resources

This sequence of lessons may utilise electronic web-based resources, such as videos and image galleries. Teachers should be present while an electronic resource is in use and close links immediately after a resource, such as a video, has played to prevent default 'auto play' of additional videos. Where resources are referred for home study, they should be uploaded through Connect, or an equivalent system, that filters advertising content.

Resources legend

The following symbols are used in this Teaching, Learning and Assessment Exemplar to provide teachers with information on the nature of the resources included in the lesson sequence:

Symbol	Name	Description	Examples of use
	Multimedia	Video or audio materials to be shown to the class	<ul style="list-style-type: none">• YouTube clips• documentary• podcasts
	Webpage	Online information source	<ul style="list-style-type: none">• news article• museum website• government website
	Student resource	Resource that students need to access for learning	<ul style="list-style-type: none">• student worksheets• graphic organiser template• interactive webpage
	Lesson materials	Materials that require teacher preparation prior to lesson	<ul style="list-style-type: none">• collection of images• card-sort activities• materials for practical activities
	Teacher support resource	Additional information to support teachers in the suggested lesson	<ul style="list-style-type: none">• thinking routine instructions• example of completed graphic organisers• additional information on topic

Stock images from Microsoft 365® used with permission from Microsoft®.



Best practice

Teaching and learning

The teaching and learning opportunities offered in this exemplar are not exhaustive. Thus, teachers are encouraged to make professional decisions about which learning experiences, and the sequence in which they are delivered, are best suited to their classroom context, taking into account the availability of resources and student ability.

This sample may prove a useful starting point for amplifying creativity in the classroom, while presenting the embedded expectations of the Western Australian Curriculum: Humanities and Social Sciences.

Teachers may find opportunities to incorporate the General Capabilities and the Cross-curriculum Priorities into the teaching and learning program.

Ways of teaching – teachers can locate additional information on the Ways of teaching on the School Curriculum and Standards Authority (the Authority) website

<https://k10outline.scsa.wa.edu.au/home/wa-curriculum/learning-areas/humanities-and-social-sciences/overview/humanities-and-social-sciences-ways-of-teaching>.

Assessing

Assessment, both formative and summative, is an integral part of teaching and learning. Assessment should arise naturally out of the learning experiences provided to students. In addition, assessment should provide regular opportunities for teachers to reflect on student achievement and progress. As part of the support it provides for teachers, this exemplar includes suggested assessment points. It is the teacher's role to consider the contexts of their classroom and students, the range of assessments required, and the sampling of content descriptions selected to allow their students the opportunity to demonstrate achievement in relation to the year level achievement standard. Teachers are best placed to make decisions about whether the suggested assessment/s are used as formative or summative assessment and/or for moderation purposes.

Ways of assessing – a range of assessment strategies that can enable teachers to understand where students are in their learning is available on the Authority website

<https://k10outline.scsa.wa.edu.au/home/wa-curriculum/learning-areas/humanities-and-social-sciences/overview/humanities-and-social-sciences-ways-of-assessing>.

Reflecting

Reflective practice involves a cyclic process during which teachers continually review the effects of their teaching and make appropriate adjustments to their planning. The cycle involves planning, teaching, observing, reflecting and replanning.

This exemplar supports reflective practice and provides flexibility for teachers in their planning. The exemplar shows how content can be combined and revisited throughout the year. Teachers will choose to expand or contract the amount of time spent on developing the required understandings and skills according to their reflective processes and professional judgements about their students' evolving learning needs.



Environmental change and management

This teaching and learning exemplar will develop students' understanding of the concepts and skills as they apply to evaluating the strategies used to manage the causes and consequences of environmental changes at a local to global scale. Teachers will explicitly teach the skills students require to conduct the summative assessment task at the end of the teaching and learning sequence.

If the suggested learning experiences and the relevant syllabus content for this unit have been studied, students will be well positioned to address the requirements of the assessment tasks to the best of their ability. The assessment task requires students to evaluate the sustainability of strategies used to manage environmental change in the form of three extended answer questions.

Fieldwork is integral to the teaching of Geography and this teaching and learning exemplar provides an opportunity for students to participate in fieldwork in an authentic way.



Year level description

In the middle adolescence phase of schooling, teaching and learning programs encourage students to develop an open and questioning view of themselves as active participants in their society and the world.

In Humanities and Social Sciences, students build on their understanding of important concepts and continue to develop their awareness of the complexity of the natural environment, social issues and the impact of technological advances. Students consider how the relationship between knowledge, technology and values influences their own role within society.

In Year 10, students develop increasing independence in critical thinking and skill application, which includes questioning, researching, analysing, evaluating, communicating and reflecting. They apply these skills to investigate events, developments, issues and phenomena, both historical and contemporary.

Students continue to build on their understanding of the concepts of democracy, democratic values, justice, and rights and responsibilities by exploring Australia's roles and responsibilities at a global level and its international legal obligations. They inquire into the values and practices that enable a resilient democracy to be sustained.

Students are introduced to the concept of economic performance and living standards while continuing to further their understanding of the concepts of making choices, interdependence, specialisation, and allocation and markets through examining contemporary issues, events and/or case studies. They explore the nature of externalities and investigate the role of governments in managing economic performance to improve living standards. They inquire into the ways businesses can manage their workforces to improve productivity and adapt to future conditions.

The concepts of place, space, environment, interconnection, sustainability and change continue to be developed as a way of thinking, through an applied focus on the management of environmental change on the full range of scales, from local to global and in a range of locations. The geography of human wellbeing is investigated through comparison between Australia and less economically developed countries.

Students develop their historical understanding through key concepts, including evidence, continuity and change, cause and effect, perspectives, empathy, significance and contestability. These concepts are investigated within the historical context of the modern world and Australia from the lead up to World War II to the present, with an emphasis on Australia in its global context. They consider the impacts of world events on human rights and freedom of different groups of people.



Achievement standard

By the end of the year:

Students construct a range of questions and hypotheses involving cause and effect, patterns and trends, and different perspectives. They use a range of methods to select, record and organise relevant information and/or data from multiple sources. When interpreting sources, students identify their origin and purpose, and draw conclusions about their usefulness. They examine sources to compare different points of view/perspectives and describe different interpretations. Students analyse information and/or data to identify simple patterns, trends, relationships and/or change over time. They draw evidence-based conclusions, using information and/or data to consider multiple perspectives and/or to propose action in response to contemporary challenges. Students develop a range of texts appropriate to the type of discussion and/or explanation required. They use subject-specific terminology and concepts, and provide evidence from a range of sources to support conclusions, and acknowledge these sources.

Students describe key features of the Westminster system and Australia's democratic values. They make comparisons between Australia's democracy and the political system of one other country. Students identify the international agreements Australia has ratified, and make connections between these agreements and the rights and responsibilities of citizens. They explain how Australia's democracy, and other democracies, may be undermined, and identify the safeguards that protect Australia's democratic system.

Students use economic indicators to analyse the economic performance of the Australian economy. They describe how government policy is used to manage the economy and improve economic performance and living standards, including the redistribution of income and wealth. Students describe how businesses respond to changing economic conditions, and the processes that businesses can use to improve productivity. They explain the challenges of ethical decision-making in business, and the future implications of changes to the working environment.

Students describe how the places in which people live influence their wellbeing and opportunities. They describe the interconnections between people and natural environments, and compare how the characteristics of places and natural environments can be influenced, changed and managed by people over time. Students predict the consequences of the changes, and describe the alternate views on strategies to sustainably manage a geographical challenge.

Students identify the causes and effects of World War II and the development of people's rights and freedoms, describing their significance from a range of perspectives. They refer to key events, the actions of individuals and groups, and beliefs and values, to explain patterns of change and continuity over time. Students describe different interpretations of the past, and identify the evidence used to support these interpretations.



Lessons 1–16

Lesson 1

The Western Australian Curriculum content addressed in this lesson is below.

Environmental change and management

- The human-induced changes that challenge the sustainability of natural environments

Analysing

- Analyse the 'big picture'
-

Resources



Prince Ea – Dear Future Generations: Sorry

<https://youtu.be/eRLJscAlk1M?si=aqeQz-c2XBkmrAUp>



Project Zero: Harvard Graduate School of Education – Circles of Action

<https://pz.harvard.edu/resources/circles-of-action>

Teacher information

Environmental sustainability is the concept in which the needs of the present and future generations are met without affecting the health of the ecosystems that provide them. This includes biodiversity conservation, managing the regenerative capacity of natural resources, the limitations of non-renewable resource use and the generation of waste.

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">• explore the concept of sustainability and develop an understanding of the impact human actions have on the planet at local, national, and global scales.	<p>Students can:</p> <ul style="list-style-type: none">• explain global sustainability in their own words and provide examples of actions that support it• analyse the implications of human activity on sustainability at personal, community, and global scales.

Introduction

- Show students the YouTube video *Dear Future Generations: Sorry*.
- Inform students this was uploaded in 2015; ask students to share predictions about what has happened since then (especially post-COVID-19).

Main activity

- Discuss and model the *Circles of action* thinking routine and the ability to think about geographical issues at a variety of scales.
- Use the *Circles of action* thinking routine, starting with students individually writing a 50-word comment about what they heard and/or saw in the video and the implications of the video at a local scale.
- Ask students to share their comments with a partner and construct a 50-word comment about the implications at a national scale.
- Then expand the discussion to include the whole class to construct a 50-word comment about the implications at a global scale.
- Discuss with students the concept of sustainability and consider the impact humans are having on the sustainability of the planet.

Review of learning

- In their own words, students write a definition of sustainability and provide some examples of some sustainability actions and/or strategies, e.g. banning single-use plastic bags or using food and garden organic (FOGO) waste bins.

Lesson 2

The Western Australian Curriculum content addressed in this lesson is below.

Environmental change and management

- The human-induced changes that challenge the sustainability of natural environments

Communicating and reflecting

- Generate a range of viable options in response to an issue or event to recommend and justify a course of action, and predict the potential consequences of the proposed action
-

Resources



ABC News – Many single-use plastics are now banned in WA. Here's everything you need to know

<https://www.youtube.com/watch?v=xKF61Bs83Io>



United Nations – *The Lazy Person's Guide to Saving the World*

<https://www.un.org/sustainabledevelopment/wp-content/uploads/2018/10/LazyPersonGuide.pdf>



Project Zero: Harvard Graduate School of Education – The 3 Whys thinking routine

<https://pz.harvard.edu/resources/the-3-whys>

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">• understand how individual actions contribute to addressing sustainability challenges.	<p>Students can:</p> <ul style="list-style-type: none">• analyse the sustainability challenges posed by single-use plastics at local, regional, and global scales• identify sustainable actions they can adopt immediately and in the future, explaining their potential impact.

Introduction

- Ask students to consider and justify their position on the question: if it seems impossible that the average person can make an impact, should we just give up?

Main activities

- Shows students the *Many single-use plastics are now banned in WA. Here's everything you need to know* video and provide them with a copy of *The Lazy Person's Guide to Saving the World* PDF.
- View the single-use plastic case study and complete the 3 *Whys* thinking routine for students to examine the challenge of single-use plastic to sustainability at a local, regional and global scale.
- Having examined *The Lazy Person's Guide to Saving the World* PDF, ask students to identify the actions they currently undertake at each of the four levels.
- Students select one action they would be willing to adopt as of today and one action they will adopt in the future.

Review of learning

- Students write a social media post of 140 characters or less that informs others about the new action they are adopting immediately to help save the world and the impact they hope it might have.

Lesson 3

The Western Australian Curriculum content addressed in this lesson is below.

Environmental change and management

- The human-induced changes that challenge the sustainability of natural environments
- The environmental world views of people, including Aboriginal and Torres Strait Islander peoples' approaches to custodial responsibilities, and their implications for environmental management

Analysing

- Account for different interpretations and points of view/perspectives in information and/or data
-

Resources



FN-sambandet Norge – What is sustainable development?

