

Deep-Space Advanced Radar Capability, Site 1, Exmouth

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See also:

- [Deep-Space Advanced Radar Capability \[DARC\]](#)
- [Deep-Space Advanced Radar Capability, Site 2, Cawdor Barracks, St Davids, Wales](#)

Location: -21.905231°, 114.114462°

Recent developments

[On 2 December 2023](#) the United States, United Kingdom and Australia announced a 'trilateral initiative to establish Deep-Space Advanced Radar Capability', signing a Memorandum of Understanding to remain in force for 22 years.

In February 2022 Northrop Grumman was awarded a US\$341 million contract as prime integrator to develop, test and deliver the first DARC site in Australia. In August 2025 Space Systems Command and Northrop Grumman announced a successful test linkage of multiple ground-based antennas at DARC Site 1. In addition to the US\$341 million award to Northrop Grumman for Site 1, [according to the ABC](#), the Australian government will reportedly spend 'almost \$2 billion over more than 20 years to operate and sustain the WA site'.

[According to US Space Force](#), 'DARC was approved for Early Use capability for U.S. Space Command in Sept. 2025, enabling the streamlining of test and evaluation processes while proving readiness of the capability in support of joint and combined force objectives.'

Space Force [announced in May 2026](#) that 'Early Use activities are being conducted from the 20th Space Surveillance Squadron's Integrated Radar Operations Center (IROC) at [Eglin Air Force Base](#), Florida.'

In [May 2026 Lt. Gen. Gregory Gagnon](#), commander of the U.S. Space Force Combat Forces Command visited Australia to discuss further development in the US-Australia space alliance. Gagnon maintained that the development of Chinese and Russia counter-space capabilities required an offensive space capability, for which Australia makes 'vital contributions':

'Reliance on purely defensive strategies is no longer viable for the U.S. Joint Force and its allies. Securing this new high ground requires unprecedented cooperation. Space control is essential for allied prosperity and multi-domain operations. A cornerstone of this collective defense is Space Domain Awareness (SDA), which Gagnon identified as one of Australia's most vital contributions.'

[Gagnon was reported](#) to have discussed USSF plans to 'link these Australian-based sensors with the Proliferated Warfighter Space Architecture (PWSA) currently being deployed in Low Earth Orbit.'

DARC Site 1, Exmouth

[caption id="attachment_100219" align="aligncenter" width="1024"]



DARC Site 1 and surrounding facilities. Source: EOSDA LandViewer, [Sentinel-2 L2A](#), 16 August 2025[/caption]

DARC Site 1 is located on the northern part of the Exmouth Peninsula in Western Australia, between the small town of Exmouth to the south and the huge Very Low Frequency antenna towers of the Naval Communications Station Harold E. Holt on the northern tip of the peninsula, North West

Cape. The DARC facility sits in a cluster of major electronic military facilities that personify the contemporary level of integration between Australia and United States defence facilities and operations. The DARPA-designed US-built Space Surveillance Telescope is a few kilometers to the northwest of the DARC array. To the east next to the waters of the Exmouth Gulf is the transmitter station for the ADF's Enhanced Defence High Frequency System Exmouth facility in a circular array half a kilometer in diameter. A few kilometers northeast of DARC the US-built Space Surveillance Telescope is located on the southeast corner of the administrative area of the Naval Communications Station.

[caption id="attachment_100200" align="alignnone" width="1024"]



Distributed antennas of the receive array of the Deep-Space Advanced Radar Capability, Site 1, Exmouth under construction. Source: Photo Credit: Apache Drone Photography. United States Space Force, photo by X0813, VIRIN:250219-X-FC312-1001, <https://www.spaceforce.mil/Multimedia/Photos/igphoto/2003649357/mediaid/8939687/>

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When complete Site 1 will host 27 parabolic dish antennas - a small number for transmission, and the remainder tasked with reception. During the [August 2025 test](#), SSC and Northrop Grumman reported that DARC

- 'Operated seven of its planned 27 antennas, bringing the program a step closer to full operational capacity.
- 'Showcased technology capable of tracking spacecraft that could threaten space assets or

the security of the United States, Australia and allied nations.

- 'Conducted a multi-week campaign of data collection, analysis and fine-tuning to confirm calibration and operational performance.'

