



Assessment task	
<b>Year level</b>	8
<b>Learning area</b>	Humanities and Social Sciences
<b>Subject</b>	Geography
<b>Title of task</b>	Earthquakes
Task details	
<b>Description of task</b>	Students write an in-class essay on the following: 'Discuss the likelihood of a large earthquake striking a major Australian city in the next hundred years.' Students will conduct research to support their extended writing task.
<b>Type of assessment</b>	Summative
<b>Purpose of assessment</b>	To assess students' understanding of Geographical concepts and skills as they apply to geographical processes that produce landforms and the causes and spatial distribution of a geomorphic hazard
<b>Assessment strategy</b>	Written responses and a graphic organiser
<b>Evidence to be collected</b>	<ul style="list-style-type: none"> <li>• Planning sheets</li> <li>• Research sheets</li> <li>• Source validation bibliography</li> <li>• In-class written response</li> </ul>
<b>Suggested time</b>	<ul style="list-style-type: none"> <li>• Planning and research: three lessons</li> <li>• Essay: 50 minutes</li> </ul>
Content description	
<b>Content from the Western Australian Curriculum</b>	<p><b>Knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• The geographical processes that produce landforms, including a case study of <b>one</b> type of landform, such as mountains, volcanoes, riverine or coastal landforms</li> <li>• The causes, spatial distribution, impacts and responses to a geomorphic hazard (e.g. volcanic eruption, earthquake, tsunami, landslide, avalanche)</li> </ul> <p><b>Humanities and Social Sciences skills</b></p> <p><b>Q&amp;R&gt;</b> Use a variety of methods to collect relevant information and/or data from a range of appropriate sources, such as print, digital, audio, visual and fieldwork</p> <p><b>A&gt;</b> Use criteria to select relevant information and/or data such as accuracy, reliability, currency and usefulness to the question</p> <p><b>A&gt;</b> Interpret information and/or data to identify key relationships and/or trends displayed in various formats (e.g. change over time in a series of images, identify spatial distributions from a map)</p> <p><b>A&gt;</b> Apply subject-specific skills and concepts in familiar and new situations</p> <p><b>E&gt;</b> Draw evidence-based conclusions by evaluating information and/or data to generate a range of alternatives and plan for action in response to contemporary events, challenges, developments, issues, problems and/or phenomena; make comparisons; evaluate costs (disadvantages) and benefits (advantages); and infer relationships</p>
<b>Key concepts</b>	Place, Environment, Interconnection, Scale

Task preparation	
<b>Prior learning</b>	<p>Prior to the assessment task the students have previously studied:</p> <ul style="list-style-type: none"> <li>• geographical processes that produce landforms, including a case study of at least one landform</li> <li>• causes, spatial distribution, impacts and responses to a geomorphic hazard</li> <li>• how the effects on the environmental and cultural landscape caused by earthquakes are influenced by social, cultural and economic factors</li> <li>• how the application of principles of prevention, mitigation and preparedness minimises the harmful effects of geomorphic hazards</li> </ul>
<b>Assessment differentiation</b>	<p>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.</p> <p>Where appropriate, teachers may either scaffold or extend the scope of the assessment tasks.</p>
Assessment task	
<b>Assessment conditions</b>	<p>Research and written response are to be completed individually</p>
<b>Resources</b>	<ul style="list-style-type: none"> <li>• Research planning sheet</li> <li>• Help sheet – useful websites</li> <li>• Essay plan template</li> <li>• Bibliography template</li> <li>• Extended response task sheet</li> </ul> <p>Earthquakes: Useful websites</p> <p>Definitions</p> <ul style="list-style-type: none"> <li>• Buzzle. <i>Richter Scale Explained</i>. <a href="http://www.buzzle.com/articles/richter-scale-explained.html">http://www.buzzle.com/articles/richter-scale-explained.html</a></li> </ul> <p>A useful site to find out how the magnitude and intensity of an earthquake are measured</p> <ul style="list-style-type: none"> <li>• Australian Bureau of Statistics. <i>Population Density</i>. <a href="http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/3218.0Main%20Features752016">http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/3218.0Main%20Features752016</a></li> </ul> <p>Population distribution map and statistics for Australian capital cities and states</p> <ul style="list-style-type: none"> <li>• Population Labs. <i>Australia Population Map (Australia Population:21515754,Australia Population Density:2.8/sq.km)</i>. <a href="http://www.populationlabs.com/Australia_Population.asp">http://www.populationlabs.com/Australia_Population.asp</a></li> </ul> <p>Map of Australia showing the density of population and population figures for major towns and cities</p> <ul style="list-style-type: none"> <li>• Australian Government Geoscience Australia. <i>Hazards</i>. <a href="http://www.ga.gov.au/hazards/earthquakes.html">http://www.ga.gov.au/hazards/earthquakes.html</a></li> <li>• Earthquakes@GA <a href="https://earthquakes.ga.gov.au/">https://earthquakes.ga.gov.au/</a></li> </ul> <p>Geoscience Australia website: a fantastic place to start your research. This site has detailed information about the causes, distribution of earthquakes in Australia and the likelihood of earthquakes that might occur in the future. Contains maps, graphs, photo galleries.</p> <ul style="list-style-type: none"> <li>• The science of earthquakes explained <a href="http://www.abc.net.au/news/science/2017-02-22/the-science-of-">http://www.abc.net.au/news/science/2017-02-22/the-science-of-</a></li> </ul>