<https://www.youtube.com/watch?v=7V8oFI4GYMY>



ABC News – Plibersek releases reasons why \$1bn McPhillamy's gold mine near Blayney is on hold

<https://www.abc.net.au/news/2024-10-11/mcphillamys-gold-mine-plibersek/104459810>



ABC News – Queensland's extremely rare boggomoss snail halting government projects

<https://www.abc.net.au/news/2024-10-07/rare-snail-brings-theodore-dam-footpath-projects-to-standstill/104414040>



ABC News – Bunbury Outer Ring Road protest deemed 'noble cause' by magistrate, as demonstrators fined

<https://www.abc.net.au/news/2022-08-30/bunbury-outer-ring-road-environment-protesters-fined-in-court/101375354>



K20 Center– Elevator Speech

<https://learn.k20center.ou.edu/strategy/57>

Teacher information

Each of the news stories in the resources are case studies that can be used to consider differing environmental worldviews and sustainable development.

An environmental worldview is defined as a person's view of the relationship between humans and nature. These range from human-centred views, in which humans are separate from nature and believe any environmental problems can be solved by technology, to earth-centred views, in which humans are a part of and dependent on nature and have to work with nature.

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">• explore the concept of sustainable development and evaluate the balance between economic benefits and environmental protection in real-world scenarios.	<p>Students can:</p> <ul style="list-style-type: none">• define sustainable development and apply it to a real-world case study• evaluate a development project by considering environmental, economic, and social factors and justify their decision with evidence.

Introduction

- Write the following question on the board for students to think about: ‘Economic benefit or environmental protection?’ Discuss with students their initial thoughts through prompts, such as:
 - Which is more important, economic benefit or environmental protection?
 - Who should decide when the two are in conflict?
 - What are some examples of the conflicting environmental and economic goals at local, national or global scale?

Main activities

- Show students the *What is sustainable development?* video.
- Students are allocated one of the three ABC News articles to analyse.
- As a class, construct a definition of sustainable development.
- For their allocated ABC News article, students create a T-chart that shows the arguments for and against the development discussed in their case study.
- Having weighed up the evidence, they are to assume the role of the environment minister and decide whether the benefit of development outweighs the need to protect the environment.
- Students need to write their decision as a statement and provide three pieces of evidence from the ABC News article to support their decision. In their statement, they should discuss the sustainability of their decision in terms of environmental, economic and social factors.

Review of learning

- Students find a peer that has taken an alternative point of view on the same ABC News article and deliver a one-minute elevator speech to support their position.

Lesson 4

The Western Australian Curriculum content addressed in this lesson is below.

Environmental change and management

- The environmental world views of people, including Aboriginal and Torres Strait Islander peoples' approaches to custodial responsibilities, and their implications for environmental management

Questioning and researching

- Use a range of methods to collect, select, record and organise relevant and reliable information and/or data from multiple sources that reflects the type of analysis of information that is needed with and without the use of digital and spatial technologies

Resources



All the tests – Environmental Worldview

<https://www.allthetests.com/quiz19/quiz/1144365659/Environmental-Worldview>



Uquiz – Environmental Worldview

<https://uquiz.com/quiz/F2aSnw?p=77940>



Mind maps Unleashed – Impacts mind map

<https://mindmapsunleashed.com/wp-content/uploads/2012/07/impacts-mindmap.jpg>



Earthwise Aware – Environmental Worldviews A Short Glossary of Terms

<https://www.earthwiseaware.org/environmental-worldviews-glossary/>



DW – Aboriginal protesters defend forest against loggers

<https://www.dw.com/en/australia-aboriginal-protesters-defend-ancient-forest-against-logging/a-53979484>



ABC News – Southern Highlands residents make final plea to stop Plasrefine's recycling plant

<https://www.abc.net.au/news/2024-11-13/southern-highlands-residents-plea-stop-plastic-recycling-plant/104591790>

Teacher information

An environmental worldview is defined as a person's view of the relationship between humans and nature. These range from human-centred views, in which humans are separate from nature and believe any environmental problems can be solved by technology, to earth-centred views, in which humans are a part of and dependent on nature and have to work with nature.

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">investigate different environmental worldviews and explore how these perspectives influence decisions about environmental issues.	<p>Students can:</p> <ul style="list-style-type: none">define a range of environmental worldviewsanalyse environmental issues and decisions through examples that illustrate different worldviews and represent them in a mind map.

Introduction

- Students complete either of the Environmental worldview online quizzes to consider which environmental worldview is most aligned to their own.

Main activities

- Show the Impacts mind map online example.
- Provide students with access to:
 - Environmental Worldviews – A Short Glossary of Terms* (online article)
 - Australia: Aboriginal protesters defend ancient forest against logging* (online article)
 - Southern Highlands residents make final plea to stop Plasrefine's recycling plant* (online article).
- Ask students to construct a mind map using the three articles, which includes:
 - defining some environmental worldviews, such as human-centred (anthropocentrism), technology-centred (technocentrism) and environment-centred (ecocentrism)
 - Aboriginal and Torres Strait Islander peoples' world views
 - specific examples from the three articles of issues, perspectives and/or decisions that represent different environmental worldviews.

Review of learning

- Students share their mind map in a group of four students. After viewing other mind maps, they add any missing content onto their own.

Lesson 5

The Western Australian Curriculum content addressed in this lesson is below.

Environmental change and management

- The environmental world views of people, including Aboriginal and Torres Strait Islander peoples' approaches to custodial responsibilities, and their implications for environmental management

Questioning and researching

- Use a range of methods to collect, select, record and organise relevant and reliable information and/or data from multiple sources that reflects the type of analysis of information that is needed with and without the use of digital and spatial technologies

Resources



Behind the News – Connection to Country - BTN Special

<https://www.youtube.com/watch?v=C9Oi6pJqYcs>



ABC News – Indigenous rangers immerse themselves in WA trial program, reconnect with country and family

<https://www.abc.net.au/news/rural/2018-08-03/esperance-indigenous-ranger-program-bringing-community-together/10057988>



Thoughtful Learning – Asking and Answering the 5W's and H Questions

<https://k12.thoughtfullearning.com/minilesson/asking-and-answering-5-ws-and-h-questions>



K20 Learn – Venn Diagram

<https://learn.k20center.ou.edu/strategy/2918>

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">• explore how Aboriginal and Torres Strait Islander peoples' approaches to custodial responsibilities and compare these with other environmental worldviews.	<p>Students can:</p> <ul style="list-style-type: none">• identify and explain the ways Aboriginal and Torres Strait Islander peoples are connected to Country and their caring for Country practices• compare environmental management strategies and worldviews from different case studies using graphic organisers.

