Earth and Environmental Science

HSC · 2017 SYLLABUS · STUDENT GUIDE

Where the marks are: HSC EES 2027

What the 8 HSC Earth and Environmental Science papers from 2019 to 2026 show, and how to use it in your revision

43% of all marks came from just **11 dot points**. They are Priority 1 and 2 below.	**2** questions worth **7–9 marks** in every paper. One usually links **two modules**.	**72%** of 2026 marks came with a **stimulus**: a graph, table, diagram or text.	**32** marks per paper are on questions where you must **use data** from that stimulus.

How to use this guide

1. **Priority 1 and 2 first.** Tick a box only when you can answer an unseen past-paper question on it for full marks.
2. **Then Priority 3** and the Hazards block (page 2), then the content that has never or hardly been asked (page 3).
3. **Practise with the stimulus in front of you.** Use numbers or features from it to support your answer.

Priority 1: examined in every paper

	Dot point	You should be able to	Papers
☐	**Mitigation and adaptation strategies** M7.IQ4.DP3	Judge a strategy (e.g. geo-engineering, blue carbon) with a benefit and a limit; say if it is mitigation or adaptation.	**8/8**
☐	**Dating geological events** M5.IQ4.DP3	Work out the order and age of rock layers using superposition, index fossils and half-life data; explain how they reveal mass extinctions.	**8/8**
☐	**Origin of organic molecules** M5.IQ1.DP1	Explain what Urey–Miller, black smokers and meteorites (panspermia) each show about how organic molecules arose.	**8/8**
☐	**Mining impacts and reclamation** M8.IQ1.DP2	Describe how a mine affects the environment and Aboriginal cultural sites, and justify a reclamation method for each problem.	**8/8**

Priority 2: examined in 7 of 8 papers

	Dot point	You should be able to	Papers
☐	**Human activities and sustainability** M8.IQ3.DP2	Use data (e.g. fish size limits) to explain how overharvesting, water pollution and habitat destruction affect a named resource.	**7/8**
☐	**How life changed the other spheres** M5.IQ2.DP1	Explain how cyanobacteria changed the atmosphere, hydrosphere and geosphere, including banded iron formations.	**7/8**
☐	**Human influence since the Industrial Revolution** M7.IQ3.DP2	Read CO_2 and temperature data; explain how extra CO_2 acidifies oceans and harms shells and reefs.	**7/8**
☐	**Modelling the plate tectonic supercycle** M5.IQ3.DP1	Order the stages and draw labelled cross-sections of rifting, an ocean opening, subduction and collision.	**7/8**
☐	**Ancient evidence of temperature change** M7.IQ2.DP1	Explain how pollen, rock types, fossils and isotope ratios each record a past climate, with an example.	**7/8**
☐	**Sustainability of a named waste option** M8.IQ2.DP3	Evaluate a named option (e.g. landfill or composting): energy, environmental impact, space. End with a judgement.	**7/8**
☐	**Recent evidence of climate variation** M7.IQ2.DP2	Say what ice cores, tree rings, Aboriginal art sites, instrument records and coral isotopes each tell us.	**7/8**

Priority 3: examined often

The rest of the top 20: each had a question mainly about it in 4 to 6 of the 8 papers.

Dot point	You should be able to	Papers
☐ **Causes of natural climate variation** M7.IQ1.DP2	Match each cause to its timescale: ocean currents and El Niño/La Niña, Earth's orbit, massive eruptions (Deccan and Siberian Traps), the plate tectonic supercycle.	**6/8**
☐ **Effects of the supercycle on climate and evolution** M5.IQ3.DP2	Explain, with an example such as Australia's drift north, how moving continents change climate and drive evolution. Be ready to show it as a flow chart.	**6/8**
☐ **Index fossils and the Geological Time Scale** M5.IQ4.DP2	State what makes a good index fossil (widespread, abundant, easily recognised, short geological range) and how index fossils divide time into eons, eras and periods.	**6/8**
☐ **Management options for solid waste** M8.IQ2.DP2	Outline how different household wastes are managed, and draw it as a flow chart with arrows.	**6/8**
☐ **Climatic phenomena and a local ecosystem** M6.IQ2.DP4	Explain the causes and physical impacts of hailstorms, east coast lows, droughts or floods, and bushfires on an ecosystem.	**6/8**
☐ **Technologies that minimise disasters** M6.IQ3.DP2	Explain how building codes, a named building technology, warning systems, hazard maps and education reduce the harm from earthquakes and eruptions.	**4/8**
☐ **Flow-on effects of climate change** M7.IQ3.DP3	Describe changes to weather patterns, to glaciers, sea ice and ice sheets, and to where species can live as sea level rises. Know weather from climate.	**5/8**
☐ **Waste audit investigation** M8.IQ2.DP1	Write a valid method for a waste audit, with a safety precaution, and say how to make the data accurate and reliable.	**6/8**
☐ **Earthquake hazards** M6.IQ1.DP3	Explain ground motion and tsunamis and their effects on the environment and on buildings, using diagrams.	**6/8**