[earthquakes/8163686](#)

- Western Australia earthquakes explained: Why does WA get the country's largest tremors?  
<http://www.abc.net.au/news/2018-09-17/wa-earthquakes-explained/10255300>
- ABC Science. *What caused the recent earthquakes in Australia?*  
<http://www.abc.net.au/science/articles/2012/05/01/3492944.htm>
- ABC Science. *Australians 'complacent' to earthquakes.*  
<http://www.abc.net.au/science/articles/2009/03/27/2527994.htm>

ABC site with good discussion of earthquakes using recent seismic activity in South Australia as an example. Also contains general explanation of plate tectonics and causes of earthquakes with Australian-centred references.

- *Australian Geographic. Australia's worst earthquakes.*  
<https://www.australiangeographic.com.au/topics/science-environment/2012/07/australias-worst-earthquakes/>
- *The Fifth Estate. Australia risks an earthquake disaster.*  
[www.thefifthestate.com.au/innovation/engineering/australia-risks-an-earthquake-disaster/56106](http://www.thefifthestate.com.au/innovation/engineering/australia-risks-an-earthquake-disaster/56106)

Professor McCue discusses Australia and possible earthquakes.

- *Earthquake information for Queensland, Australia.*  
[http://www.quakes.uq.edu.au/html/quake\\_info/OZ\\_QLD\\_info.html](http://www.quakes.uq.edu.au/html/quake_info/OZ_QLD_info.html)
- *The conversation. Earthquakes down under: a rare but real hazard.*  
<http://theconversation.com/earthquakes-down-under-a-rare-but-real-hazard-37630>

## Instructions for teacher

### Earthquakes

Questions that may assist students to develop their conceptual understanding when introducing the task include:

#### Place

Would earthquake prone areas necessarily look the same?

Why have cities been built in areas where earthquakes are known to occur? (For example Tokyo, Christchurch)

#### Environment

What are tectonic plates?

Do tectonic plates move?

Are there links between earthquakes and volcanic eruptions?

#### Interconnection

Is an earthquake necessarily an isolated event, or is it connected to other events?

Are all earthquakes connected to tsunamis?

#### Scale

How do we measure earthquakes?

What level of earthquake is liable to cause major environmental damage?

#### Lesson 1: Introduction

- Provide the task sheet to the students, outline the task and explain how the outcome (essay) can be achieved by using the templates supplied.
- As a class, discuss the essay question to be answered.
- Class brainstorm on the board how to deconstruct the essay question, i.e. what is expected when you are asked to 'discuss' a topic.
- Draw attention to the sentence at the bottom of the task sheet (the shaded sentence) and discuss with the class how the importance of the evidence of their argument is being assessed and not their stance.
- Once the class understands the essay question, move onto 'points to consider'
- Provide students with the planning and bibliography sheets and discuss how to use these effectively: do not copy directly from source, but write down key words and phrases.
- Remind students that a bibliography is essential to all research and should be completed on an ongoing basis. To achieve full marks for the bibliography, students must use a variety of sources. Discuss with the class the types of sources available and valuable to them.
- Introduce the students to the list of useful websites.
- Students begin their research.

