

Australian Radio-Quiet Zone WA (ARQZWA)

The Australian Radio Quiet Zone WA (ARQZWA), originally called the Mid West Radio Quiet Zone, was established by the Australian and Western Australian Governments to protect radio astronomy receivers from harmful radio interference, while allowing for opportunities for coexistence with other activities.

This factsheet provides information about the radio-quiet zone around the Murchison Radio-astronomy Observatory (MRO) site in the Mid West region of Western Australia.

The Murchison Radio-astronomy Observatory

The Murchison Radio-astronomy Observatory (MRO) is a 126 km² area located within the boundaries of Boolardy Station, about 315 km north east of Geraldton.

Home to world-leading telescopes such as CSIRO's Australian Square Kilometre Array Pathfinder (ASKAP) and the Murchison Widefield Array (MWA), the MRO has been created for radio astronomy research and is an exciting location for global science.

It is also the future site of Australian infrastructure for the international SKA telescope project; SKA infrastructure will also be built in southern Africa.

CSIRO is the manager of the Murchison Radio-astronomy Observatory (MRO), known as the MRO Entity.

CSIRO acknowledges the Wajarri Yamatji people as the traditional owners of the MRO site.

The Australian Radio-Quiet Zone WA (ARQZWA)

The Australian Radio Quiet Zone WA (ARQZWA) is an area around the MRO within which radio frequency emissions need to be managed to ensure the proper functioning of the MRO's world-leading telescopes.

The ARQZWA is protected by the legislation, regulatory and policy instruments put in place by the Australian Communications and Media Authority (ACMA) and by three protected zones managed by the Department of Mines and Petroleum in the WA government.

The ACMA has implemented regulations about the use of radio devices in the ARQZWA to enhance the national and international status of the area for radio astronomy, and assist in attracting further international investment to the region.

Under the ACMA measures, radio astronomy is the primary user of spectrum in the central part of the ARQZWA (within 70 km of the MRO).

Radio frequency interference

Radio telescopes are designed to detect faint radio signals from space, but this also makes them very sensitive to the interference caused by other radio transmissions.

This radio frequency interference can be caused by radio transmissions from mobile phones, two-way radios and broadcasting towers, or by electrical equipment such as vehicles, appliances or electrical machinery.

For the lowest frequency range, the ARQZWA extends to 260 km from the MRO.

The ACMA has measures in place over the ARQZWA that require potential applicants for a radiocommunication licence to consult with CSIRO to determine whether the device will adversely affect radio astronomy and to consider measures to minimize any interference.

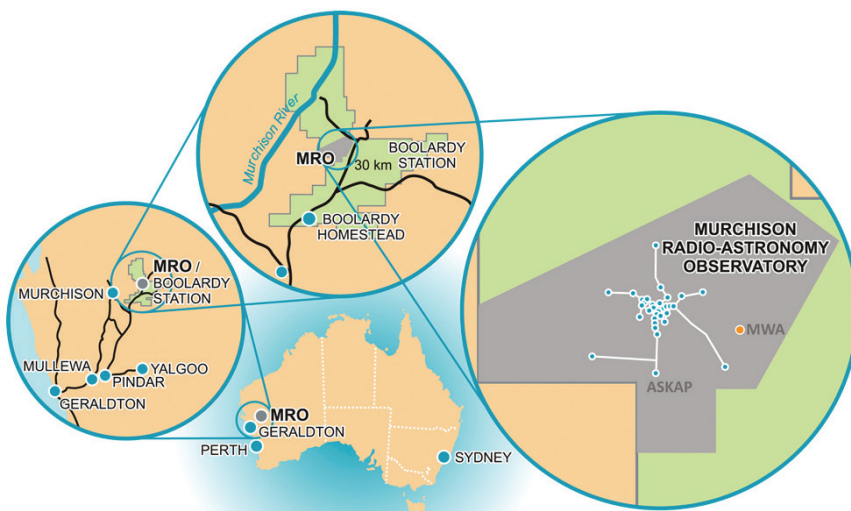
There are also limits on using class-licensed transmitters (such as WiFi or Bluetooth) within 70 km of the MRO.

The ARQZWA controls are only as strong as they need to be and restrictions become less stringent further from the MRO and at the higher frequencies.

Based on CSIRO's understanding of current pastoral activities on neighbouring properties to the MRO, the ARQZWA should not have any significant impact on those activities.

However, pastoralists are invited to contact CSIRO if there are questions or concerns about any particular activity.

More information on the ARQZWA is available in the *Frequently Asked Questions* section of this factsheet, or by contacting Dr Kate Chow (CSIRO), or the ACMA.



CSIRO's Murchison Radio-astronomy Observatory, located in the Mid West region of Western Australia. The MRO is marked in grey.

