

Murchison Radio-astronomy Observatory Support Facility

The Murchison Radio-astronomy Observatory Support Facility (MSF) is the new office for CSIRO Astronomy and Space Science in Geraldton. It is a support hub for CSIRO's Murchison Radio-astronomy Observatory, providing critical services for the ASKAP telescope and other international projects underway at the MRO.

What is the MSF?

The MSF is an 800 m² facility that provides remote operations services for CSIRO's Australian Square Kilometre Array Pathfinder (ASKAP) telescope and other international projects currently under construction at the Murchison Radio-astronomy Observatory (MRO) in the Mid West region of Western Australia.

Located on the campus of the Geraldton Universities Centre (GUC), the MSF provides office space for administrative, technical and maintenance staff of CSIRO whose primary role it is to support the development and operation of the MRO, 370 km to the northeast of Geraldton.

The main features of the MSF include:

- ♦ **Operations Room:** allows CSIRO staff to remotely access and operate and monitor the telescope.
- ♦ **Portal Room:** provides access for regional researchers who have been awarded time on iVEC's Pawsey Centre supercomputer in Perth via a super-high speed network link.
- ♦ **Workshop space** for testing, calibration and repair of ASKAP and other MRO related equipment.
- ♦ **Meeting and conference facilities,** as well as a home base for CSIRO Educational and Outreach activities in the region.

Linking the MRO

A super high-speed network link connects the MSF with the MRO, and also with the iVEC Pawsey Centre in Perth.

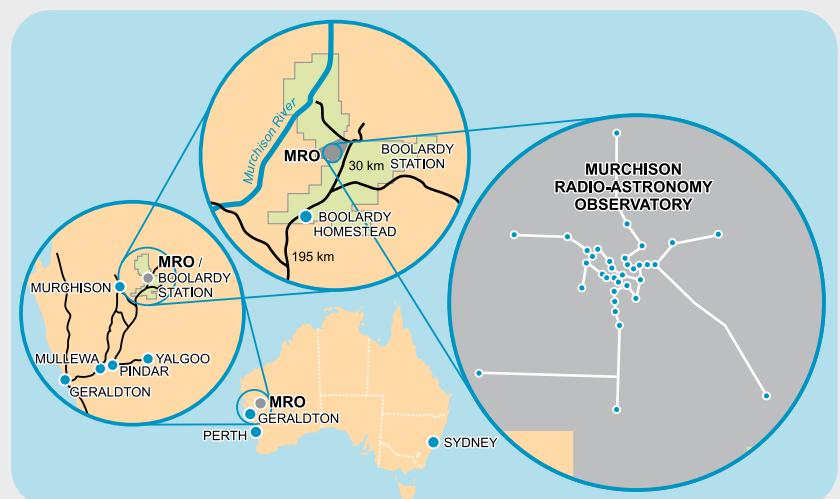
CSIRO installed the optical fibre connection between Geraldton and the MRO as an integral part of the MRO development. The Geraldton–Perth link is part of the National Broadband Network. The link will progressively increase in capability to speeds in excess of 40 Gb/s.



CSIRO's MRO Support Facility in Geraldton.

What is the Murchison Radio-astronomy Observatory?

The Murchison Radio-astronomy Observatory (MRO) is located within the boundaries of Boolardy Station in the Mid West Region of Western Australia. The MRO was created for radio astronomy research and is the site of world leading telescopes, such as CSIRO's Australian Square Kilometre Array Pathfinder (ASKAP) and the Murchison Widefield Array. The MRO will also host major components of the Square Kilometre Array, an international project to create the world's largest and most sensitive radio telescope. CSIRO acknowledges the Wajarri Yamatji people as the traditional owners of the MRO site.



The diagram shows the arrangement of ASKAP's 36 antennas, in Boolardy station in the Mid West Region of Western Australia.

MSF: the road to here

After a public tender process, CSIRO awarded the \$4 million contract for construction of the MSF to Merym Pty Ltd, which trades as EMCO Building. Construction began in January 2012 and many Geraldton sub-contractors were used during the building construction.

EMCO completed the construction in January 2013 and CSIRO staff commenced occupation the building in March 2013.

What is ASKAP?

ASKAP is CSIRO's revolutionary new radio telescope incorporating novel receiver technologies and leading-edge ICT systems. Made up of 36 dish-like antennas, each 12 metres in diameter, working together as a single instrument. Using innovative receiver technology, ASKAP is set to survey large areas of sky with unprecedented sensitivity and speed. Once fully completed, it will be one of the most powerful survey radio astronomy instruments on the planet.

The bulk of the first five years of ASKAP's operation have already been allocated to ten major international projects looking for pulsars, measuring cosmic magnetic fields and studying millions of galaxies.

ASKAP, as well as being a world leading telescope itself, will also provide an important test-bed for Square Kilometre Array (SKA) technology and will itself be incorporated into Phase one of the SKA.

What is the SKA?

The SKA is an international project to develop a future radio telescope that will have capabilities far in excess of even ASKAP. The SKA will be 50 times as sensitive and have a discovery potential 10,000 times greater than the best present-day instruments. It will be one of the largest and most ambitious international science projects ever realised.



The MSF will provide critical support to the operation of CSIRO's next generation telescope, ASKAP, as well as other international projects underway at the MRO.

It will help to answer some of the most fundamental questions of 21st Century astronomy and physics involving dark matter, dark energy, the nature of gravity, the origins of the first stars and galaxies and the generation of magnetic fields in space.

The telescope will be built in Australia and Southern Africa.

Understanding the Universe

CSIRO is a pioneer and world leader in radio astronomy research with a long and illustrious history backed up by the development of novel and groundbreaking instrumentation at radio, microwave and optical wavelengths.

CSIRO's division of Astronomy and Space Science currently operates radio telescopes at three observatories near the towns of Parkes, Coonabarabran and Narrabri in New South Wales.

These radio telescopes are known collectively as the Australia Telescope National Facility (ATNF). The facility is used by Australian and international scientists to conduct outstanding astronomical research. ASKAP will also be operated as part of the ATNF.

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FOR FURTHER INFORMATION

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