



report

**The Square Kilometre Array
January 2009**





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1 Introduction

The Square Kilometre Array (SKA) is an international project to build the world largest radio telescope. The array will be comprised of several thousand antennas up to 5,000kms apart, which will operate as a single instrument. The Square Kilometre array will be over 50 times as sensitive and 10,000 times faster as the best present-day instruments capable of exploring the origins of the universe. The AU \$2.45 billion project is being undertaken by an international consortium of researchers and organisations representing 17 countries, with construction expected to begin in 2012 and completion set for 2020. ¹

¹ <http://www.ska.gov.au/>



2 Australia's Bid

In December 2005, an Australian consortium submitted a proposal to host the Square Kilometre Array project and in December 2006, following a rigorous selection process, Australia was short listed along with South Africa. The proposed core site is located in Murchison Shire in the mid-west of Western Australia with other array stations to be located around Western Australia, Australia and possibly New Zealand.

The Australian federal government are working with the Western Australian Government and the CSIRO on the Australian bid to host the SKA. To date the governments have committed nearly \$150 million to best position Australia as the preferred host.

This funding has been allocated to number of precursor projects including:

- The development of the Australian Square Kilometre Array Pathfinder (ASKAP) radio telescope. The ASKAP will be a smaller version of SKA that will be built on the core site in Western Australia. It will be a test-bed for SKA technology and will be one of the world's best radio telescopes.
- The establishment of an International Radio Astronomy Research Centre in Western Australia aimed at further developing Western Australia's radio astronomy research capability. The centre will involve The University of Western Australia, Curtin University of Technology, CSIRO, research institutions and industry and will also be home to hundreds of researchers, technicians and post-graduate students.
- The Murchison Radio Astronomy Observatory, which is being established to be set up by CSIRO, the Massachusetts Institute of Technology (MIT) and Berkeley University.



3 Potential Economic Impact

If Australia is successful in its bid to host the Square Kilometre Array project there will be enormous scientific and economic benefits to the country. The anticipated capital cost of the project is around \$2.45 billion and approximately 50% of the capital would likely be spent in Western Australia. The annual operating budget over the 50 year life of the telescope is around \$200 million a year.

Once it is operational, the facility only requires a small workforce at the site of the SKA (10-20 people) however, it will have a scientific workforce of up to 400 scientists and technicians located off site. Furthermore, over the 8 year construction period and subsequent 50 year life, the Square Kilometre Array will indirectly generate strategic employment in areas such as super-computing, high-speed networking, advanced manufacturing, infrastructure, construction, transport, logistics and sustainable energy. In addition to generating significant strategic employment the project will attract international investment and world class talent which will drive innovation and boost Australia's research capacity. It will intensify international research collaboration encourage knowledge and technology transfer.



4 Call to action

As the closest capital city to the potential core site, Perth is in a unique position to benefit should Australia win the right to host the Square Kilometre Array project. Both the Federal and State governments along with industry should continue to invest in and develop their capabilities in radio astronomy and other relevant fields to ensure Perth is in the best position to maximise the positive economic and scientific impact generated by the Square Kilometre Array.