Chapter 3

Industry, Innovation and Science portfolio

3.1 This chapter summarises certain key areas of interest raised during the committee's consideration of additional estimates for the 2018–19 financial year for the Industry, Innovation and Science portfolio. This chapter of the report follows the order of proceedings and is an indicative, not exhaustive, account of issues examined.

3.2 On 21 February 2019, the committee heard evidence from Senator the Hon. Matthew Canavan, Minister for Resources and Northern Australia[1], along with officers from the Department of Industry, Innovation and Science (the department) and agencies including:

- Anti-Dumping Commission;
- Australian Nuclear Science and Technology Organisation (ANSTO);
- Commonwealth Scientific and Industrial Research Organisation (CSIRO);
- Office of Innovation and Science Australia;
- Northern Australia Infrastructure Facility (NAIF); and
- National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

3.3 Senators present over the course of the day's hearing included Senator Hume (Chair), Senator Ketter (Deputy Chair), and Senators Carr, Patrick, Sinodinos, Stoker, and Storer.

Department of Industry, Innovation and Science—Programme 3

Women in STEM

3.4 The committee asked representatives from the department about government initiatives relating to women in science, technology, mathematics and engineering (STEM).

3.5 Officials from the department noted that work on encouraging women's participation in STEM was an important part of the National Innovation and Science Agenda (NISA). Specifically, the NISA introduced initiatives including the Male Champions of Change, the Women in STEM and Entrepreneurship grants program, the Superstars of STEM, and the Science in Australia Gender Equity project.[2]

3.6 Officials also noted the recent appointment of the first women in STEM ambassador, Professor Lisa Harvey-Smith. The role of the ambassador is to work on a

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1 Minister Canavan was relieved for a short time by Senator the Hon. Simon Birmingham, Minister for Minister for Trade, Tourism and Investment; Senator the Hon. Nigel Scullion, Minister for Indigenous Affairs; and Senator the Hon. Zed Seselja, Assistant Minister for Treasury and Finance.

2 *Proof Estimates Hansard*, 21 February 2019, p. 34.

national scale to raise awareness of the issues that can hold girls and women back from STEM study and work:

> She will increase understanding of the opportunities available to girls and women in STEM, aiming to increase their participation. Through her advocacy, the Ambassador will help drive cultural and social change for gender equity.[3]

3.7 Officials from the department commented that the government is committed to supporting women in STEM:

> This is reflected in the 2018-19 budget, where the government committed over $4.5 million over four years to support long-term strategic approaches to encourage more women and girls to pursue STEM education and careers. This work has included developing the inaugural Women in STEM strategy; support to the sector to develop the decadal plan; and support to develop a Girls in STEM Toolkit to really open up the eyes of school-age girls to the exciting careers that can be there for them in STEM.[4]

Complementary medicines

3.8 The committee discussed the use of the Australian Made logo for complementary medicines. The committee noted the introduction of legislation relating to the Australian Made logo in early 2017, and that the Australian Competition and Consumer Commission's interpretation of the legislation had revealed unintended consequences of the legislation. Specifically, that:

> The new definition of 'substantial transformation' focuses more on the imported content of a product than the previous definition. Some products which previously met the substantial transformation test will no longer do so, meaning that they will no longer qualify to carry the Australian Made logo.[5]

3.9 The committee asked what the department was doing to resolve this issue, noting that a resolution may be possible through the introduction of new regulations. Departmental officials noted that 'the government has announced and established a task force to investigate this issue'.[6] Officials commented:

> The work of the task force, including meeting with industry and representations of industry, has demonstrated that this issue is more complicated and more difficult than the claims that may have been made. For example, two of the majority exporters, Blackmores and Swisse, have

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3 Department of Industry, Innovation and Science, *Science News*, 'Australia's first Women in STEM Ambassador', https://www.industry.gov.au/news-media/science-news/australias-first-women-in-stem-ambassador (accessed 28 March 2019).

4 *Proof Estimates Hansard*, 21 February 2019, p. 34.

5 Australian Made, 'Complementary health and the logo', https://www.australianmade.com.au/for-business/complementary-health-and-the-logo/ (accessed 29 March 2019).

