



## What is the Australian SKA Pathfinder (ASKAP)?

The Australian SKA Pathfinder (ASKAP) will be a next-generation radio telescope incorporating novel receiver technologies and leading-edge ICT systems. When complete, ASKAP will be one of the world's leading radio telescopes. It will comprise an array of thirty-six antennas, each 12 metres in diameter.

## Who is involved in ASKAP?

ASKAP is led by CSIRO Australia Telescope National Facility (ATNF) in collaboration with leading scientists and engineers in the Netherlands, Canada, United Kingdom and Germany, as well as colleagues from a number of Australian universities. Collaborations with industry partners are an important aspect of this project, particularly for information and communication technology, high performance computing and mass production manufacturing techniques.

## Where will ASKAP be located?

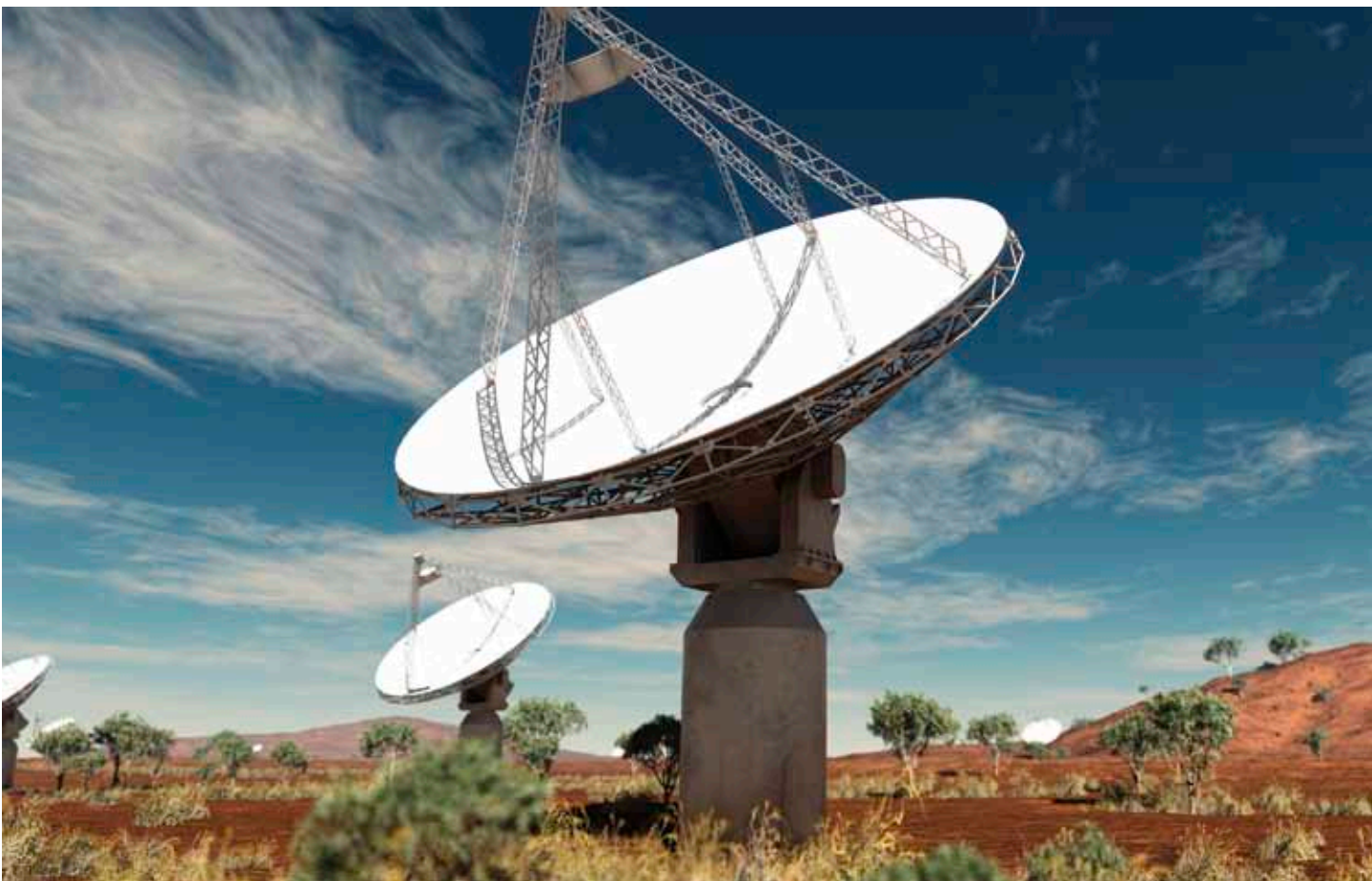
ASKAP will be built in a remote outback region of Western Australia, with construction planned to start in 2009. This region has been identified as ideal for a new radio observatory. The population is very small and hence there is a lack of man-made radio signals that would otherwise interfere