Frequently Asked Questions

CAN PASTORALISTS IN THE AREA USE CB/ UHF/VHF/HF RADIO VEHICLE-TO-VEHICLE AND VEHICLE-TO-BASE?

Yes, normal pastoral and emergency use of such radios is acceptable.

WHERE CAN WE PLAY RADIO?

You can listen to AM/FM radio (such as a car radio, stereo radio or portable radio receiver) anywhere outside the MRO.

WHERE CAN WE TRANSMIT TO SCHOOL OF THE AIR?

Transmitting to School of the Air from existing surrounding homesteads is acceptable.

WHERE CAN WE USE A MOBILE PHONE?

CSIRO requests that you keep your mobile phones turned off in areas where there is no mobile phone coverage in the vicinity of the MRO.

We also request that you minimise use of satellite phones on adjoining properties, but use for normal pastoral activity or emergency use is acceptable.

CAN WE USE A SATELLITE PHONE WHILE DRIVING PAST BOOLARDY STATION?

In order to maintain the unique radio quiet nature of the MRO site now and into the future, CSIRO prefers that you do not use your satellite phone while driving through Boolardy Station, unless in an emergency situation.

HOW CLOSE TO THE MRO CAN WE MUSTER WITH A MOTORBIKE?

You can continue your current level of mustering with a motorbike on your own property.

However, we do ask that you contact Brett Hiscock, CSIRO MRO Site Manager, when you intend to be mustering within 30 km of the boundary of the MRO.

This will enable CSIRO to plan around your activity.

HOW CLOSE TO THE MRO CAN WE MUSTER WITH A PLANE?

CSIRO requests that aircraft movements avoid coming within one nautical mile of the MRO site if possible.

WHERE DO WE NEED TO SHIELD WELDING WORK AND HOW DO WE SHIELD IT?

Arc welding activity will be detectable by the radio telescopes if the equipment is within 25 km of any of the MRO boundaries.

CSIRO requests that you contact Brett Hiscock, CSIRO MRO Site Manager, if you are planning more than a few hours of arc welding within 25 km of those boundaries.

This will enable CSIRO to plan around your activity and possibly offer to provide additional shielding equipment for your activity.

DOES THE RQZ MAKE A DIFFERENCE TO FUTURE SHED DESIGN (THAT IS, OPEN SIDE AWAY FROM THE MRO)?

Possibly, depending on where the new sheds are located.

CSIRO would welcome the opportunity to discuss with you your plans for the location and design of any sheds you wish to erect in future.

Note that current homesteads are sufficiently far from the MRO that no special precautions are required.

CAN I INSTALL ELECTRIC FENCES WITHIN THE RQZ?

Electric fences may cause interference to radio astronomy if they are sited too close to radio astronomy receivers.

CSIRO requests that pastoralists consult with CSIRO regarding any plans to install electric fences in the vicinity of the MRO.

CAN WE VISIT THE MRO ANY TIME TO SEE WHAT'S THERE? OR DO WE NEED PERMISSION FOR CSIRO TO VISIT THE MRO?

The MRO is already the home of some exciting scientific equipment. As the MRO is a 'work site' and subject to Commonwealth Government occupational health and safety restrictions, you will require prior permission from CSIRO in order to visit the MRO.

Please contact Brett Hiscock, MRO Site Manager, to discuss opportunities to visit.

CAN WE VISIT OUR NEIGHBOURS, THE HALLEENS, AT BOOLARDY STATION?

The RQZ will not stop you from visiting the Halleens at Boolardy Station.

CAN THE WAJARRI YAMATJI PEOPLE VISIT THE MRO WHENEVER THEY WISH?

The MRO Indigenous Land Use Agreement contains details of the Access Protocol for Wajarri Yamatji people.

DO MINING COMPANIES NEED SPECIAL PERMISSION FROM ACMA TO INSTALL REPEATER TOWERS FOR MINING CAMPS?

Under national legislation, equipment such as repeater towers must be licensed by the ACMA in any region of Australia.

CSIRO is committed to working with commercial and mining companies in the Mid West to develop technical solutions that will enable the satisfactory co-existence of radio astronomy and mining and rail activity.



Key Contacts

Dr Kate Chow

CSIRO SKA Site & Infrastructure
t +61 2 9372 4516
e Kate.Chow@csiro.au

Brett Hiscock

CSIRO MRO Site Manager
t +61 8 9923 7750
e Brett.Hiscock@csiro.au

CONTACT US

t 1300 363 400
+61 3 9545 2176
e enquiries@csiro.au
w www.csiro.au

YOUR CSIRO

Australia is founding its future on science and innovation. Its national science agency, CSIRO, is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation.