

Assessment Rationale — Waste Rock Stockpile Investigation (Earth and space sciences)

Teacher-facing assessment rationale for the Earth and space sciences summative 'Waste Rock Stockpile Investigation'. Maps each part and rubric criterion to the SCSA Year 4 content descriptions (weathering/erosion and the four inquiry sub-strands) and the achievement standard, explains the WA mining context and cross-curriculum links (Sustainability, Ethical Understanding), and justifies validity and fairness. For teacher/moderation use.

This document shows how the summative task **Waste Rock Stockpile Investigation** assesses the mandated WA Curriculum (SCSA) Year 4 Science content, and explains the design of the task and marking key. It is for teacher planning and moderation and is not given to students.

Curriculum content assessed

Strand / sub-strand	Content description (SCSA Year 4)
Science understanding — Earth and space sciences	"Weathering, erosion, transportation and deposition cause slow or rapid change to Earth's surface."
Science inquiry — Questioning and predicting	"Pose questions and make predictions based on planned observations of phenomena that include variables to be measured and changed."
Science inquiry — Planning and conducting	"Plan and conduct investigations, including elements of fair tests, and consider the material and equipment risks."
Science inquiry — Processing / Collaborating and applying	"Organise and represent data ... to identify patterns" and "use science knowledge to propose explanations for observed phenomena and solutions to problems."

Alignment with the Year 4 achievement standard

The Year 4 achievement standard states that students "appreciate that Earth's surface changes over time due to a variety of processes," "plan investigations that include elements of fair tests and consider the material and equipment risks," and "use science knowledge to propose explanations and solutions to problems." This task is an authentic performance of all three at once.

Task part	What it asks	Content / standard link
Part A — Plan your fair test	Question, prediction, and variables (change / measure / control).	Questioning and predicting; planning a fair test.
Part B — Safety	Identify and manage a risk.	"Consider the material and equipment risks."
Part C — Design and result	Build a design, conduct the test, record the observation vs the uncovered pile.	Planning and conducting; making and recording observations.
Part D — Explain and improve	Explain the result using weathering/erosion and propose an improvement.	Earth and space understanding; "propose explanations and solutions."

How the marking key reflects the standard

Because this content description sits alongside four inquiry sub-strands, the marking key is inquiry-weighted: *Planning a fair investigation* (30) and *Conducting, observing and recording* (30) carry the most weight, matching the emphasis on fair-test planning and conducting; *Explaining results and improving (using science)* (25) assesses the Earth-science understanding and the "propose solutions" content; *Identifying and managing risk* (15) assesses the explicit risk requirement. The High / Sound / Limited descriptors mirror the SCSA judging-standard language.

Why this task is valid and fair

- **It builds on the taught sequence.** Students learn the weathering types (Lesson 9), run a freeze-thaw fair test (Lesson 10) and model erosion, transportation and deposition (Lesson 11) before applying all of this to a real problem — so it assesses developed learning, using the same fair-test template used all term.
- **It is authentic to Western Australia.** Acid mine drainage from waste-rock stockpiles is a genuine local environmental issue in a mining state, making the science meaningful and connecting classroom learning to students' world.
- **It is inclusive.** Group building with individual planning sheets supports collaboration while producing individual evidence; the labelled diagram lets students show understanding visually; and the exemplar's guidance to scaffold or extend (differentiation) is built in.

Cross-curriculum and capabilities. The task develops **Sustainability** (protecting soil and waterways) and **Ethical Understanding** (weighing the benefits of mining against its impact on the environment and communities), and applies the **Design and Technologies** design-and-evaluate process and **Critical and Creative Thinking**.

Moderation note. Moderate on the quality of the fair-test plan and the science explanation, not on how little liquid leaked. A design that leaked but is well planned and well explained can still be High.