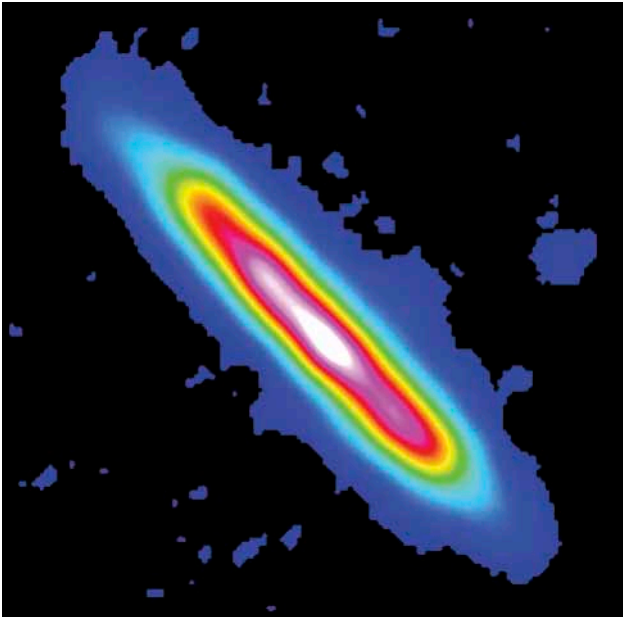
with weak astronomical signals. ASKAP will link to existing telescopes in rural NSW to demonstrate the ability to correlate signals over vast distances. The remarkably radio-quiet site in Western Australia is in the process of being developed as the Murchison Radio-astronomy Observatory (MRO) and is the Australian candidate core site for the Square Kilometre Array (SKA). The SKA is under development by a consortium of 19 countries and will be an international mega-science project.

Australia and New Zealand are short-listed as one of two possible locations for the SKA; Southern Africa is the other.

For more information on the SKA visit [www.ska.gov.au](http://www.ska.gov.au), [www.ska.govt.nz](http://www.ska.govt.nz) or [www.skatelescope.org](http://www.skatelescope.org).

*Artist's impression of ASKAP antennas at the Murchison Radio-astronomy Observatory. Credit: Swinburne Astronomy Productions. Design data provided by CSIRO.*





The beautiful, edge-on galaxy ESO115-G021 and its dwarf companion as observed with the Australia Telescope Compact Array. The colour scale indicates intensity of radio emission from hydrogen atoms at a frequency of 1.4 GHz. ASKAP will enable astronomers to observe many more such galaxies at greater distances (and hence earlier times in the Universe's history). Credit: B Koribalski, CSIRO.



A dedicated 12-metre antenna has been built at CSIRO's Parkes Observatory and it is now being used to test ASKAP technologies including novel receivers (phased array feeds). Credit: David McClenaghan, CSIRO.

## Why build ASKAP?

ASKAP will be a telescope that can capture radio images with unprecedented sensitivity over large areas of sky. With a large instantaneous field-of-view, ASKAP will be capable of vastly improved survey speeds compared with existing radio telescopes. In one week ASKAP will generate more information than is currently contained on the whole World Wide Web; in one month it will generate more information than is contained in the world's academic libraries. This combination of survey speed and sensitivity will allow astronomers to answer some fundamental questions about cosmic magnetism and the evolution and formation of galaxies; it will also assist in the discovery of new pulsars and possibly of gravitational waves.

ASKAP will provide Australian and international astronomers with another world-leading radio astronomy observatory; it will be operated by CSIRO ATNF along with existing observatories at Parkes, Narrabri and Mopra.

## What is the link between ASKAP and the international SKA project?

In addition to carrying out cutting-edge science, ASKAP will pioneer and test revolutionary new technologies in areas of electrical engineering, digital systems, computing and signal transport. ASKAP will provide key results and techniques to the international SKA design and development effort. ASKAP will trial green-energy power generation systems, as well as showcase the outstanding characteristics of the MRO site and the potential for the SKA to be located in Australia.

Australia is recognised as a world leader in radio astronomy, and ASKAP will allow Australian astronomers to continue in this role and at the same time provide valuable input to the international SKA project.

### For further information

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**ASKAP project website:**

[www.atnf.csiro.au/projects/askap](http://www.atnf.csiro.au/projects/askap)



Australian Government

New Zealand Government