Introduction

- Students view the *Behind the News: Connection to Country* video. Whilst watching, they list the different ways shown in the video Aboriginal and Torres Strait Islander peoples are connected to Country and the different caring for Country practices.

Main activity

- Provide students with the *Indigenous rangers immerse themselves in WA trial program, reconnect with country and family* online article.
- Students complete the *Asking and Answering the 5W's and H Questions* instructional strategy about the Aboriginal rangers program being used in Esperance as an environmental management strategy.

Review of learning

- As a class, use the *Venn Diagram* instructional strategy to compare the Tjaltjraak Native Title Aboriginal Corporation case study with one other example studied so far in the lesson sequence, referring to the different management practices being used and the respective environmental worldviews being demonstrated.

Lesson 6

The Western Australian Curriculum content addressed in this lesson is below.

Environmental change and management

- The human-induced changes that challenge the sustainability of natural environments

Communicating and reflecting

- Compare evidence to substantiate judgements
-

Resources



Images of examples of environmental change



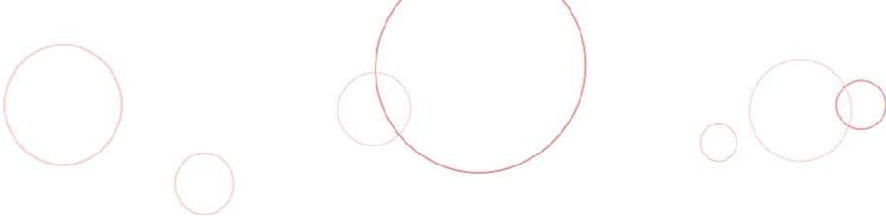
Green Facts – Figure 1: Examples of impacts on human health and ecosystems
<https://www.greenfacts.org/en/pollution-free-planet/figtableboxes/human-health-ecosystems.htm>

Teacher information

In preparation for this lesson teachers should collect a range of images depicting environmental changes, including both positive and negative impacts.

Suggested search terms include:

- Climate change: ‘carbon capture technology impact on climate change’ or ‘drought and desertification due to climate change images’.
- Deforestation: ‘deforestation for agricultural benefits’ or ‘Amazon rainforest destruction satellite images’.
- Urbanisation: ‘green urban planning positive impact images’ or ‘traffic congestion and air pollution city images’.
- Air pollution: ‘clean energy reducing air pollution before and after’ or ‘factory emissions causing air pollution photos’.
- Water pollution: ‘river cleanup success before and after images’ or ‘plastic pollution in ocean marine life impact’.
- Biodiversity loss: ‘reintroducing extinct species success stories’ or ‘effects of biodiversity loss on ecosystems infographic’.



Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">investigate how human activities have caused environmental change.	<p>Students can:</p> <ul style="list-style-type: none">identify and evaluate various environmental changes caused by human activity, considering current and future impacts on the environment and humansuse data to provide evidence-based reasoning that supports their opinions on the most significant local environmental change.

Introduction

- Show students a range of images depicting different environmental changes and have a class discussion about the ways humans have altered the environment. The discussion could include why/how the environment has been altered. Is the general response positive or negative?

Main activities

- Ask students to complete the graphic organiser template in Appendix A based on their learning in the unit so far, listing many different environmental changes caused by human activity, and evaluate the current and future impacts of the environmental changes for both the environment and humans.
- Show students the Examples of impacts on human health and ecosystems factsheet.
- Use the information from the Examples of impacts on human health and ecosystems factsheet to add specific data and examples to the graphic organiser.

Review of learning

- Students select the environmental change that is having the greatest impact on their local area and provide two pieces of evidence to support this opinion.

Lesson 7

The Western Australian Curriculum content addressed in this lesson is below.

Analysing

- Analyse information and/or data in different formats
-

Resources



NSW Government – Conducting a field sketch

<https://education.nsw.gov.au/teaching-and-learning/curriculum/hsie/hsie-curriculum-resources-k-12/hsie-7-10-curriculum-resources/conducting-a-field-sketch>



NSW Government – Field sketches – Geography 7–10

<https://education.nsw.gov.au/teaching-and-learning/curriculum/hsie/hsie-curriculum-resources-k-12/hsie-7-10-curriculum-resources/geography-7-10-field-sketches>



Project Zero: Harvard Graduate School of Education – Looking ten times two

<https://pz.harvard.edu/resources/looking-ten-times-two>



New South Wales Government – Gallery Walk

<https://education.nsw.gov.au/teaching-and-learning/learning-remotely/teaching-at-home/expectations/contemporary-learning-and-teaching-from-home/learning-from-home--teaching-strategies/gallery-walk>

Teacher information

This lesson provides students with the opportunity to practise the skill of constructing a field sketch in preparation for the fieldwork lesson in Lesson 9.

The *Field sketches – Geography 7–10* resource has a downloadable Word document, *Guide to teaching field sketches*, which contains instructions for teachers on how to create a field sketch. These instructions can be adapted for student use.

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">develop the skills to construct and analyse field sketches as a method of geographic representation.	<p>Students can:</p> <ul style="list-style-type: none">construct a clear and accurate field sketch that effectively represents the selected location and includes relevant informationevaluate and improve field sketches using peer feedback.

Introduction

- Students complete the *Looking ten times two* thinking routine for Figure 1 and Figure 2 from the *Guide to teaching field sketches*.
- Students identify the words or phrases that they have in the lists for both figures.

Main activities

- Provide students with instructions for how to construct a field sketch from page 8 of the *Field sketches – Geography 7–10* resource.
- Teachers select a location/s in the school that would be appropriate to construct a field sketch or provide students with a photograph to translate into a field sketch.
- Students construct a field sketch following the provided instructions.

