# Progress Towards a Large Aperture Antenna in New Zealand for Deep Space Tracking

Incumbent New Zealand telco, Spark, has for 12 years been leasing a redundant 30 metre aperture C-Band full-motion antenna at its Warkworth Satellite Earth Station to Auckland University of Technology (AUT) for radio astronomy purposes. AUT had designed and built an interchangeable X-Band feed to augment frequency coverage and installed a hydrogen-maser clock.

Last year Space Operations New Zealand (SpaceOps NZ) was asked to consider taking over the AUT operation after the university decided to abandon its radio astronomy interests.

SpaceOps NZ has agreement in principle with all parties to operate the antenna, subject to a number of conditions, including a successful survey of the antenna and beam-waveguide components, an electromagnetic interference analysis and evaluation of the antenna’s suitability for S-Band operation. A nominal S-Band feed has been designed to assist analysis, and a desktop study undertaken to establish the compatibility with SpaceOps NZ’s scheduler, which had been designed for low Earth orbit multi-antenna multi-mission operations. Spacecraft signal testing in conjunction with JPL is being scheduled.

Progress to date is promising to meet the intention of supporting deep space missions and to avail the antenna for radio astronomy purposes. All going well, SpaceOps NZ will take over operation of the antenna on 1st July 2023. A high-data rate modem and ancillary equipment is planned to be installed later in the year, with the antenna to become commercially available in early 2024.