2024 Stage 6 Consultation – EES: Science Teachers' Association of NSW Response
https://www.nsw.gov.au/education-and-training/nesa/news/syllabus-consultations

1. What are the strengths of the draft syllabuses?	○ Clear content statements of the expectation of what is required to be taught and therefore what may be examined. ○ Increased quantity and clarity on lab experiments. ○ Overall, it is looking great. It should improve standard of teaching EES across the state.
2. Are there any content points requiring further refinement?	○ The image on page 9 seems to indicate there is a fieldwork component, but this comes up nowhere in the rest of the syllabus. **Formation and Structure of the Earth** • "Discuss ideas about the formation of the Earth with reference to Aboriginal Dreaming Stories and Torres Strait Islander Legends" ○ Feels a little tokenistic and it might be hard to find information about Torres Strait Island Legends. • "Outline chemical and physical systems for classifying Earth's layers" ○ Seems to be covered in the two points after it. What is new in this dot point? • "Evaluate the evidence for the Earth formation" ○ Feels like an odd use of the verb. **Developing the Theory of Plate Techtonics** • "Analyse the contributions of Marie Tharp and Alfred Wegener to the development of the theory of plate tectonics" ○ Wegner should be before Tharp. • "Analyse the geological evidence, models and theories contributing to the theory of plate tectonics" ○ Unclear what the syllabus wants teachers to do for this point. It is quite vague. **Plate Boundaries and Tectonic Structures** • "Analyse the scientific evidence, models and theories contributing to an understanding of the formation of Australian geological features" ○ Australia's tectonic setting does not lead itself to inclusion in a unit on plate boundaries and tectonic structures.

	○ This could be transformed into a case study: “Investigate the tectonic setting and processes that has led to a significant geological feature” **Rocks, minerals and the rock cycle** ○ Sedimentary and igneous are subdivided. Metamorphic should be subdivided into contact and regional as well to be consistent. ○ The ‘keys’ mentioned could be more explicit or even included on a data sheet. This would add rigor and make teaching this section more consistent. **Mining Resources** • “Analyse the use of the terms ‘renewable’ and ‘non-renewable’ when describing resources and processes required to maintain society and the environment” ○ This is a very confusing dot point. Do you want us to analyse the renewability of processes? What does this mean? • “Analyse maps to relate past plate boundaries and tectonic structures to the location of Australian iron, aluminium and copper ore deposits” ○ Recommend removing. ○ This is a very difficult dot point that does not seem to link to the rest of the syllabus. It would be incredibly time consuming, and teachers may skip it as it doesn't link directly to year 12 content. • “Conduct a laboratory experiment to model a geomagnetic survey to locate a magnetic ore under the Earth’s surface” ○ How do smaller schools do this? • “Explain the choice of open pit mining, underground mining, and offshore and onshore drilling extraction techniques at a variety of locations” ○ Could be a “justify” instead of “explain” so the students would need to make decisions about what type of mine would be used in different circumstances. • “Analyse the scientific evidence, models and theories contributing to an understanding of the formation of Australian geological features” ○ Could specify: ▪ Uluru ▪ Flat Topography ▪ Ancient Cratons ▪ Formation of Eastern Australia

	Meteorological hazards o Dot point realignment – perhaps put the larger one at the end. o Feedback loops – explicitly mention the positive and negative feedback loops. **Sustainability and waste management** o Use secondary sources
3. Are scientific investigations sufficiently flexible for implementation by teachers?	• "Conduct a laboratory experiment to generate an electric current using a turbine" o The first dot point under Energy Resources about turbines and solar cells might not be accessible for schools with less resources. Could this be "conduct" or "simulate"? o Language of syllabus needs to be consistent: - Conduct a laboratory experiment - Conduct a controlled laboratory experiment - Conduct a practical investigation - Plan and conduct a practical investigation o The practical investigations on rock classification – is it possible to get a standardised classification key form NESA?
4. Do the syllabuses provide flexibility for teachers to support diverse learners?	Yes.

General Comments:

- Inquiry questions help to guide the teachers through each session.
- Working Scientifically in Stage 6 needs to work with the new 7-10 syllabus. The continuum of skills does not currently work.
- A datebook is needed for Stage 6.
- While it is good to be moving to 3 modules in year 11, the 120 hours teaching requirement in Year 11 is not feasible.
- A glossary of terms is needed, with correct definitions.
- Consistent language is needed across the syllabus for all terminology (eg. Representations and models - what is the difference? Also 'Investigation' and 'demonstration' isn't well delineated). This will be particularly important for early career teachers.
- Numbers (and letters) are needed to number all the headings and sections and outcomes, so that teachers all know which we are refereeing to.
- Schools in Rural and Remote areas might struggle with this syllabus if they do not have adequate resources.
- NESA guidance for Aboriginal & Torres Strait Islander perspectives is needed.
- The addition of data science in the new 7-10 is good, however there is currently no progression for data science in Stage 6. It is a shame to lose data science completely, it should not be just for science extension.

- The balance between using pracs to demonstrate a concept versus having student do authentic scientific investigation isn't there.
- Explicit permission structure for investigations needed.