Expect a Hazards question built on a map, graph or real event

Earthquakes and volcanoes (Module 6, the first inquiry question) took **7–16 marks in every paper**, but the marks are spread over six dot points, so only one appears above. Know why earthquakes are shallow at divergent boundaries but range from shallow to deep at convergent ones, how magma type controls how explosive an eruption is, volcanic hazards such as lahars, and when a hazard becomes a disaster. Know **Mount Pinatubo (1991)** in detail: it was examined in 2023, 2025 and 2026.

Skills that keep coming up

- **The big cross-module question.** In 2021 and every paper from 2023, an 8-mark question asked for TWO modules, concepts or examples linked to a statement, image or list. Prepare two cause-and-effect chains you know well.
- **Flow charts** (5 of 8 papers) and **labelled cross-sections**: boxes in order, arrows for every step, labels on every feature.
- **Investigations:** variables, a valid method, and the difference between validity, reliability and accuracy. In 2026, 7 marks went to judging whether sources were valid.
- **Aboriginal and Torres Strait Islander knowledge** was asked directly in 6 of 8 papers. Know one named mine where traditional owners were involved in planning, mining and restoration, and how cultural burning supports sustainability.
- **Short calculations** from a graph or table (a few marks in most papers): show working and units.

Don't get caught out

watch this space

Checked against every question and marking guideline from 2019 to 2026. These are in the syllabus but have never or hardly been asked, and only two papers remain on this syllabus. Most need one example and a few sentences.

Never asked	What to know
☐ **Underground mining methods** M8.IQ1.DP2	Pictured once (2025), but the method itself has never been asked. Know one, e.g. longwall coal mining, its effects (the ground sinks, stream beds crack) and how the site is reclaimed.
Hardly asked	
☐ **Human activities and droughts or floods** M6.IQ2.DP5	Never a question of its own. Clearing land and paving cities makes rain run off faster, so floods are bigger; taking too much water from rivers makes droughts worse downstream.
☐ **Agricultural resources on land and in water** M8.IQ1.DP1	You have never been asked to name and locate them. Know one of each, e.g. wheat in the WA wheatbelt and farmed salmon in Tasmania.
☐ **Ice cores** M7.IQ2.DP2	In eight multiple-choice questions, but never the focus of a written one. Trapped air bubbles give past CO_2; oxygen isotopes in the ice give past temperature.
☐ **Changes in Earth's orbit** M7.IQ1.DP2	Eccentricity, tilt and precession change climate over tens to hundreds of thousands of years and pace the ice ages.
☐ **Isotopes in deep-sea sediments** M7.IQ2.DP1	Shells formed in glacial periods hold more oxygen-18 relative to oxygen-16, so a sediment core records temperature.
☐ **Alternative energy as mitigation** M7.IQ4.DP3	Wind or solar replacing coal: emissions avoided, against the need for storage.
☐ **Aboriginal art sites as evidence** M7.IQ2.DP2	One example of art showing a now-extinct species, e.g. thylacines in northern Australia, and what it tells us about past environments.
☐ **Explosive vs effusive eruptions** M6.IQ2.DP1	Compare their effects on the atmosphere and living things. Asked directly once, in 2019.

What markers reward

- **Be specific.** Name the mine, the eruption, the waste option, the technology. Markers' most common complaint is answers that are too general.
- **Link cause to effect.** Don't list effects; explain how each one happens.
- **Answer every part.** TWO means two, BOTH means both, and do what the verb asks.
- **Use the stimulus.** Quote numbers and refer to every graph or figure named in the question.
- **Draw clearly.** Arrows, labels and a key.

Don't mix these up

Flagged by NESA markers. Can you explain the difference?

- greenhouse effect vs ozone depletion
- mitigation vs adaptation
- sustainable vs renewable vs recyclable
- hazard vs disaster
- validity vs reliability vs accuracy
- relative vs absolute dating
- ancient vs recent climate evidence
- earthquake frequency vs magnitude
- tsunamis vs tidal waves
- weather vs climate

A word of caution

These are patterns from past papers, not knowledge of the 2027 paper. When we built this list from earlier papers only and checked it against the next paper (2022–26), its top 15 dot points covered 43 of the 100 marks on average, so more than half came from elsewhere. EES topics have partly rotated, so the resource case study and predicting earthquake and volcano zones (none in 2025–26) are worth a look, though that pattern is weak. Use this guide to decide what to do first, not what to skip.

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