



Hawke's Bay Water – Regional Freshwater Assessment and SkyTEM

Project overview

Name of the project	Hawke's Bay Water Project 1: Regional Freshwater Assessment Project 2: SkyTEM Aquifer Mapping (SkyTEM)
Region	Hawke's Bay
Tier and type	Tier 3: Infrastructure
Applicant	Hawke's Bay Regional Council
Total project cost	\$ ^{Commercial Information}
Amount of funding sought from the PGF	Regional Freshwater Assessment: \$450,000 SkyTEM: \$2,154,000 Total: \$2,604,000
Financial instrument	Grant
PDU recommendation	Approve

146. Hawke's Bay Regional Council (HBRC) is seeking a \$2,604,000 grant from the PGF towards two projects:

- a. **Regional Freshwater Assessment** (\$450,000): A study across the Hawke's Bay updating and building on previous work to consider where and how to future proof the reliability of freshwater resources.
- b. **SkyTEM** (\$2,154,000): Aquifer mapping project delivering spatially dense, 3D maps of entire aquifer systems, for high resolution identification of aquifer properties to depths of at least 300 metres.

147. This application forms part of the HBRC Water Security Package, and should be considered in conjunction with the project Hawke's Bay Water – Tukituki and Heretaunga projects.

148. The three priorities for PGF investment in water storage are:

- Feasibility studies to inform investment decisions
- Contribution to construction costs
- Regional assessments of water storage, use and management needs.

149. While the other two Hawke's Bay Water Security Package projects are focussed on short term infrastructure solutions, the objective of this project is to provide a platform for the Hawke's Bay in respect of water management for the next 30 to 50 years.



Regional Freshwater Assessment

- 150. The project is an in-depth study of freshwater use and management needs in the Hawke's Bay. The assessment will provide an evidence-based platform for future community engagement as well as solutions development and prioritisation to address Hawke's Bay's current and future freshwater challenges, with a focus on economic utilisation and environmental outcomes.
- 151. The output will be a report that covers freshwater supply and demand, priorities (for Māori and at-risk catchments in a Resource Management Act/National Policy Statement-Freshwater Management context), opportunities, solutions and recommendations for further investigation and/or investment.
- 152. HBRC expects the strategic assessment to be completed by the end of 2019.

SkyTEM

- 153. HBRC is well aware of the need to better map and manage the region's water reserves and are increasingly learning of connections and pathways between groundwater and surface water. The traditional methods of gathering data from drilling or ground-based surveys are slow, costly, provide poor spatial data coverage and generally deliver information only from shallow parts of aquifers.
- 154. HBRC propose to use SkyTEM, which has been used to map large aquifer systems in countries including Denmark, Netherlands, Australia, India, China, Canada and the United States. SkyTEM is an airborne geographical survey system that accurately and cost effectively maps aquifers electronically to depths greater than 300 metres, along with impermeable layers that separate groundwater from the surface and between different aquifers. This information will be used for numerous critical water management applications across the region and will provide invaluable knowledge as the region seeks to future proof the resource.
- 155. The SkyTEM mapping project is expected to be completed by June 2022.

PDU recommendation

- 156. The PDU recommends that you approve the \$2,604,000 grant, comprising of two projects \$450,000 (Regional Freshwater Assessment) and \$2,154,000 (SkyTEM), subject to agreement on scope and contractors.

157. **Commercial Information**

158.



159. The Hawke's Bay Community have rated water related issues as the most important environmental and economic challenge though HBRC's catchment based freshwater plan change processes in Tukituki and Heretaunga.
160. SkyTEM will improve the information and evidence base available to enhance the understanding of environmental opportunities and limits in the Hawke's Bay Region, specifically in the Heretaunga Plains, Ruataniwha Plains and the Otane and Poukawa Basins. In addition, this data will be the basis for models that monitor and report on trends in the environment.
161. The Regional Freshwater Assessment does not unlock potential within the region per se, however, the solutions and investment opportunities it will facilitate will. With more secure water, the Hawke's Bay regional economy can further transition to high-value less animal intensive, lower nutrient producing activities. This is demonstrated by current use on the Heretaunga Plains and can be replicated in other areas within the region, particularly the southern and northern catchments (Central Hawke's Bay and Wairoa, subject to land suitability).

Local support

162. HBRC considers that water is the number one challenge for the Hawke's Bay. The project is also aligned with the region's identified need to support the productive capacity of its primary sector, and generating increased long-term employment opportunities.
163. Water is a key aspect of the local economic development plan. This proposal contributes to the following actions in the plan:
 - Explore opportunities arising from water storage schemes should they proceed, in order to promote increased regional productivity.
 - Work with primary producers to ensure productivity gains deliver the improved environmental performance required for freshwater reform.
 - Support natural resource users to identify and proactively manage business risks and opportunities arising from a changing climate.

164. Commercial Information

Governance

165. The HBRC will provide governance on these projects..
166. HBRC will partner with GNS Science to complete the critical planning and preparation requirements to undertake the SkyTEM aquifer mapping project.