6 *Proof Estimates Hansard*, 21 February 2019, p. 36.

> informed the task force that they don't use the logo on their export products and have enjoyed considerable success overseas.[7]

3.10 Officers from the department advised the committee that the taskforce was due to complete its report and provide advice to the minister by the end of February 2019.[8]

Department of Industry, Innovation and Science—Programme 1

R&D tax incentive

3.11 The committee discussed the research and development tax incentive (RDTI) with departmental officials. In particular, the committee sought an update of the work of the National Reference Group (NRG). Departmental officials confirmed that the NRG had not met since March 2017; however, also noted that consultations had taken place with a number of organisations that form the NRG in relation to proposed changes to the R&D tax incentive in July 2018.[9]

3.12 Departmental officials advised the committee that a new consultation group called the RDTI Roundtable, that comprised existing NRG members as well as other organisations, would have its first meeting on 7 March 2019.[10] Departmental officials clarified:

> The difference as well from the NRG to the new RDTI roundtable is that it will be a rolling membership, which means there are a considerable number of members. We are talking about a number of around 30.[11]

Square Kilometre Array

3.13 The Square Kilometre Array (SKA) is a global project that aims to build the world's largest and most capable radio telescope. The department's website explains:

> During its more than 50 year lifetime, the SKA will expand our understanding of the universe and drive technological developments worldwide. Australia and South Africa will each host SKA components. The project is in the pre-construction phase.[12]

3.14 Departmental officials provided the committee with an update on the progress of the SKA over the last 12 months:

> The SKA has made a lot of very positive progress over the last 12 months. Both France and Spain have joined the current SKA organisation, and the project is now moving towards a signing ceremony for the SKA

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7 *Proof Estimates Hansard*, 21 February 2019, p. 37.

8 *Proof Estimates Hansard*, 21 February 2019, p. 41.

9 *Proof Estimates Hansard*, 21 February 2019, pp. 51–52.

10 *Proof Estimates Hansard*, 21 February 2019, pp. 51–52.

11 *Proof Estimates Hansard*, 21 February 2019, pp. 52–53.

12 Department of Industry, Innovation and Science, *Astronomy*, 'Co-hosting the Square Kilometre Array', https://www.industry.gov.au/strategies-for-the-future/astronomy/co-hosting-the-square-kilometre-array (accessed 29 March 2019).

> Observatory Convention that we've been negotiating. That signing ceremony will take place in Rome on the 12 March. It will involve all the member countries.

3.15 There are currently 12 member countries of the SKA project, which is still in the pre-construction design phase.

3.16 The committee asked about what outstanding funding allocation still needed to be made by the Australian Government as part of the SKA. Officials from the department noted that there was still a range of funding allocations to be made:

> We have an obligation to continue to fund the SKA organisation, so that's the UK company where the headquarters are located. We are also still supporting some companies or institutions that are participating. As I mentioned earlier, we're getting close to the end of the pre-construction phase, so there's still some funding for that. But then we still move into a bridging period, which is between the end of pre-construction to construction. The Australian government is providing some funding to support those activities also.[13]

3.17 Specifically, there is an allocation of $25 million over 2018–19 and 2019–20, which is part of the $293 million total that takes the SKA project through to 2025–26.[14]

Department of Industry, Innovation and Science—Programme 2

Australian Space Agency

3.18 The committee discussed the establishment of the Australian Space Agency (ASA). The head of the ASA is Dr Megan Clark AC. Dr Clark is a geologist and former director of CSIRO.

3.19 The committee noted the government's announcement in December 2018 that the ASA's headquarters will be located in South Australia. Dr Clark advised the committee that the ASA would be set up inside Lot 14—the site of the former Royal Adelaide Hospital and would be the base for 20 staff.[15] Dr Clark noted that construction on that site is due to commence in mid-2019.[16]

3.20 Dr Clark also informed the committee of progress that the ASA had made in relation to establishing agreements with industry:

> The agency, in its first eight months, has already done statements of strategic intent with three industry partners: Airbus, Sitael and Nova Systems. Inside those agreements, relevant to South Australia, Airbus has agreed to relocate one of its satellites in the Skynet network and the control centre of that to South Australia. Sitael is an Italian satellite manufacturer, and has committed to manufacturing satellites up to 300 kilograms in South

13 *Proof Estimates Hansard*, 21 February 2019, p. 65.

