2026 Queensland Quantum Challenge - Curriculum Alignment to Australian Curriculum V9 – Earth and Environmental Science (for Year 11)

The Earth and Environmental Science Rationale is bolded where there is alignment to the 2026 Queensland Quantum Challenge. The Unit/Syllabus Objectives included provide connections to domains where applications of quantum and advanced technologies are being harnessed to solve problems.

Earth and Environmental Science Rationale

Earth & Environmental Science provides opportunities for students to engage with the dynamic interactions in and between four systems: geosphere, hydrosphere, atmosphere and biosphere. In Unit 1, students examine the evidence underpinning theories of the development of Earth systems, their interactions and their components. In Unit 2, students investigate how Earth processes involve interactions of Earth systems and are interrelated through transfers and transformations of energy**. In Unit 3, students examine renewable and non-renewable resources, the implications of extracting, using and consuming these resources, and associated management approaches. In Unit 4, students consider how Earth processes and human activity can contribute to Earth hazards, and the ways in which these hazards can be predicted, managed and mitigated to reduce their impact on earth environments.**

Earth & Environmental Science aims to develop students':

• interest in Earth and environmental science and their appreciation of how this multidisciplinary knowledge can be used to understand contemporary issues

• understanding of Earth as a dynamic planet consisting of four interacting systems: the geosphere, atmosphere, hydrosphere and biosphere

• appreciation of the complex interactions, involving multiple parallel processes, that continually change Earth systems over a range of timescales

• understanding that Earth and environmental science knowledge has developed over time; is used in a variety of contexts; and influences, and is influenced by, social, economic, cultural and ethical considerations

• ability to conduct a variety of field, research and laboratory investigations involving collection and analysis of qualitative and quantitative data, and interpretation of evidence

• ability to critically evaluate Earth and environmental science concepts, interpretations, claims and conclusions with reference to evidence

• ability to communicate understanding, findings, arguments and conclusions related to Earth and its environments, using appropriate representations, modes and genres.

Senior Earth and Environmental Science	
Unit / Syllabus Objectives	**Subject Matter**
Unit 3: Living on Earth – extracting, using and managing Earth resources	Science as a human endeavour • Appreciate that ICT and other technologies for exploration of mineral and energy resources have dramatically increased the size, accuracy and geographic and temporal scope of datasets with which scientists work. • Appreciate that modern technologies have had a significant impact on improving the efficiency and effectiveness of locating and extracting resources, including by aerial and satellite imagery to map resource location, use of software packages to model resource distribution, and validation of the model using technologies such as seismic surveys.
Unit 4: The Changing Earth – the cause and impact of Earth hazards	Science as a human endeavour • Appreciate that people can use scientific knowledge obtained from models and theories to inform the monitoring, assessment and evaluation of risk in response to changes in climate patterns.