Benefits

167. These projects reflect the principle that growth and resilience go hand in hand. They will follow an approach to water use and management not solely focussed on harvesting new water to support old practices, but instead on a pathway for regional growth via small to medium scale integrated water storage solutions that:
 - Stabilises the region's water supply-demand balance
 - Prioritises the environment's need for water



- Encourages investment in water use conservation and efficiency.

International Obligations

168. MFAT advises that if this funding is for technical research and assessments, it poses no risks for New Zealand's international obligations.
169. Should future funding be requested for capital expenditure (e.g. an irrigation scheme), MFAT will work with PDU on its alignment with our international obligations and trade policy settings.

Costs and funding sources

170. The budget for the two projects that make up this application is outlined in the table below.

Overview of Total + Funding Sources			
Source of Funding	Funding \$ (excluding GST)	% of Total	Total \$
PGF Funding (through this application)			
- Hawke's Bay Regional Water Assessment	\$450,000		
- Hawke's Bay SkyTEM Project	\$2,154,000		
Sub TOTAL - PGF contribution	\$2,604,000	Comin %	\$2,604,000
HBRC and Support Partners			
- Hawke's Bay Regional Water Assessment	\$ Commercial Inform		
- Hawke's Bay SkyTEM Project	\$ Commercial Informator		
Sub TOTAL - HBRC and partners contribution	\$ Commercial Informator	Comin %	\$ Commercial Informator
Total Project Cost		100%	\$ Commercial Informator

PDU assessment of the project

171. This section provides an overview of PDU's assessment against the PGF eligibility and assessment criteria.

Assessment against PGF criteria

Criteria	Rating (1✓ to 5✓)	Comment
Sustainable regional economic development	✓✓✓✓	<i>These will largely be covered in the scope of the study to be completed</i>



Criteria	Rating (1✓ to 5✓)	Comment
Productivity and innovation		<i>as part of this application.</i>
Increased employment, training or work readiness for the sectors workforce		<ul style="list-style-type: none"> The Regional Assessment lays the groundwork for future projects that will increase economic output. It will positively impact by identifying where the greatest opportunities or potential to optimise water use are located and guide central and local government's collective effort to transition to high-value land use.
NZ's ability to meet climate change commitments		
Māori aspirations for utilising land and other resources and achieving cultural objectives		<ul style="list-style-type: none"> The scope of this project includes identifying freshwater needs, emerging issues possibly including an assessment/stocktake of Marae water systems and investigating options to bring under-utilised Māori owned land into high-value production through a possible Māori allocation. A condition of funding will include compliance with the investment principle that addresses disparities in Māori access to water for land development.
Environmental sustainability and/or productivity of natural assets		<ul style="list-style-type: none"> Increasing productivity and enabling growth are at the core of this project. It will take a holistic approach by focussing on both behaviour change through water conservation efforts such as metering for example, to produce more from existing water supplies as well as investigating opportunities to supplement water supplies via medium to small scale integrated storage solutions.
Additionality	N/A	



Criteria	Rating (1✓ to 5✓)	Comment
Connections and alignment with regional priorities	✓✓✓✓	<ul style="list-style-type: none"> This project will build on an existing natural resource, water, acting as a catalyst. Water is a scarce resource in an area that otherwise has the key components required for a successful, high value sustainable primary sector industry (e.g. climate, downstream infrastructure, etc).

Water storage principles

172. In October 2018 Cabinet agreed to a set of investment principles for PGF water storage projects. The Cabinet paper also stated that the Hawke's Bay was a priority for PGF water storage funding.
173. An assessment of the Hawke's Bay water projects as a group are included in the Heretaunga/Tukituki paper below.

Agency comments

Free and frank opinions



Free and frank opinions

Risk assessment

183. The following risks have been identified:

Risk description	Mitigations	Risk Rating L/M/H
Ensuring project development continues to align with PGF water storage investment principles: it will be critical that the project continues to develop in a manner consistent with the PGF's water storage investment principles, to ensure the environmental and sustainable economic benefits are achieved.	This will be a term of any PGF funding agreement.	L
New Technology and appropriate capability: HBRC does not possess specific skillsets and experience with inversion procedures and interpretation	Close contact with SkyTEM from HBRC and GNS Science will be a pre-requisite prior to mobilisation.	L



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<p>of TEM data. HBRC has sought a proposal from SkyTEM and engaged GNS Science to prepare a report that outlines the critical planning and preparation requirements to undertake this type of survey.</p>		
<p>Permitted Activities: Necessary approvals required from landowners, stakeholders and local authorities have not been scoped or sought (it is customary to do this further into the process).</p>	<p>GNS Science and HBRC are examining whether flying permits are required or not. If they are and people object it is simply a matter of avoiding that land area. This objection is not likely to be a high probability and public meetings will be held during 2019.</p>	L

Recommendations and next steps

184. The PDU recommends that you approve the \$2,604,000 grant, comprising of two projects \$450,000 (Regional Freshwater Assessment) and \$2,154,000 (SkyTEM), subject to agreement on scope and contractors.

PROACTIVELY RELEASED