#### Lesson 2: Research lesson

- Remind students to ensure their research is relevant to the essay topic.
- Remind students to complete their planning sheets and bibliography.

#### Lesson 3: Essay planning

- Model the process of essay planning on the board.
- Model paragraph writing on the board
  - define topic of the paragraph and write topic sentence
  - elaboration of paragraph topic
  - examples to support paragraph topic.
- Discuss some possible arguments as a class.

**Instructions to students**

**Earthquakes**

**Planning sheet**

**Name:** \_\_\_\_\_

Evidence FOR earthquakes occurring	Evidence AGAINST earthquakes occurring	Implications?

## Planning sheet

Discuss the likelihood of a large earthquake striking a major Australian city in the next hundred years.

Key words/Questions	Dot points	Diagrams/data/maps/pictures/graphs
Where do earthquakes occur?		
Why do earthquakes occur where they do?		
Is Australia moving? Which way? How fast?		
Has Australia experienced earthquakes? Where? When? Magnitude? Devastation?		
Where are Australia's fault lines?		
Which Australian cities are at risk? Why?		

## References

Essay plan	Dot points	Diagrams/data/maps/pictures/graphs
<b>Introduction</b> Hypothesis Stance		
Supporting argument Paragraph 1:		
Supporting argument Paragraph 2:		
Supporting argument Paragraph 3:		
Supporting argument Paragraph 4:		
<b>Conclusion</b>		

### The ethical recording and communicating of evidence

List the bibliographical information of all resources from which you have taken information. You are legally required to acknowledge the author or editor who wrote or compiled the information you have used for your assignment.

**Bibliography/Reference list framework**

**Books**

Author	Year	Title	Publisher	Place
<b>More than one author</b>				

**Encyclopedia or dictionary**

Author	Year	Title of article	Title of encyclopedia	Vol	Publisher	Place	Page(s)

**Magazine articles**

Author	Year	Title of article	Title of magazine	Volume	Number	Page(s)

**Newspaper articles**

Author	Year	Title of article	Title of newspaper	Date	Page(s)

**Film or video**

Title	Year	Format	Publisher	Place



**World wide web – document**

<b>Author</b>	<b>Year or last update</b>	<b>Title of website</b>	<b>Date retrieved</b>	<b>Url (website address)</b>

**World wide web – image**

<b>Title</b>	<b>Format</b>	<b>Year</b>	<b>Date retrieved</b>	<b>Url (website address)</b>

**Online encyclopedia**

<b>Title of article</b>	<b>Year</b>	<b>Title of website</b>	<b>Date retrieved</b>	<b>Url (website address)</b>

## Instructions for students

### Earthquakes – In-class essay



[Image adapted from: Luff, M. (2010). File: Crack in Bridge Street from the 2010 Canterbury earthquake.jpg. Retrieved August, 2014, from [http://commons.wikimedia.org/wiki/File:Crack\\_in\\_Bridge\\_Street\\_from\\_the\\_2010\\_Canterbury\\_earthquake.jpg](http://commons.wikimedia.org/wiki/File:Crack_in_Bridge_Street_from_the_2010_Canterbury_earthquake.jpg) Used under Creative Commons Attribution-ShareAlike 2.0 Generic licence.]

### Your task is to write an in-class essay on the topic:

Discuss the likelihood of a large earthquake striking a major Australian city in the next hundred years.

You have a planning sheet provided to help you with your research. This planning sheet is NOT to be used when you write the essay. When researching, make sure that you are writing only things that help address the question. Write in dot points. Use diagrams.

### Some points to consider when starting your research

- Where do earthquakes occur?
- Why do earthquakes occur where they do?
- Is Australia moving? Which way? How fast?
- Has Australia experienced earthquakes? Where? When? Magnitude? Devastation?
- Where are Australia's fault lines?
- Which Australian cities are at risk? Why?