Review of learning

- Students share their field sketch with a peer to conduct a peer review using a gallery walk to answer the following questions as prompts:
 - How effective is the field sketch in illustrating the field location?
 - How well presented is the field sketch? Is it easy to read?
 - How well labelled is the field sketch?
 - Is there enough relevant information provided with the field sketch?

Lessons 8–9

The Western Australian Curriculum content addressed in these lessons is below.

Environmental change and management

- The causes and consequences of **one** environmental change at a local, national or global scale
- The responses to manage the environmental change and the application of environmental, economic and social criteria in evaluating these management responses

Questioning and researching

- Analyse and clarify the purpose of an inquiry using appropriate methodologies, ethical protocols and concepts to plan for, and inform, an investigation

Resources



SurveyMonkey – Survey Question Types Explained: Examples & Expert Tips
<https://www.surveymonkey.com/mp/survey-question-types/>

Teacher information

Lesson 8 is for students to prepare for the fieldwork conducted in Lesson 9. The focus should be on what data could be collected and the methods used to collect that data. This data can be used to contextualise the environmental change case studies in future lessons by identifying the environmental change, its consequences and the management strategies in the fieldwork site.

In preparing the survey, teachers should model with students the different types of questions that can be included in surveys, highlighting that they need quantitative data that can be translated into tables and graphs.

Lesson 9 is allocated for fieldwork. Fieldwork provides students with the opportunity to apply their learning to a real-world context and adds value to classroom learning. Fieldwork activities should provide students with hands-on opportunities and be part of the learning of Geography, not an added special activity.

Teachers can provide the fieldwork booklet (Appendix C) to students to collect their fieldwork notes. There is a marking key provided in the booklet for teachers to use if they wish to integrate this with the summative assessment.

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">• understand effective survey questions for fieldwork to collect data on environmental use and management strategies• conduct fieldwork in a local environment to investigate environmental change and management.	<p>Students can:</p> <ul style="list-style-type: none">• develop a quantitative survey for fieldwork• create a clear and organised recording table to document survey responses during fieldwork• collect primary data from fieldwork in a local environment.

Introduction

- Write the purpose of the upcoming class fieldwork on the whiteboard or work with the class to develop a purpose for the fieldwork, such as 'The purpose of the class fieldwork is to investigate how the local council is preventing coastal erosion and how this is impacting on beach goers.'
- Conduct a class discussion about the information that needs to be collected to achieve the purpose of the fieldwork.

Main activity

- Show students the *Survey Question Types Explained: Examples & Expert Tips* online guide and discuss the different types of questions and why it is important for questions in the field work survey to be quantitative.
- Using the information about types of questions, students individually brainstorm questions that could be asked to survey people at the fieldwork site about their use of the environment and what strategies could be used for management of the location.
- Students work with a partner or in a small group to choose the top five questions. These questions are written on Post-it notes.
- Use the post it notes to categorise (e.g. use of the environment, environmental change, management responses) the similar questions and develop a five-question survey that can be used as part of the fieldwork in the next lesson.

Review of learning

- Students develop a recording table to collect the survey response they receive during the fieldwork activity.

Lesson 10

The Western Australian Curriculum content addressed in this lesson is below.

Environmental change and management

- The causes and consequences of **one** environmental change at a local, national or global scale

Communicating and reflecting

- Develop texts, particularly explanations and discussions, using evidence from a range of sources to support conclusions and/or arguments
-

Resources



ABC News – Safeguarding a sanctuary

<https://www.abc.net.au/news/2023-05-16/ningaloo-safeguarding-a-sanctuary/102291152>



Project Zero: Harvard Graduate School of Education – See, Think, Wonder

<https://pz.harvard.edu/resources/see-think-wonder>



Department of Biodiversity, Conservation and Attractions – Ningaloo Coast Nyinggulu

<https://exploreparks.dbca.wa.gov.au/sites/default/files/2021-10/ningaloo-coast-world-heritage-area-visitor-guide.pdf>



Outlier Creative – Create a Compelling One-Pager: 5-Step Method

<https://www.outliercreative.com/blog/how-to-create-a-one-pager>

Teacher information

This lesson is designed to provide students with a context for the environment they will be investigating as part of a case study into the causes and consequences of environmental change at a local scale.

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">investigate the geographical characteristics of an environment.	<p>Students can:</p> <ul style="list-style-type: none">create a detailed one-page explainer that includes the location, size, biophysical environment, land uses and human impacts on Ningaloo Reefreflect on and address initial questions or uncertainties about Ningaloo Reef based on their investigation.

Introduction

- Show students the *Safeguarding a sanctuary* resource and complete the *See, Think, Wonder* thinking routine. Record students' responses on the whiteboard.

Main activity

- Provide students with a range of resources to create a one-page explainer on the geographical characteristics of Ningaloo Reef.
- Students conduct a brief investigation into Ningaloo Reef to complete a one-page explainer.
- Students could include the following information on their explainer:
 - location (including latitude and longitude)
 - the size and shape of the reef
 - the biophysical environment
 - the land uses of the reef
 - human impacts.

Review of learning

- Having completed their explainer, have students revisit the 'wonder' section of the *See, Think, Wonder* thinking routine from the introduction and write a one- or two-sentence response addressing something the class wondered at the start of the lesson.

Lesson 11

The Western Australian Curriculum content addressed in this lesson is below.

Environmental change and management

- The causes and consequences of **one** environmental change at a local, national or global scale

Questioning and researching

- Construct, select and evaluate a range of questions and hypotheses involving cause and effect, patterns and trends, and different perspectives
-

Resources



ABC News – Ningaloo Reef facing heightened coral bleaching risk, putting Exmouth tourism operators on alert

<https://www.abc.net.au/news/2022-03-25/ningaloo-reef-high-risk-of-coral-bleaching-from-climate-change/100935764>



Project Zero: Harvard Graduate School of Education – Claim, Support, Question

<https://pz.harvard.edu/resources/claim-support-question>

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">• explore the causes and consequences of environmental change in an environment.	<p>Students can:</p> <ul style="list-style-type: none">• develop a claim about the cause of environmental change on Ningaloo Reef• create and use research questions to gather relevant data from multiple sources, presenting it through varied formats like graphs or maps.

Introduction

- Students view the embedded video in the article *Ningaloo Reef facing heightened coral bleaching risk, putting Exmouth tourism operators on alert* and construct a claim (or series of claims) about the cause of environmental change on Ningaloo Reef. For example, a student may claim that as water temperatures rise the instances of coral bleaching increase.

Main activities

- Ask students to find evidence they can use to support the claims that they have developed regarding the cause of environmental change on Ningaloo Reef.
- Students work with a partner to construct three to five questions that will enable them to support the claim they made at the start of the lesson.
- Students conduct research to answer their questions and support their claim. They should use a variety of sources to collect their information and present the information in a variety of ways. For example, a graph showing the relationship between water temperature and coral bleaching events or a map showing water temperatures in locations where coral bleaching has occurred.

Review of learning

- Students write five true or false statements about environmental change on Ningaloo Reef and use these statements to quiz three other class members.

Lesson 12

The Western Australian Curriculum content addressed in this lesson is below.

Environmental change and management

- The causes and consequences of **one** environmental change at a local, national or global scale

Communicating and reflecting

- Deconstruct and reconstruct the collected information and/or data into a form that identifies the relationship between the information and the hypothesis, using subject-specific conventions, terminology and concepts

Resources



Thinking Pathways – Give one, Get one

https://thinkingpathwayz.weebly.com/uploads/1/0/4/4/104440805/give_one_get_one.pdf



Department Biodiversity, Conversation and Attractions – Resilient Reefs Ningaloo

<https://www.dbca.wa.gov.au/management/world-heritage-areas/resilient-reefs-ningaloo>

Teacher information

The infographic showing the potential impacts of climate change on Ningaloo Reef is available in the downloads section located at the bottom of the page in the *Resilient Reefs Ningaloo* resource.

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">investigate the consequences of environmental change on an environment, analysing and presenting specific evidence through infographics.	<p>Students can:</p> <ul style="list-style-type: none">classify the consequences of climate change on Ningaloo Reef as social, economic or environmentalcreate an infographic that clearly illustrates an impact of climate change, supported by two pieces of evidence.

Introduction

- Students complete a *Give one, Get one* for the consequences of climate change on Ningaloo Reef. Collect student responses and have students classify the consequences as social, economic or environmental.

Main activities

- Show students the *Potential impacts of climate change on Ningaloo* infographic and have them add any missing consequences to their list.
- Allocate students one of the sub-impacts of climate change on Ningaloo (e.g. possible decline in turtle populations). For their allocated topic students create an infographic showing two specific pieces of evidence to illustrate the impact.
- These infographics are displayed in the classroom and are linked to their respective impacts (e.g. increasing average temperature).

Review of learning

- Students conduct a gallery walk of the completed infographics and record one piece of evidence for each potential climate change impact.



Lessons 13–14

The Western Australian Curriculum content addressed in these lessons is below.

Environmental change and management

- The responses to manage the environmental change and the application of environmental, economic and social criteria in evaluating these management responses

Communicating and reflecting

- Develop texts, particularly explanations and discussions, using evidence from a range of sources to support conclusions and/or arguments
-

Resources



The Teacher Toolkit – Jigsaw

<https://www.theteachertoolkit.com/index.php/tool/jigsaw>



Thoughtful Learning – Asking and Answering the 5W’s and H Questions

<https://k12.thoughtfullearning.com/minilesson/asking-and-answering-5-ws-and-h-questions>

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">• explore different types of environment management strategies and collaborate to develop a management plan for an environment.	<p>Students can:</p> <ul style="list-style-type: none">• explain different marine management strategies• create a Ningaloo Reef management plan that incorporates a variety of management strategies.

Input

- Students are organised into jigsaw groups of four. Within their jigsaw group, each student is allocated a specific type of management strategy for a marine environment from the list below:
 - Monitor the change, such as using geospatial technology to map the health of a reef.
 - Reverse the change, such as producing healthy corals in an aquaculture facility then placing them on a reef.
 - Adapt to the change, such as research into coral species that are more tolerant of higher water temperatures.
 - Provide an artificial solution, such as the creation of artificial reefs to improve biodiversity.

Main activities

- Students complete research with a partner with the same type of management strategy and investigate:
 - an example of a strategy in a marine environment
 - an overview of the strategy – *5W's and H Questions*
 - the strengths of the strategy
 - the weaknesses of the strategy
 - the social, economic and environmental impacts of implementing the strategy.
- Students return to their jigsaw group and share their findings on the different types of strategies.
- Using the information that has been shared, groups produce their own Ningaloo Reef management plan that incorporates some or all types of management strategies.

Review of learning

- Students return to their research partner and share their group's management plan. They provide their partner with two stars and a wish for the other group's management plan.

Lesson 15

The Western Australian Curriculum content addressed in this lesson is below.

Environmental change and management

- The responses to manage the environmental change and the application of environmental, economic and social criteria in evaluating these management responses

Evaluating

- Critically evaluate information and/or data and ideas from a range of sources
-

Resources



Enel – The 3 pillars of sustainability: environmental, social and economic

<https://www.enel.com/company/stories/articles/2023/06/three-pillars-sustainability>



Teacherheadiz – 10 Techniques for Retrieval Practice

<https://teacherhead.com/2019/03/03/10-techniques-for-retrieval-practice>



ABC News – Hope for damaged parts of Great Barrier Reef as tourism sector helps deploy millions of coral 'babies'

<https://www.abc.net.au/news/2021-12-03/coral-babies-deployed-onto-the-great-barrier-reef/100667280>



Project Zero: Harvard Graduate School of Education – Circle of Viewpoints

<https://pz.harvard.edu/resources/circle-of-viewpoints>

Teacher information

This lesson is a continuation of the lesson sequence where students worked in groups to develop their own Ningaloo Reef management plan. Students will be required to evaluate their plan against social, economic and environmental criteria.

Lesson outline

Learning intention/s	Success criteria
<p>Students will:</p> <ul style="list-style-type: none">• evaluate environmental management strategies using the three pillars of sustainability.	<p>Students can:</p> <ul style="list-style-type: none">• identify and explain the three pillars of sustainability (environmental, social and economic) and how they influence management strategies• evaluate their Ningaloo Reef management plan against sustainability criteria and consider the perspectives of different stakeholders.

Introduction

- Students return to their jigsaw groups from Lessons 13 and 14 to implement some of the feedback from the three stars and a wish activity they received from their research partner to improve the group's Ningaloo Reef management plan.

Main activities

- Provide students with access to the resource *The 3 pillars of sustainability: environmental, social and economic*
- Students use the resource to complete a summary that outlines the definitions and different factors that influence the different characteristics of sustainability.
- Teachers use the *Hope for damaged parts of Great Barrier Reef as tourism sector helps deploy millions of coral 'babies'* article to model evaluating a management strategy against social, economic and environmental criteria, looking at both positive and negative outcomes of the strategy.
- In their jigsaw groups, students evaluate their Ningaloo Reef management plan against social, economic and environmental criteria.

Review of learning

- Complete a *Circle of viewpoints* thinking routine for their Ningaloo Reef management plan from the perspective of one stakeholder, such as a tourism operator or environmental scientist.



Lesson 16

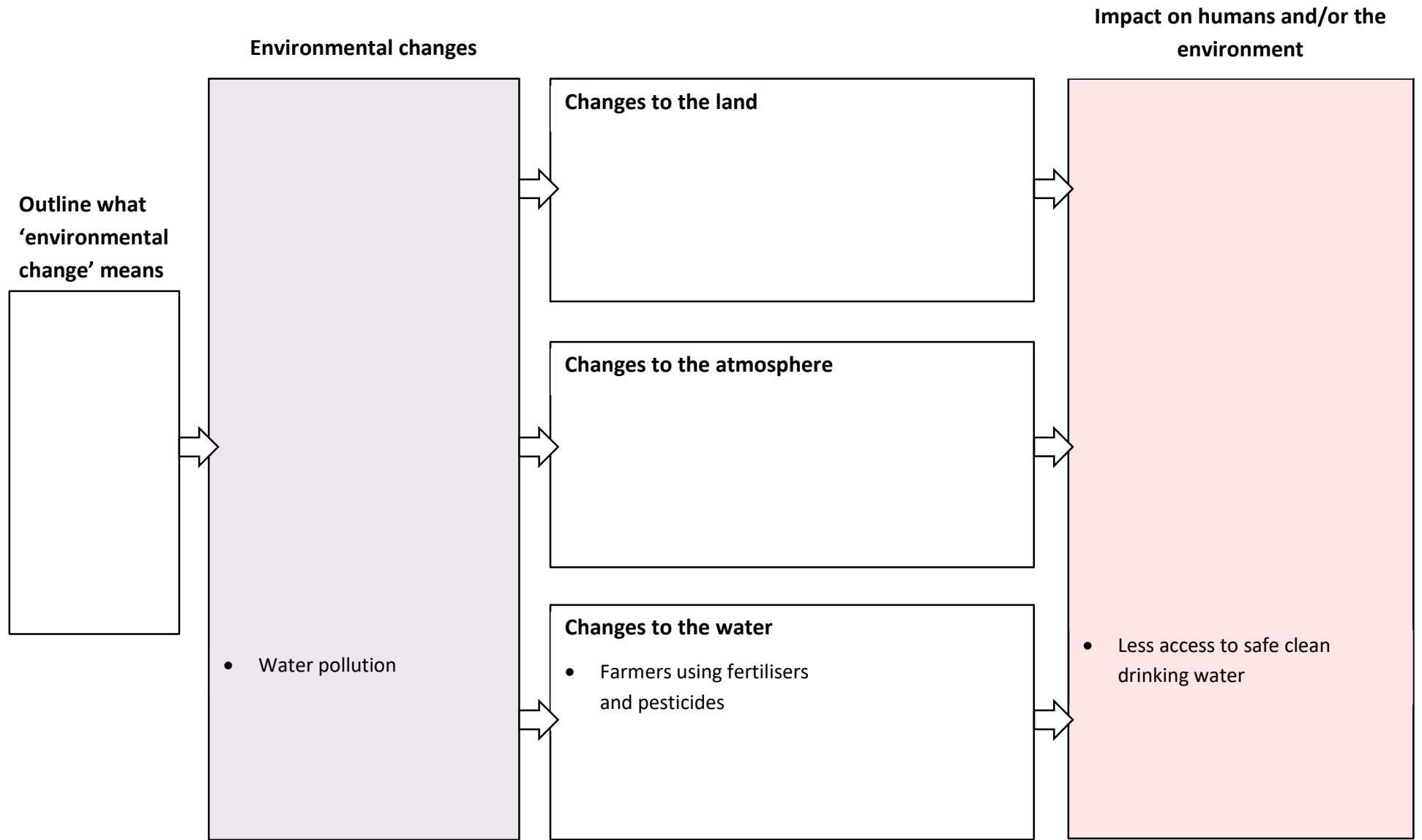
See Appendix B: Assessment task – Extended response



Appendix A

Resources

Lesson 6: Graphic organiser





Appendix B

Assessment task

Extended response



Task details

Title	Extended response
Description	Students use what they have learnt in this lesson sequence, which may include fieldwork, to examine the causes, consequences and management strategies of an environmental change at a local, national or global scale. They will complete an in-class written assessment in response to three questions under test conditions.
Way of assessing	Written work
Evidence to be collected	Extended written task
Suggested time	50 minutes (Lesson 16)
Differentiation	Teachers should differentiate their teaching and assessment to meet the specific learning needs of their students, based on their level of readiness to learn and their need to be challenged. Where appropriate, teachers may either scaffold or extend the scope of the assessment tasks.

Content descriptions

Knowledge and understanding

- The causes and consequences of **one** environmental change at a local, national or global scale
- The responses to manage the environmental change and the application of environmental, economic and social criteria in evaluating these management responses

Humanities and Social Sciences skills

Analysing

- Analyse the 'big picture'
- Apply subject-specific skills and concepts in familiar, new and hypothetical situations

Evaluating

- Critically evaluate information and/or data and ideas from a range of sources

Communicating and reflecting

- Develop texts, particularly explanations and discussions, using evidence from a range of sources to support conclusions and/or arguments
- Generate a range of viable options in response to an issue or event to recommend and justify a course of action, and predict the potential consequences of the proposed action

Key concepts

Place, space, environment, interconnection, sustainability, scale, change.



Instructions to students

This task has three questions. Complete all three questions.

You may refer to your fieldwork booklet.

You have 50 minutes in class under test conditions.

Question 1

(8 marks)

Explain an example of environmental change you have studied. Include in your answer the:

- location(s)
- the cause of the environmental change
- the consequences of the environmental change.

Question 2

(6 marks)

Explain **two** strategies that could be used to manage the environmental change.

Question 3

(12 marks)

Evaluate the sustainability of **one** of the strategies being used to manage the environmental change. Refer to social, economic and environmental sustainability in your response.

Marking key

Description	Marks
Validation question 1	
Explains in detail an example of environmental change including: <ul style="list-style-type: none"> location(s) the cause of the environmental change the consequences of the environmental change 	7–8
Explains an example of environmental change with reference to some aspects of location, causes and consequences	5–6
Describes an example of environmental change with reference to some aspects of location, causes and consequences	3–4
Makes a statement about an example of environmental change	1–2
Subtotal	/8
Validation question 2 (2 x 3 marks)	
Explains a strategy that can be used to manage environmental change	3
Describes a strategy that can be used to manage environmental change	2
Makes a statement about a strategy that can be used to manage environmental change	1
Subtotal	/6
Validation question 3 (3 x 4 marks for each of the pillars of sustainability)	
Evaluates the sustainability, in terms of social, economic or environmental criteria, of one strategy used to manage environmental change using a range of evidence to support their response	4
Explains the sustainability, in terms of social, economic or environmental criteria, of one strategy used to manage environmental change with reference to some evidence to support their response	3
Describes the sustainability, in terms of social, economic or environmental criteria, of one management strategy with limited reference to supporting evidence	2
Makes a statement about the sustainability, in terms of social, economic or environmental criteria, of one management strategy	1
Subtotal	/12
Total	/26



Appendix C

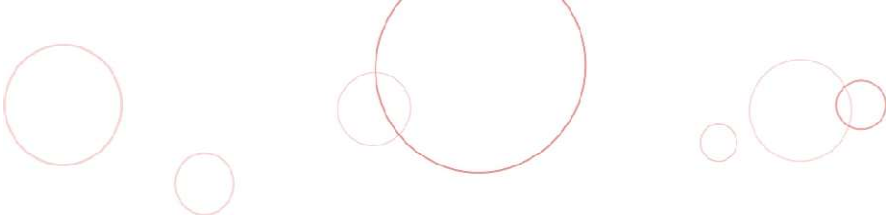
Fieldwork booklet



Fieldwork

For the purpose of this fieldwork booklet, the type of environment has not been specified. This allows teachers to adapt the booklet to fit their fieldwork site.

There is a marking key provided for teachers who wish to use this booklet as part of the summative assessment task.

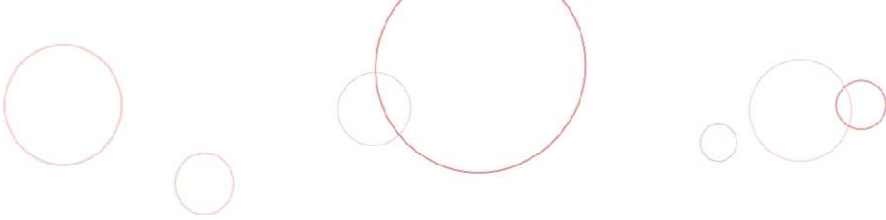


Fieldwork booklet

Complete your booklet carefully as you will be able to use these notes to help you with your summative assessment.

-
1. Location of the environment: Use an online mapping website to complete a sketch map, which clearly shows the location of the environment you are visiting.

Make sure your map includes: a North point, legend, title and scale.



2. Draw a field sketch of the environment you are visiting. On the sketch, identify the following:
- landform features
 - human activity
 - vegetation
 - areas of risk or damage
 - ways the environment is being managed.

A large, empty rectangular box with a thin black border, intended for a student to draw a field sketch of an environment. The box occupies most of the lower half of the page.

5. Describe and evaluate the effectiveness of the strategies being used or that could be used, to repair the damages and/or changes to the environment.

Description of strategy	Evaluation in relation to sustainability negative and positive factors		
	Social	Economic	Environmental

Marking key

Description	Marks
Fieldwork booklet – sketch map and field sketch	
Sketch map and field sketch are accurate, relevant and include all required features Include all conventions of mapping: orientation, legend (appropriate use of symbols/labels to identify features), title and scale	5–6
Sketch map and field sketch are relevant and include most of the required features Include most conventions of mapping: orientation, legend (appropriate use of symbols/labels to identify features), title and scale	3–4
Sketch map and field sketch are relevant and include most conventions of mapping: orientation, legend (appropriate use of symbols/labels to identify features), title and scale	1–2
Subtotal	/6
Fieldwork booklet	
Includes relevant, detailed, geographical information and/or data Consistently uses relevant geographical terminology and concepts	5–6
Includes relevant geographical information and/or data Uses some relevant geographical terminology and concepts	3–4
Includes some relevant geographical information and/or data Makes limited use of geographical terminology and concepts	1–2
Subtotal	/6
Fieldwork booklet – Collecting and recording information and/or data	
Uses appropriate recording techniques to collect and organise effectively the geographical information and/or data required by the task	4–5
Uses a variety of recording techniques to collect and organise the geographical information and/or data required by the task	2–3
Uses few logical or organised recording techniques to collect and organise the geographical information and/or data required by the task	1
Subtotal	/5
Total	/17



Acknowledgements

Lesson 3

'Lesson 3 teacher information' paragraph 3 from United Nations Brundtland Commission. (1987). *Sustainability*. Retrieved May, 2025, from <https://www.un.org/en/academic-impact/sustainability>

