

## Project Snapshot

The Sustainable Management of Coastal Groundwater Resources (SMCGR) project aims to improve the management of groundwater in coastal dune aquifers, which is used to supply water for coastal communities in the Mid North Coast region. There is increasing pressure on groundwater resources from expanding urbanisation and tourism in this region, which has made sustainable management of existing groundwater supplies an important issue for coastal communities and councils.

Over extraction from groundwater systems can affect the water available for ecosystems, which may be dependent on shallow groundwater resources. Withdrawal of groundwater resources in excess of the sustainable yield may also result in fresh water resources being degraded by seawater intrusion or by upcoming from underlying saline water bodies.

The SMCGR project will develop a framework for sustainable management of coastal groundwater resources. The management framework will be based on benchmarks that will protect groundwater quantity and quality in stressed aquifers. Benefits arising from the improved management techniques in the Project are expected to be transferable to coastal dune aquifer systems across Australia.



## Protecting our Groundwater

The key objective is to develop an integrated approach for managing the availability and quality of coastal groundwater resources, and to ensure that coastal aquifers do not become over allocated, depleted or degraded as a consequence of increasing demand from rapidly expanding urban centres such as South West Rocks.

The SMCGR project will use socio-economic assessment and new state of the art groundwater and seawater intrusion modelling tools to ensure the long term availability and quality of groundwater in coastal sand dune aquifers. The first step in the project is to gain an understanding of the groundwater system.

The study will help improve of management of groundwater resources in coastal dune aquifers in the Mid North Coast region on NSW but also has the potential for application to other coastal communities reliant on coastal dune systems for water supplies. The monitoring and modelling procedures used in this Project may serve as a guide to best practice. This will be particularly important in enabling new groundwater sources to be developed sustainably and in improving security of water supplies for coastal communities .

## Project Outcomes

The SMCGR project will facilitate the active management of groundwater resources and set benchmarks for sustainable management of the quantity and quality for coastal dune aquifers.

The project will contribute to:

- A comprehensive monitoring data set for groundwater levels and water quality;
- Integrating water quantity and water quality considerations within a risk management framework;
- Establishing a sustainable extraction regime for high water use systems;
- Facilitating the management of aquifers for long term sustainable use; and
- The integration of socio-economic goals in groundwater resource management .

The SMCGR project will be used to demonstrate methodologies which can be applied to similar high-value coastal dune aquifer systems along the Australian coastline.



## Key Project Outputs

- A best practice monitoring strategy for coastal sand dune systems with good quality groundwater, including identifying the impacts of groundwater extraction on water levels and water quality;
- Early warning indicators of groundwater stress and water quality decline to detect risks and trigger appropriate management responses for the community and the coastal dune environment;
- A risk and impact assessment method for groundwater dependent ecosystems that are subjected to reduced water availability during peak demand periods so that ecosystem needs are maintained and quantified; and
- Appropriate extraction regimes particularly during peak water demand and for variable rainfall conditions.



### For Further Information Contact:

Corinne Cameron - GHD Hassall : (02) 9239 7017

Jay Punthakey - Ecoseal: (02) 9880 8900

Ross Brodie - Geoscience Australia : (02) 6249 9042

## Project Team

The SMCGR project will be implemented by a partnership that includes GHD Hassall in consortium with the Kempsey Shire Council (Macleay Water), Geoscience Australia, NSW Department of Water & Energy (DWE), and Ecoseal Developments Pty Ltd.

## Project Contributions

This project is co-funded by the Raising National Water Standards Program. The Australian Government's \$200 million Raising National Water Standards Program supports the implementation of National Water Initiative by funding projects that are improving Australia's national capacity to measure, monitor and manage our water resources.

In-kind contributions have been provided by Kempsey Shire Council (Macleay Water), Geoscience Australia, NSW Department of Water & Energy (DWE) and Ecoseal Developments Pty Ltd.

## Key Project Activities

- Collect data for monitoring and accounting of water, including hydrological modeling of coastal aquifers;
- Distribute groundwater pumping to reduce the risk of excessive drawdowns that may impact on dependent ecosystems;
- Improve understanding and management of groundwater resources in coastal aquifers at risk from seawater intrusion;
- Develop and apply yield estimates in the form of an extraction regime, rather than just an extraction volume, contributing to an improved understanding of stresses and management options;
- Develop and apply monitoring methods and tools that could provide early warning of the risks of groundwater quality decline and of potential impact on groundwater dependent ecosystems and sustainable yield; and
- Evaluate a cost benefit analysis of alternative management regimes and scenarios coupled with key sensitivity tests including demand projections and aquifer yields.

## Community Involvement

The SMCGR project team is working closely with Kempsey Shire Council and the North Coast Catchment Management Authority to ensure that local sustainability issues are addressed during the project.

During the second year of the study a series of surveys and discussions with the Kempsey Shire community will be undertaken to assess any possible socio-economic impacts and ascertain the value placed on urban water supplies into the future.