[caption id="attachment_100203" align="aligncenter" width="1430"]



A reflector being assembled in the Antenna Integration Structure (AIS) at DARC Site 1 in Australia. photo credit: Mike Kortum, Four Sea Group Inc. [United States Space Force photo by X0813, VIRIN: 250219-X-FC312-1002.](#)[/caption]

According to Northrop Grumman, seven of Site 1's antennas were able to "characterize the movement of multiple satellites" in recent trials. "DARC's calibrated antenna arrays operated as a single system to successfully characterize the movement of multiple satellites and demonstrate the effectiveness of the system's precision radar tracking technology," said Kevin Giammo, director of space surveillance and environmental intelligence at Northrop Grumman.

Construction of Site 1 began in [October 2023](#). When complete, Site 1 will host 27 parabolic dish antennas. Working together, these smaller radar arrays can combine their signals to act like a much larger, more expensive single-dish system. Full operation is [expected in 2027](#).

By February 2025, 21 of the planned 27 parabolic antennas were under construction. EOS Sentinel-2 and Landsat-2 satellite imagery (4 August and 12 October 2025 respectively) confirmed that 21 antennas had been constructed.

Antenna array, DARC Site 1, Exmouth, August - October 2025

Sentinel-2 L2A, 4 August 2025



Source: Sentinel-2 L2A, EOSDA [Landviewer](https://eos.com/landviewer/), 16 August 2025, at https://eos.com/landviewer/?lat=-21.89774&lng=114.15276&z=13&mapLabels=true&id=S2A_tile_20250801_49KHR_0&b=Red.Green.Blue&anti=true

Landsat 8, 12 October 2025



Source: Landsat 8, EOSDA [Landviewer](https://eos.com/landviewer/), 21.90489°S 114.10645°E, 12 October 2025, [false colours], at https://eos.com/landviewer/?lat=-21.90411&lng=114.11485&z=16&id=LC08_L1TP_1

At the time of these 2025 satellite images, the DARC Site 1 facility consisted of 21 parabolic antennas, with at least six to be constructed. The following figure uses the United States Space Force photograph above, VIRIN dated 19 February 2025, to introduce an initial antenna numerical identification applied to antennas in place by early 2025.



The rapid development of Site 1 has been a priority U.S. for both Space Command and IndoPacific Command. In April 2023, the head of Space Forces Indo-Pacific, Brigadier General Anthony Mastalir, said that getting DARC Site 1 operational was '[absolutely critical](#)':

'When you look at a place like Australia as a landmass, you have a lot of opportunity to contribute to that space picture...The Australians, the defense Space Command folks and the acquisition arms, they absolutely understand that, so they're moving aggressively to embrace some of these opportunities and bring systems like DARC — deep space radar capability — here on the continent.'

[GlobalSecurity.org](#) provided an outline of requirements of the Site 1 specified in the 2022 construction contract:

'FY 2023 plans continue Site 1 design and development activities including design reviews, hardware purchases, software development and integration, and construction. Complete Site 1 EA. Complete final Facility Design Review (90%) and Critical Design Review. Purchase, install and check out hardware including, but not limited to, the antennas, transmitters, receiver hardware, and associated processing, cabling, communications subsystems. Begin construction of Site 1 including roads, buildings, utilities, foundations, and installation of all antenna structures. Perform additional site development efforts such as the construction of facility-support and site infrastructure to include backup generator buildings, fuel storage (tank farms), electrical substations for power site distribution, wastewater treatment/septic &

leach, non-potable water storage / fire protection distribution (site & buildings), water treatment (potable) and physical security equipment to meet protection level 3 (PL3) requirements.'

For the Australian Defence Force, DARC Exmouth is an element in [Operation Dyurra](#), described as

'the dedicated Australian Defence Force space operation which integrates space capabilities, services and effects into wider operations.'

The DARC Exmouth facility will be operated remotely by U.S. and Australian defence forces. As of August 2025, no details have been released about ADF operational involvement with DARC 1, but it is likely that the ADF's Defence Space Command [No. 1 Space Surveillance Unit](#) (1SSU) based at RAAF Base Edinburgh in South Australia will be involved.

[No. 1 Space Surveillance Unit](#) operates Australia's space domain capabilities, including the Space Surveillance Telescope (SST) and Space Surveillance Radar (SSR) located close to the DARC site near Exmouth. No. 1 Space Surveillance Unit also operates the ADF Jindalee Operational Radar Network (JORN), and the Australian Mission Processor that provides Australian access to data downlinked from U.S. infrared Defense Satellite Program and Space Based Infra Red System satellites through the Relay Ground Station at the Joint Defence Facility Pine Gap.

At Edinburgh, No. 1 Space Surveillance Unit operates the SST and SSR together with [Operating Location Bravo](#), an element of U.S. Space Force's Space Delta 2.

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