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Parliament House, Perth, WA, 6000

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## **Inquiry into technological and service innovation in Western Australia**

Thank you for your invitation for WA:ERA to make a submission to the Committee's Inquiry.

WA:ERA's 22 August 2013 submission to the Committee Inquiry into "The economic impact of floating LNG on Western Australia" provides relevant background to the WA:ERA joint venture (JV) between CSIRO, Curtin University and The University of Western Australia. We were pleased that the Committee cited our submission in Volume 1 of the final report of its Inquiry at pages 116, 182-3 and 189-190.

The WA:ERA JV partners continue to work closely with the offshore oil and gas industry and particularly with industry alliance partners Woodside (since WA:ERA was established in 2003), Chevron (we celebrated 10 years of this alliance last year, see: <http://www.waera.com.au/Events>) and now Shell to deliver collaborative research outcomes with real impact. On 22 July 2015, the National Geosequestration Laboratory (NGL) was formally opened by the Hon Ian Macfarlane with the Hon Bill Marmion (see: <http://ngl.org.au/484/>). NGL assets provide an additional capability for technological and service innovation by WA:ERA joint venturers.

While WA:ERA's JV partners Curtin and UWA will be making more detailed submissions to the Inquiry, we thought that emphasising some broader points relevant to all three partners may assist the Committee. As Australia's national science and industrial research body, CSIRO has a major role of global significance in technological and service innovation. It is particularly strong in Western Australia in resources and energy, environmental science and in supercomputing (Pawsey Centre) where astronomy and allied researchers linked to the Square Kilometre Array (SKA) is a growth area. CSIRO's new CEO, Larry Marshall, has placed a renewed emphasis on commercialisation of industry relevant innovation arising from CSIRO R&D.

Several recent announcements exemplify the capability and standing of our university partners, UWA and Curtin, and provide a platform for further technological and service innovation with industry. On 20 May 2015, Minister Pyne and the Australian Research Council (ARC) announced that UWA and Curtin had been successful in three out of nine national proposals under the ARC Industrial Transformation Research and Training Programmes. UWA Professor David White is leading the ARC Research Hub for Offshore Floating Facilities (ARC funding of \$5m), UWA Professor Eric May is leading the ARC Training Centre for Liquefied Natural Gas Futures (\$4.6m), and at Curtin Professor Kingsley Dixon is leading the ARC Training Centre for Mining Restoration (\$5m).

On 2 July 2015 the Premier, the Hon Colin Barnett joined CISCO's Senior Vice President Asia Pacific and Japan, Irving Tan and Curtin Vice Chancellor Professor Deborah Terry AO and Woodside CEO Peter Coleman as Foundation Partners to launch the CISCO Internet of Everything Innovation Centre at Curtin University. Curtin has also recently completed a new facility funded by Chevron to test Monoethylene Glycol (MEG) as used in offshore gas pipelines and in LNG plans such as Gorgon and Wheatstone. Chevron has offered other key operators access to the Curtin facility.



A good definition of innovation by the OECD is cited at page 216 of a CEDA report released in June 2015 of broader relevance to the Inquiry: <https://cica.org.au/wp-content/uploads/Australias-future-workforce.pdf>. Also of value are the Commonwealth Industry Department's *Australian Key Innovation Indicators*: <http://www.industry.gov.au/innovation/reportsandstudies/Documents/AustralianKeyInnovationIndicatorsDataCard.pdf> and 5<sup>th</sup> edition of the *Australian Innovation System Report 2014*: <http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-Innovation-System.aspx>. The Australian Council of Learned Academies helpful final report on *The role of science, research and technology in lifting Australia's productivity* was released in June 2014. The Elnasri & Fox paper "The Contribution of Research and Innovation to Productivity and Economic Growth" (September 2014) emphasises significant positive spillovers from public sector R&D spending on research agencies and higher education: <http://research.economics.unsw.edu.au/RePEc/papers/2014-08.pdf> that is in keeping with a 2013 OECD paper by Koutsogeorgopoulou & Barbiero: "Boosting Productivity in Australia" which also emphasises the importance of collaboration for innovation, see especially pp 19-21: <http://www.oecdilibrary.org/docserver/download/5k4c0vt9xf3.pdf?expires=1439450174&id=id&accname=guest&checksum=A6A7BF854F113203A39B26FC7AEC510>. Material by the Office of the Chief Scientist of Australia may also assist the Committee.

Collaboration between government, universities/CSIRO and business has been a driving force since WA:ERA's establishment. While some of the proposals cited in the Committee's May 2014 report (Volume 1 pp185-194) have not proceeded following the change of Federal Government, WA:ERA has been strongly supporting the current Federal Government's Industry Growth Centres initiative. We have been working with industry and the State Government to seek to have the Oil and Gas and Energy Resources Growth Centre (OGERGC) based in Perth at the ARRC as a central location that can support industry/researcher engagement, including with SMEs and a node for the Mining Equipment, Technology and Services Growth Centre (METSGC).

In addition to significantly improving subsea systems and the prospect of FLNG there seems little doubt that remote operations, big data analytics, robotics, and LEAN construction will form key parts of increasing productivity and a successful way forward that can be supported through the OGERGC. During operations, technology will be joined with, for example, coordinated maintenance and corrosion management to reduce costs and improve industry's international competitiveness. While the OGERGC will have other priorities such as industry skills and regulatory reform, and other likely nodes such as in South Australia and Queensland, a Perth headquarters with R&D linkages across industry and researchers would form a key platform for technological and service innovation in Western Australia. The Chief Scientist of Western Australia, Professor Peter Klinken, rightly says there is a need to collaborate and innovate or die.

WA:ERA's JV partners are very active in the Pawsey Centre and with the SKA project and leveraging its opportunities, such as with big data analytics for resources and energy. Clearly, UWA and Curtin have major roles in education, professional training and postgraduate research that include domestic and international students in Australia and overseas. Chevron, Woodside and Shell support university chairs and researchers that build capability for innovation. Also of note, UWA has recently published a document relevant to the Inquiry entitled 'State of Mind': <http://zone.uwa.edu.au/wp-content/uploads/2014/04/State-of-Mind.pdf>.

Conscious that this brief submission provides only a snapshot of key sources and WA:ERA partners' activities relevant to the Committee's terms of reference for the Inquiry, I would be pleased to help provide whatever further detail may assist.

Yours sincerely



Kym Bills  
CEO