

# **Request for Quotation: Geotechnical survey at Charles Darwin University campus, Katherine**

## **1. Introduction**

The University of Tasmania, in collaboration with Geoscience Australia, the NT Government and Charles Darwin University (CDU) wish to establish a radio telescope and GPS receiver on the CDU Katherine campus as part of the AuScope project. AuScope is funded through the Federal Government's National Collaborative Research Infrastructure Strategy (NCRIS) and will establish the facilities to study in unprecedented detail the structure and evolution of the Australian continent.

Through regular observations using Very Long Baseline Interferometry (VLBI), the precise location of the telescope with respect to other telescopes in Australia and world-wide will be measured and monitored to millimetre precision or one part in ten-billion. As well as providing important scientific information on the rotation of the Earth, the movement of continental plates and the effects of earthquakes, these VLBI measurements provide the fundamental reference frame for all other types of geographic positioning techniques such as GPS. The co-location of the telescope and GPS at Katherine will provide one of three fundamental position reference points for the Australian Continent, the other two being in Yarragadee (WA) and Hobart (Tas).

The first of the three 12m diameter radio telescopes will be installed in Hobart early in 2009 with the Katherine and Yarragadee telescopes to follow in mid-2009. A geotechnical survey at the CDU campus is requested in order to determine suitability for telescope foundations, a GPS receiver, and several surveying monuments. A map of the CDU campus with potential drilling sites indicated is provided in Appendix A. Each site is marked with a metal stake and a pink ribbon.

## **2. Requirements**

It is highly desirable that the foundations be keyed into the local bedrock so that relative motion is limited to sub-millimeter levels

The telescope is being manufactured by Patriot Antenna Systems Inc and drawings for the foundations are attached in Appendix B. The maximum load on the foundations from the telescope is 167,000 kg. The depth of the telescope foundations is specified to be 1.1m however it can be made deeper if necessary in order to achieve our stability requirement.

We request for each location a determination of whether it is possible to site a telescope, GPS antenna or monument and be connected to bedrock:

At the three sites Lansdowne 2, 4 and 5, drill to a depth of 20m taking and logging cores to characterize the strata. These drill holes are required to establish the presence (or not) of bedrock, limestone caverns or weathered soil layers between/in rock units. The log should describe the types of strata encountered including the depths of layer boundaries and thicknesses. Core samples should be covered and stored on the CDU campus in a location agreed with Mr Jason Pokela.

### **3. Contacts**

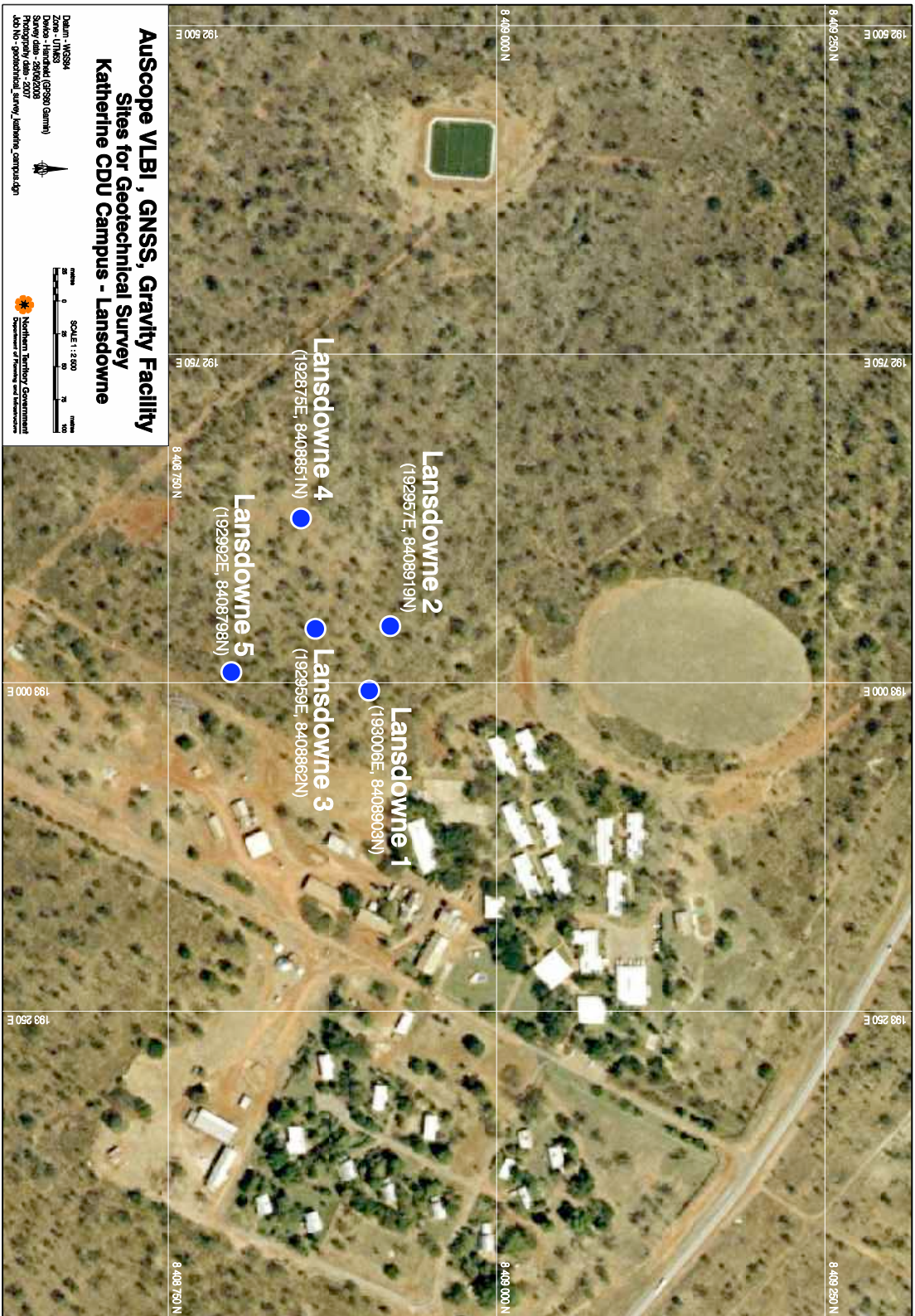
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# Appendix A



# Appendix B

