



Market Survey: MID Infrastructure Contract 3

1. Client and Market Survey:

The SKAO, formally known as the SKA Observatory, is a global collaboration of Member States whose mission is to build and operate cutting-edge radio telescopes to transform our understanding of the Universe, and deliver benefits to society through global collaboration and innovation. Headquartered in the UK, its two telescope arrays will be constructed in Australia and South Africa and be the two most advanced radio telescope networks on Earth. A later expansion is envisioned in both countries and other African partner countries.

Together with other state-of-the-art research facilities, the SKAO's telescopes will explore the unknown frontiers of science and deepen our understanding of key processes, including the formation and evolution of galaxies, fundamental physics in extreme environments and the origins of life. Through the development of innovative technologies and its contribution to addressing societal challenges, the SKAO will play its part to address the United Nations' Sustainable Development Goals and deliver significant benefits across its membership and beyond.

The SKAO invite expressions of interest for the contract described below.

To express an interest in this contract candidates must:

1. Create an account on the [SKAO Supplier Portal](#).
2. Complete the Registration process via the 'Tender notice overview' page for this contract on the SKAO Supplier Portal.

The submission of supporting information or documentation at this stage of the procurement process is not required.

At the next stage invitations to pre-qualify for the contract will be issued according to the indicative timeframe below.

A shortlist of pre-qualified contractors will then be invited to submit tenders.

2. Project:

The SKAO will have a uniquely distributed character: one observatory, operating two telescopes, on three continents for the global scientific community.

The two SKAO telescopes will be located in radio quiet zones in South Africa and Western Australia. They differ in design and are complementary by their very nature. Both are interferometers: arrays of antennas which when linked together act as one enormous telescope, bigger than would ever be possible in a traditional single-dish design.

In South Africa, the SKA-Mid telescope will initially comprise 197 dishes, 64 of which are already in place and form the MeerKAT precursor telescope, itself a world-class facility, which will be integrated into SKA-Mid. In Western Australia, an initial 131,072 low-frequency antennas will form the SKA-Low telescope, spread across 512 antenna stations.

The telescopes' design is scalable and upgradable, allowing future improvements to maintain their world-leading capabilities, and also to align with available funding. This includes state-of-the-art scientific and computing infrastructures, designed to progressively exploit the capabilities of the Observatory as computing technology continuously improves over coming decades.



3. Contract:

MID Infrastructure Contract 3: Site Monitoring Systems (Weather stations and visual monitoring)

4. Contract Description:

The successful Contractor will be required to take responsibility for the design of the whole of the works. The tender package will include a reference design, which has been prepared by SKAO. Tenderers will be able either to adopt the reference design and provide such additional new design as necessary to complete it, or to prepare a fully new design. New design prepared by the Contractor will be subject to an acceptance procedure. The SKAO reference design will be deemed to have been accepted.

The Contractor's Scope is the design, manufacture, supply, delivery, installation, testing, commissioning and training associated with the following works:

- Weather Monitoring Station (WMS)

- Upgrade of two (No.2) existing weather monitoring stations
- Three (No.3) new weather monitoring stations
- Visual Monitoring System (VMS)
 - Four (No.4) new visual monitoring systems

The following is excluded from this contract; Three Phase Power (From the closest access point to the base of the mast for the three new selected WMS site locations outside the core area); Fibre (From the closest access point to the base of the mast for the three new selected WMS site locations outside the core area); Foundations; Earthing (Mat); Mast and Security perimeter fencing.

