

NAWRA progress report

CSIRO delivers progress reports as part of the Northern Australia Water Resources Assessment project. Here is the latest update from the March 2017 report.

Big picture science investigation of Northern Australia resources on track

Extensive scientific work investigating the potential for further development in Northern Australia marked the midway point with a progress report that puts the \$18 million project on track to meet the June 2018 delivery deadline to the Commonwealth Government.

The [Northern Australia Water Resources Assessment](#) involves more than 120 contributors from CSIRO, state governments and subcontractors, working across 10 activity areas, and draws on expertise from across the entire country. It remains on schedule to deliver in 2018 new data and insights that will support decisions around regional development.

The Assessment is being conducted across three separate areas: the Fitzroy catchment (Western Australia), four catchments near Darwin (Northern Territory) and the Mitchell catchment (Queensland). It seeks to evaluate how water resource development could enable regional economic development in these three areas.

The latest six-monthly progress report comes at the close of the 2016-2017 wet season which started after the Northern Territory experienced its [second wettest dry season](#) and became the wettest summer on record in the [Kimberley](#).

The Assessment's work provides a big picture of northern Australia. Using remotely sensed data from low Earth orbit satellites, better maps have been developed across river systems of frequency and distribution of flood inundation, distribution and persistence of waterholes, waterhole water quality and water use requirements of riparian vegetation. These are being utilised to inform the work of numerous members of the Assessment team including ecologists, hydrologists and soil scientists.



Field work has taken scientists from Derby to Cairns.

Scientists from multiple disciplines have also worked at a fine level of detail gathering and using large quantities of data from the Assessment areas. Various high-tech modelling techniques have been used to assess surface water hydrology in order to better understand how much water might be available for irrigated agriculture, the reliability of that water supply and the impacts of using that water on downstream river flow.

Meanwhile, hydrologists have also been looking below ground level at the most promising aquifers, refining hydrogeological models of time scales of groundwater flow, recharge and discharge, and estimating the potential of the available groundwater resource.

The progress report outlines how a wide variety of methods for storing water both above and below ground, and at large and small scale are being investigated. Having an overall understanding of all the different opportunities for storing water is important in taking a long term view of water resource development and catchment development planning, where the incremental release/allocation of water to inappropriate developments may

preclude the development of more appropriate options into the future. For example, the report outlines how in the Darwin and Mitchell catchments, eight large in-stream potential dam sites have been identified for pre-feasibility analysis. The Assessment is also looking at methods of ‘banking’ water underground, and continues to investigate the applicability of [managed aquifer recharge](#), also known as “upside down weirs”, in the three areas.

The progress report details the extensive field work undertaken in the 2016 dry season. Nearly 3,000 soil samples from more than 500 sites across the three Assessment areas provide a snap shot in time of the northern Australia landscape. These data along with existing data held by the WA, NT and Qld governments have now been combined into a single database being used to produce maps of land suitability for a range of crops. The soil samples have been provided to CSIRO’s [National Soil Archive](#) in Canberra. These samples have all been analysed through the Queensland Government Chemistry Labs.

A range of potential crops has been modelled to inform development of reliable farming systems that best use the available soil and water resources. Gross margin tables for farm-scale agricultural economics are being prepared for each area. Options for aquaculture development, especially for barramundi, red claw and prawns are also being assessed.

In terms of understanding the added costs of transporting produce to market, CSIRO has mapped the existing infrastructure supporting agricultural supply chains within the catchments using CSIRO’s [TraNSIT model](#). These data will help inform potential development site location decisions as well as future infrastructure needs.

The Assessment is also investigating potential risks from development. They include identifying potential adverse offsite impacts such as additional sediments or nutrients to local waterways, as well

Field work snapshot

Land suitability assessments field work during the 2016 dry season took 10 teams on 12-day field trips totalling 120 days in the field taking samples from more than 500 soil sites across three catchments in WA, NT and Queensland. Read more in *Hard yakka field work underpins decisions for Northern Australia* via [ECOS](#).

as risks to the biodiversity. Scientists have produced a set of maps showing the distribution of ecological ‘assets’ in the Assessment areas, including both freshwater and marine species. These maps and an understanding of the ecology in the priority areas will inform decisions on water use.

Once complete, the Assessment will provide information that enables policy and investment decisions to be considered in terms of the trade-off between risk and opportunity, including environmental and economic considerations made within the context of water accessibility and reliability and other factors such as transport logistics and supply chains.

An integral part of the Assessment’s work is to better understand Indigenous values, rights and development aspirations. Field work in the Fitzroy, Darwin catchments and the Mitchell has resulted in a number of research agreements which will allow for ongoing exchange of information regarding Indigenous aspirations impacted and enabled by development.

Despite being one of the wettest wet seasons on record in some parts of the Assessment areas, no delays to ongoing field work are expected at this stage. The emphasis of work now shifts to validation and analysis of data, development of potential scenarios and final reporting to the Australian Government by the end of June next year.

Read more about [NAWRA](#).

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