Your answer requires you to take a stance: you **agree** or **disagree** with the statement *how likely*. Either response is acceptable. It is how you present your supporting argument that gets marks.

## Marking key

Description	Marks
<b>In-class essay</b>	
<p>Comprehensively discusses the likelihood of a large earthquake striking a major Australian city in the next hundred years</p> <p>Selects relevant and accurate information and/or data about the geographical processes and spatial location of earthquakes to support the hypothesis</p> <p>Refers to specific relevant examples that support the hypothesis</p> <p>Applies relevant geographical terminology and concepts to develop discussion</p>	9–10
<p>Briefly discusses the likelihood of a large earthquake striking a major Australian city in the next hundred years</p> <p>Selects mostly relevant and accurate information and/or data about the geographical processes or spatial location of earthquakes to support the hypothesis</p> <p>Refers to some examples that partially support the hypothesis</p> <p>Applies some relevant geographical terminology and concepts to develop discussion</p>	7–8
<p>Provides a limited discussion on the likelihood of a large earthquake striking a major Australian city in the next hundred years</p> <p>Makes limited use of examples with irrelevant or inaccurate links between the geographical processes, the spatial location of earthquakes and the hypothesis</p> <p>Applies some relevant geographical terminology</p>	5–6
<p>Identifies some causes of earthquakes</p> <p>Makes no link between the geographical processes, the spatial location of earthquakes and the hypothesis</p> <p>Uses limited geographical terminology</p>	3–4
Makes broad generalised statements about the causes of earthquakes	1–2
<b>Subtotal</b>	<b>10</b>
<p><b>Answers may include, but are not limited to:</b></p> <ul style="list-style-type: none"> <li>• movement along fault lines causing compression in the earth's crust causing a 'ripple' effect on the earth's surface. Understanding of the focus point and the epicentre and how this impacts on the devastation of an earthquake</li> <li>• knowledge of the method of measurement of earthquakes, e.g. distance from the epicentre, depth of focus, topography (shape of land), local ground conditions</li> <li>• Mercalli (intensity) Scale or Richter (magnitude) Scale is appropriate</li> <li>• discussion of the tectonic process (tectonic plates moving)</li> <li>• identification that most earthquakes occur on plate boundaries; however, Australia is located mid plate</li> <li>• discussion of why Australia still experiences earthquakes and why a major event is a possibility</li> <li>• identification of major Australian fault lines</li> <li>• identification of selected Australian city</li> <li>• demonstrates an understanding the role of the fault lines and tectonic processes that could cause this natural disaster</li> <li>• demonstrates the understanding of the threat of the earthquake on that city's infrastructure, resulting in possible environmental and human damage</li> <li>• inclusion of specific and relevant examples of earthquakes in Australia, location, date, magnitude and impact of the cultural and physical environment throughout essay</li> </ul>	

Description	Marks
<b>Research skills</b>	
Selects relevant geographical information and/or data from a number of sources Uses appropriate recording techniques to collect and present the geographical information and/or data required by the task Records sufficient information and/or data to support the inquiry	7–8
Selects mostly relevant geographical information and/or data from a number of sources Uses mostly appropriate recording techniques to collect and present the geographical information and/or data required by the task Records sufficient information and/or data to support the inquiry	5–6
Selects some relevant geographical information and/or data from a limited number of sources Uses simple incomplete recording techniques to collect and present the geographical information and/or data required by the task Records insufficient information and/or data to support the inquiry	3–4
Selects mostly irrelevant geographical information and/or data from a limited number of sources Uses no logical or organised recording techniques to collect and present the geographical information and/or data required by the task Records insufficient information and/or data that provides little support for the inquiry	1–2
<b>Subtotal</b>	<b>8</b>
Presents a bibliography which includes a list of sources (e.g. online maps, websites, spatial software applications, print resources and visual media) and correctly follows the referencing technique approved by the school	2
Presents a bibliography which includes a limited list of sources and may follow the referencing technique approved by the school	1
<b>Subtotal</b>	<b>2</b>
<b>Total</b>	<b>20</b>