No	Scope	Brief description
1	Weather Monitoring Stations (WMS)	
1.1	Provide Power	Provide power to each of the five weather monitoring stations from the base of the mast throughout each WMS. Single phase / Three phase power will be provided at the base of mast by MID Infrastructure Contract 1 Contractor
1.2	Provide Fibre	Provide fibre to each of the five weather monitoring stations from the base of the mast throughout each WMS. Fibre will be provided at the base of mast by MID Infrastructure Contract 1 Contractor.
1.3	Procure Weather Monitoring Station (WMS) Components	Procure weather monitoring station components for the five WMS: as shown in the WMS design document (reference design) The WMS has three main functions, namely monitoring, reporting and control. Wind speed and direction, temperature, barometric pressure, rainfall and humidity will be measured at five locations and the information will be reported via fibre to a server where the data is converted into a Telescope Manager (TM) specified format and relayed to the TM via a Local Area Network (LAN) in the Central Processing Facility (CPF). Weather reporting takes place on change, periodically or on request from the TM.
1.4	Designing and Fabrication of WMS RFI Enclosures (Faraday Cages)	Design and build WMS Radio Frequency Interference (RFI) enclosures (Faraday cages) for the five weather monitoring stations. Furnish all designs and manufacturing drawings of the RFI enclosures.
1.5	WMS RFI Enclosure Sub Assembly Lab Integration	Integrate RFI enclosure hardware and perform RFI test on the RFI enclosure sub assembly using SKA RFI testing facility.
1.6	RFI Test all WSM Sensors in the Lab	RFI Test all WSM sensors using SKA RFI testing facility. Integrate sensors to the RFI enclosure sub assembly and RFI test the lab integrated system. Furnish RFI report. (Note that the RFI report is required before WMS site integration.)
1.7	WMS Site Integration	Build and install functioning WMS, including Notices, Labelling, and Signage, as shown in the WMS design document (reference design)
1.8	Site Acceptance Testing	Perform Site Acceptance test and provide documentation including a complete list of all deviations and concessions.
1.9	As Built data pack	Furnish WMS as-built data pack, including operating Instructions.
2	Visual Monitoring System (VMS)	
2.1	Provide Power	Provide power to each of the four Visual Monitoring Stations from the base of the mast. (Single phase / Three phase power will be provided at the base of mast by MID Infrastructure Contract 1 Contractor.)
2.2	Provide Fibre	Provide fibre to each of the four Visual Monitoring Stations from the base of the mast. (Fibre will be provided at the base of mast by MID Infrastructure Contract 1 Contractor.)

No	Scope	Brief description
2.3	Procure VMS Components	Procure Visual monitoring components for four fixed cameras: as shown in the VMS design document (reference design) VMS concept of operations is that four fixed cameras (no pan, tilt and zoom control) will monitor four site access roads at the security guard huts. The cameras will be fitted with day/night sensors to automatically switch on floodlights for night operation. Each camera will be positioned at a guard hut to cover the area around the security boom. Each camera will relay images at 6 frames per second to a video recorder situated at the Central Processing Facility (CPF). The digital video recorder will store images running continuously for at least two weeks.
2.4	Designing and Fabrication of VMS Camera RFI Enclosures (Faraday Cages)	Provide power to each of the four Visual Monitoring Stations from the base of the mast. (Single phase / Three phase power will be provided at the base of mast by MID Infrastructure Contract 1 Contractor.)
2.5	VMS Camera RFI Enclosure Sub Assembly Lab Integration	Integrate camera RFI enclosure hardware and perform RFI test on the RFI enclosure sub assembly using SKA RFI testing facility.
2.6	VMS Site Integration	Build and install functioning VMS, including Notices, Labelling, and Signage.
2.7	Site Acceptance Testing	Perform Site Acceptance Test and provide documentation including a complete list of all deviations and concessions.
2.8	As Built Data Pack	Furnish VMS as-built data pack, including operating Instructions.

The systems will be installed at multiple locations within the SKA MID telescope site near Carnarvon in the Western Cape, South Africa.

Only tenders from South African companies will be evaluated and ultimately accepted.

5. Tender Evaluation and Key Criteria:

A "most economically advantageous tender evaluation method" will be adopted which will include both price and functionality/quality criteria.

The Contractor (including design engineers if required) should be in a position to demonstrate experience in the Weather Monitoring Stations and Visual Monitoring Systems. An in-house or subcontracted Radio Frequency Interference (RFI) specialist is essential, while NEC (New Engineering Contract) contracting experience would be advantageous.

The SKAO is an inter-governmental treaty organisation, and conducts its procurement and tender processes in accordance with its own procurement policies.

6. Contract Form:

The Contract will be executed under the NEC4 Engineering and Construction Contract (ECC) contract - Option A.

7. Indicative Timeframe:

Subject to the SKAO Council approving the SKA Construction Proposal in June 2021 and meeting other requirements, the table below sets out the **indicative timeframe** for this Contract:

Market Survey close	23 July 2021
Pre-Qualification period	26 July 20201 -13 August 2021
Invitation to Tender issued	27 August 2021
Closing date of Tenders	22 October 2021
Contract Award	29 April 2022
Completion (installation)	31 July 2023
12 month maintenance	31 July 2024