14 *Proof Estimates Hansard*, 21 February 2019, pp. 65 and 67.

15 *Proof Estimates Hansard*, 21 February 2019, p. 70.

16 *Proof Estimates Hansard*, 21 February 2019, p. 68.

> Australia. And Nova Systems, which is based in South Australia, is looking at areas to expand in space situational awareness—that is, the debris in space—and the analytics around that, next generation ground systems and, also, capability assurance services.[17]

Australian Institute of Marine Science

3.21 The Chief Executive Officer (CEO) of the Australian Institute of Marine Science (AIMS), Dr Paul Hardisty, made an opening statement which highlighted some of AIMS's activity over the last six months. In particular, Dr Hardisty noted the effect of the recent Townsville floods on AIMS's operations:

> I would also like to thank all the AIMS staff, who kept working, even as floodwaters threatened their homes. They volunteered to keep our facilities at Cape Cleveland running, even as our road was cut, and then banded together to help our colleagues whose homes were flooded to clean up and dig out. It was a pretty bad time for a lot of people. I just wanted to acknowledge that. Thank you.[18]

3.22 Dr Hardisty also noted that the Reef Restoration and Adaptation Program was nearing a conclusion. The aim of the program is to provide governments with options for at-scale restoration and adaptation of the reef. Dr Hardisty noted that '[c]urrently, such options do not exist'.[19]

3.23 Dr Hardisty also noted that AIMS will shortly release the latest edition of its biennial 'AIMS Index of Marine Industry', which measures the economic value of Australia's marine industries:

> In 2001 and 2002 total income, based on the marine environment, was about $27 billion. In 2015–16 it was $68.1 billion, an increase of over 250 per cent during that period. And for the first time in the history of the index, in this latest version, which will be issued next month, tourism and recreational activities have eclipsed offshore oil and gas production as the main contributor to the Australian economy amongst marine industries.[20]

3.24 Dr Hardisty concluded:

> As Australia's north continues to grow and develop, the marine estate will increasingly deliver more value and be subject to mounting stresses. Vast areas of our northern marine estate remain virtually unexplored. Meanwhile, key marine ecosystems, such as coral reefs, are in decline and will require significant investment if we are to safeguard them and the economic and social benefits they represent for the future.[21]

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17 *Proof Estimates Hansard*, 21 February 2019, pp. 68–69.

18 *Proof Estimates Hansard*, 21 February 2019, p. 82.

19 *Proof Estimates Hansard*, 21 February 2019, p. 82.

20 *Proof Estimates Hansard*, 21 February 2019, p. 82.

21 *Proof Estimates Hansard*, 21 February 2019, p. 82.

3.25 The committee asked AIMS about the vessels of its research fleet. Dr Hardisty answered that AIMS has two major vessels: RV *Solander* and RV *Cape Ferguson*. The RV Cape Ferguson is 20 years old, and AIMS has advised the committee it is looking to with replace the vessel or enter it into a life-extension program.[22]

3.26 Dr Hardisty noted that replacement of the vessel would be in the order of $50 million; whereas a life-extension program would be in the $1–3 million range.[23]

Australian Nuclear Science and Technology Organisation

3.27 The committee asked ANSTO about its plans for the use of Building 23. Dr Adi Paterson, CEO of ANSTO, noted that ANSTO had toured the building with the new minister to show her key elements of the challenges that ANSTO will face in Building 23.[24] Dr Paterson noted:

> I think there is a consensus forming that the replacement plans for building 23 in terms of long-term supply of nuclear medicines in a reliable way in Australia is a matter that many different actors are looking at in a structured way.[25]

3.28 Dr Paterson explained that whether the plan for refurbishment of Building 23 was planned on a five year or eight year plan, that ANSTO's priority remained the 'proper sustainment of the existing facility'.[26]

