Submission Template
2016 National Research Infrastructure Roadmap
Capability Issues Paper

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Would you like your submission to remain confidential, i.e. not published on the website?	**NO**

Please note: Respondee is also a non-executive director of AuScope, the NCRIS facility in the earth sciences. This response is on behalf of the Deep Exploration Technologies CRC.

Question 1: Are there other capability areas that should be considered?

The solid earth geosciences are severely under-represented in the Issues Paper. We make the following points on this under-representation.

(i) Research in the solid earth sciences underpins Australia's resources industry which in 2014 constituted 59% of all Australia's exports and ~10% of GDP.
(ii) Energy and Resources are both stated Science and Research Priorities of the Australian Government.
(iii) In terms of publications/citations, the geosciences are the highest impact of any science in Australia per researcher.

It is astonishing that an area of stated national priority, with such huge economic impact and which punches above its weight in the research sphere should be so under-represented in the Issues Paper.

The geosciences field is more suitably aligned with the 'Physics, Chemistry, Mathematics and Materials' grouping than with the 'Environment and Resource Management' grouping.

Question 2: Are these governance characteristics appropriate and are there other factors that should be considered for optimal governance for national research infrastructure.

The NCRIS scheme and AuScope in particular have functioned successfully. Key factors in that success are the collaborative (as opposed to competitive) approach to infrastructure prioritisation and the independent, not-for-profit corporate governance of AuScope which removes it from the priorities of individual institutions, to the benefit of the broader geosciences community.

Question 3: Should national research infrastructure investment assist with access to international facilities?

This is appropriate where the scale of facilities is beyond what can and should be supported by Australia alone such as the SKA, CERN and the International Ocean Discovery Program (IODP).

Question 4: What are the conditions or scenarios where access to international facilities should be prioritised over developing national facilities?

Access to international facilities should be prioritised over developing national facilities where the scale of facilities is beyond what can and should be supported by Australia alone. The respective research community should be able to clearly indicate their desire for access to international facilities or for the development of Australian facilities.

Question 5: Should research workforce skills be considered a research infrastructure issue?

The workforce required to operate National Research Infrastructure is part of the infrastructure issue (otherwise it won't operate). Funding researchers who utilise the National Research Infrastructure is not part of the infrastructure issue.

Question 8: What principles should be applied for access to national research infrastructure, and are there situations when these should not apply?

The current NCRIS guidelines are appropriate, i.e. access for little or no cost to Australian researchers, data made widely and freely available, industry access with some cost recovery and guidelines to ensure facilities are non-competitive with commercial providers.

Question 18: Are the identified emerging directions and research infrastructure capabilities for Environment and Natural Resource Management right? Are there any missing or additional needed?

Section 6.2.4 of the Issues Paper addressing the solid earth is brief and appears uninformed regarding major challenges and priorities in the geosciences. Australia has a declining discovery rate for new mineral deposits, thus the long-term future of its resources industry is at risk. One of the key challenges is the difficulty of exploration through cover. The UNCOVER initiative is a major collaboration of researchers, government and industry to improve mineral exploration success. One key role for research infrastructure in the geosciences is to underpin the tasks carefully prioritised by the UNCOVER initiative. By doing such, research infrastructure will underpin a key aspect of the Australian economy and address the government's stated Science and Research Priorities in Energy and Resources.

However, not all geosciences research relates to energy and resources and geosciences research infrastructure must also continue to support a broad community whose publications/citations are the highest impact of any science in Australia per researcher. AuScope has performed this role outstandingly to-date.

DET CRC has supported over 100 Australian researchers and these researchers have made extensive use of AuScope facilities, notably its 'Subsurface Observatory' and 'Earth Imaging and Sounding' programs.

DET CRC strongly supports AuScope's growing focus on a network of geophysical and remote sensing deployments and geochemical sampling that will together create a geological telescope looking into the earth's interior. Strategic planning on future infrastructure needs is ongoing

within AuScope. AuScope's paper on the 'Australian Earth Observing System' has been widely circulated in the geosciences community and will inform a new strategic vision by the end of the year.

It is beyond the scope of this submission to detail all the specific directions, but research infrastructure in the geosciences should underpin the priorities of the UNCOVER initiative and those identified by AuScope.