3.29 Dr Paterson also noted that ANSTO had expanded its activities in Building 54 over the last few years. He noted that 'about five years ago that was three to four per cent of world supply. We now undertake 16 per cent of world supply'.[27]

3.30 In relation to Building 54, Dr Paterson specified:

> The building 54 plant is the one that was built in the middle of the 2000s. The ANM plant is currently undergoing its final commissioning. I had a meeting with the regulator in relation to that last week. It is also undergoing the approvals from nuclear medicine authorities both in Australia—that is, the TGA—and in the United States—the FDA. When those nuclear medicine authority approvals are received and the regulator is satisfied with the safe operation, we will be able to begin supply from the ANM facility to the market.[28]

22 *Proof Estimates Hansard*, 21 February 2019, p. 84.

23 *Proof Estimates Hansard*, 21 February 2019, p. 84.

24 *Proof Estimates Hansard*, 21 February 2019, p. 88.

25 *Proof Estimates Hansard*, 21 February 2019, p. 88.

26 *Proof Estimates Hansard*, 21 February 2019, p. 88.

27 *Proof Estimates Hansard*, 21 February 2019, p. 88.

28 *Proof Estimates Hansard*, 21 February 2019, p. 88.

Commonwealth Scientific and Industrial Research Organisation

Artificial intelligence

3.31 The committee asked CSIRO about work being done in relation to artificial intelligence. Dr Larry Marshall, CEO of CSIRO, noted that work on artificial intelligence is principally undertaken by Data61, the digital part of CSIRO. However, Dr Marshall also noted that artificial intelligence was becoming a more prominent part of CSIRO overall:

> ...over the last few years, many of the other areas of CSIRO, like agriculture, have become increasingly digital, so that digital capability is diffused throughout the organisation. A lot of the creations inside Data61 find their way into the different industries through the other CSIRO business units. In fact, that tends to be the largest source of growth for Data61. We use artificial intelligence, for example, in our climate modelling now. We call it machine learning. It's an early form of AI, but it is AI. We're using it to improve our seasonal and decadal climate prediction, we're using it in our drought modelling and we're using it in our health group, where we're trying to use AI to analyse and do early detection of cancers.[29]

3.32 Dr Marshall considered that, for CSIRO, artificial intelligence is 'all about energy, water, health, and, of course, jobs'.[30] He pointed to some recent work done by Data61 to map out the impact of digital technologies on the future of work in Australia.[31]

3.33 The committee asked about the application of such work on artificial intelligence to the public service. Dr Smith, Secretary of the department, noted that a number of departments were beginning to look at how artificial intelligence would impact the future of their work; in particular, Dr Smith pointed to the Department of Human Services and the Department of Home Affairs.[32]

3.34 Dr Smith considered that more research needed to be done in order to determine what the more precise impact of artificial intelligence might be on jobs, noting:

> There are various studies, both those that are quite dramatic and those that are more assuring, in terms of what that means for the changing nature of work. We are still trying to do mapping work between the two departments—the Department of Jobs and Small Business and my department—in understanding the sectoral implications. But, really, it's trying to get that balance between where the opportunities are and where the jobs are that are going to be impacted. There's also work going on in the Public Service to think about what jobs within the public sector will be

29 *Proof Estimates Hansard*, 21 February 2019, p. 92.

30 *Proof Estimates Hansard*, 21 February 2019, p. 92.

31 *Proof Estimates Hansard*, 21 February 2019, p. 92.

32 *Proof Estimates Hansard*, 21 February 2019, p. 92.

> impacted. There will be opportunities, but there will also be different types of jobs.
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> That's a longhand way of saying that there's quite a bit of work in train. It hasn't all come together yet, but we're not unique, as a country, in trying to understand the various dimensions of it and really think about what the positives are, what we need to plan for in terms of the transformation of jobs going forward and how we engage the population, in a digital sense, on where the jobs of the future are.[33]

Murray-Darling report

3.35 The committee noted the recent release of the South Australian Murray-Darling Basin Royal Commission report and asked CSIRO about its involvement in the inquiry. Officers from CSIRO noted the following sequence of events in relation to CSIRO's participation:

> In terms of the sequence of events there, in early June we received a request for current and former CSIRO employees or staff to appear. Shortly after that, the Commonwealth instituted a High Court action, an injunction, to prevent past and current Commonwealth employees from appearing. We advised the commissioner on 29 June that we would be respecting the High Court process and let it run its course, and then we would advise after that how CSIRO would respond to the commission. That High Court action was discontinued towards the end of August, and there was advice from the Australian government solicitor that there would be voluntary submissions made. CSIRO also advised the royal commissioner on 12 October that we would be making a voluntary submission on the relevant scientific matters. We submitted that on 5 November.[34]

3.36 The committee raised concerns that CSIRO did not appear at a public hearing the inquiry. However, CSIRO noted that they did make a submission to the inquiry, and that beyond that, there was no particular need to appear.

3.37 Dr Marshall stated: 'Our science is published. It is clear. It stands on its own merits'.[35]

National Offshore Petroleum Safety and Environmental Management Authority

Seismic testing in the Great Australian Bight

3.38 The committee asked representatives from the NOPSEMA about a recent approval given by NOPSEMA for seismic testing to be undertaken in the Great Australian Bight. In particular, the committee raised concerns about the effect of such testing on local marine life.[36]

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33 *Proof Estimates Hansard*, 21 February 2019, pp. 92–93.

34 *Proof Estimates Hansard*, 21 February 2019, p. 94.

35 *Proof Estimates Hansard*, 21 February 2019, p. 96.

36 *Proof Estimates Hansard*, 21 February 2019, p. 125.

3.39 Officials from NOPSEMA noted that an assessment of the impacts seismic testing on marine fauna had been undertaken:

> The short answer is yes, we did answer the impacts on a full range of relevant marine fauna at that time of year and that location, including southern right whales. It was part of the assessment decision-making and also drove part of the conditions that were being established that you mentioned that were attached to the approval.[37]

3.40 Officials also noted that NOPSEMA had reviewed the environmental impact assessment report on the seismic testing and highlighted that:

> We don't have any role in conducting seismic surveys, releasing exploration permits or promoting oil and gas development. We're purely considering whether the environmental impact of the survey, for example, if it's a seismic survey, could be conducted without unacceptable impacts.[38]

3.41 NOPSEMA confirmed that seismic testing had been approved for between September and November in 2019 and 2020.[39]

Other topics raised

3.42 The committee discussed a wide range of topics during the hearing with the Industry, Innovation and Science portfolio. The above reporting of discussions is not complete. Other topics discussed by the committee included:

- Possible privatisation of the National Measurement Institute;
- SAGE—Science in Australia Gender Equity;
- European southern observatory;
- Building Ministers' Forum
- Australian Building Codes Board;
- Building regulators' forum—flammable cladding;
- Non-conforming building products;
- Shergold and Weir report recommendations;
- Science policy review;
- Meetings of the Commonwealth Science Council;
- Advanced Manufacturing Growth Fund;
- Space agency activities relating to launches from Port Lincoln;
- Refurbishment and management of asbestos in space agency site;
- Seafood origin working group;

37 *Proof Estimates Hansard*, 21 February 2019, p. 125.

38 *Proof Estimates Hansard*, 21 February 2019, pp. 125–126.

39 *Proof Estimates Hansard*, 21 February 2019, p. 125.

- Australian anti-dumping system;
- Commercial concerns regarding trade diversion;
- Public availability of the trade remedies index;
- Revenue implications of non-compliance;
- Paper dumping investigation and progress of subsequent report;
- AIMS' strategy to 2025;
- Staffing at ANSTO;
- Regulation for nuclear medicines;
- National radioactive waste management facility in South Australia;
- Menindee Lake fish kill;
- Northern Australia Water Resources;
- Coal—demand for exports in Asia/Pacific;
- NOPTA—Bight Petroleum exploration activities;
- Update on investment decisions of the NAIF;
- NAIF Board donations to political parties;
- NAIF Board selection process;
- NAIF Projects in central Queensland;
- Equinor drilling in Great Australian Bight;
- Sound of seismic survey effect on marine animals;
- Prelude project safety issues; and
- Passive acoustic monitoring.

Senator Jane Hume
Chair