

3.4 Hawke's Bay Water - Regional Freshwater Assessment and Skytem

PGF Application		For: Approval	
Applicant:	Hawke's Bay Regional Council (HBRC)	Pipedrive ID #	Commercial
Entity Type:	Local Authority	PGF Funding Sought:	\$2,604,000
Region	Hawke's Bay	Total Project Cost:	\$ Commercial Information
Tier:	3 - Infrastructure	Co-contribution rate:	Comm %
Sector:	Water Storage	Funding Structure:	Grant

We recommend that the IAP:

- a) **Support** \$2,604,000 from the PGF fund towards the Hawke's Bay Regional Council as a grant towards the project.
- b) **Note** the two components of the project are:
 - i) **Regional Freshwater Assessment** (\$ Commercial Information) – A study across the region updating and building upon previous work to consider where and how to future proof the reliability of freshwater resources;
 - ii) **SkyTEM** (\$ Commercial Information) – 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 (an aquifer is an area of rock underneath the surface of the earth which absorbs and holds water).
- c) **Note** this application forms part of the Water Security Package from the HBRC. This package also includes progression of specific solutions that have already been identified, including through HBRC's catchment based freshwater plan change processes in Tukituki and Heretaunga (outlined in a separate investment paper to the IAP).

Proposal:

This proposal should also be considered in conjunction with the Hawke's Bay Water – Tukituki and Heretaunga Plains project.

This application from the HBRC is seeking PGF funding to support:

a) **Regional Freshwater Assessment**

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. 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. HBRC expect the strategic assessment to be completed by the end of 2019.

b) SkyTEM Aquifer Mapping

SkyTEM is an airborne geographical survey system that maps aquifers electronically. It was launched in 2004 to meet the demand for rapid acquisition of high resolution aquifer knowledge for management and exploration purposes, it has since been used to map large aquifer systems in countries including Denmark, Netherlands, Australia, India, China, US and Canada (refer to <https://skytem.com/> for further information about the technology). HBRC and stakeholders (industry, community, iwi-Māori) are well aware of the need to 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 Hawke's Bay aquifers. SkyTEM, is a tool available now that accurately and cost effectively enables identification of aquifers 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 this valuable resource. The SkyTEM mapping project is expected to be completed by June 2022.

Assessment against the PGF criteria:

Eligibility Criteria

This application is eligible for PGF funding.

Productivity Potential

While the other two projects in the Hawke's Bay Water Security Package are focused 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. Given the current, and expected future significance of water to the Hawke's Bay economy, the link between this project and productivity potential is strong.

Conceptually, the project will reflect the principle that growth and resilience go hand in hand and will follow an approach to water use and management that is not solely focussed on harvesting new water to support old practices, but instead creates 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, and
- Encourages investment in water use conservation and efficiency.

Policy objectives and regional priorities

PGF principles in relation to investment in water storage:

- In October 2018 Cabinet agreed 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.
- **Commercial Information**

Matariki - Hawkes Bay Regional Economic Development Strategy and Action Plan 2016

Water is a key aspect of the local economic development plan, this proposal contributes to the following actions in the plan:

- 4. Lead in the provision of resilient physical, community and business infrastructure
 - 4.7 Explore opportunities arising from water storage schemes should they proceed, in order to promote increased regional productivity.
- 5. Promote greater innovation, productivity and agility
 - 5.4 Work with primary producers to ensure productivity gains deliver the improved environmental performance required for freshwater reform.
 - 5.5 Support natural resource users to identify and proactively manage business risks and opportunities arising from a changing climate.

Further, the applicant considers that water is the number one challenge for the region, and the number one priority for PGF funding.

PGF Criteria	Assessment Commentary	Rating (0✓ to 5✓)
Link with fund and government outcomes		
Creates permanent jobs	<p><i>These will largely be covered in the scope of the study to be completed as part of this application.</i></p> <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. • 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 	✓✓✓✓
Delivers benefit to the community		
Increased utilisation and returns of Maori asset base		
Enhanced sustainability of natural assets		
Mitigation of climate change effects		

	<p>principle that addresses disparities in Māori access to water for land development.</p> <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		
Adding value by building on what is already there	<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). 	✓✓✓✓
Acts as a catalyst for productivity potential in the region		
Connected to regional stakeholders and frameworks		
Alignment with regional priorities	<ul style="list-style-type: none"> This project is aligned with the region's identified need for water supply resilience, and regional economic development including supporting the productive capacity of its primary sector, and generating increased long-term employment opportunities. 	✓✓✓✓
Support from local governance groups (inc. Councils, Iwi/Hapu)	<ul style="list-style-type: none"> Relevant local authorities and Ngati Kahungunu Iwi Incorporated are supportive of this project (Commercial Information). 	✓✓✓✓
Governance, risk management and project execution		
Robust project management and governance systems	<ul style="list-style-type: none"> Governance and project management is sufficiently outlined. 	✓✓✓✓
Risk management approach	<ul style="list-style-type: none"> Key risks are sufficiently outlined and an appropriate approach to manage these. 	✓✓✓✓
Future ownership / operational management	<ul style="list-style-type: none"> N/A 	
Analysis of the benefits		

The Hawke's Bay Community have rated water related issues as the most important environmental challenge though HBRC's catchment based freshwater plan change processes in Tukituki and Heretaunga. Understanding how to manage water resource to ensure safety for human health and ability to relate cause to effect arms the decision makers with information to guide policy and plans that better reflect community values and aspirations.

If the reliability of water supply is materially impacted intensive production units (that already exist) will be lost and the Heretaunga and Ruataniwha catchments will revert to less productive, less profitable and potentially higher emission land uses.

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 (see page 11 of the SkyTEM application). In addition, this data will be the basis for models that monitor and report on trends in the environment.

The Regional Freshwater Assessment does not unlock potential within the region per se, however, the solutions and investment opportunities it will identify will. With more secure water, the Hawke's Bay regional economy can further transition to a 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).

Financial Analysis

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	\$ Commercial Information		
- Hawke's Bay SkyTEM Project	\$ Commercial Information		
Sub TOTAL - PGF contribution	\$2,604,000	Comm %	\$2,604,000
HBRC and Support Partners			
- Hawke's Bay Regional Water Assessment	\$ Commercial Information		
- Hawke's Bay SkyTEM Project	\$ Commercial Information		
Sub TOTAL - HBRC and partners contribution	\$ Commercial Information	Comm %	\$ Commercial Information
Total Project Cost		Comm %	\$ Commercial Information

Funding Arrangements

The funding will be provided via a grant and distributed on completion of agreed milestones (to be confirmed by the PDU).

Due Diligence and Ownership

Due diligence has not been carried out on the applicant as it is a local authority (as per PDU policy).

Risk Assessment

1. **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 condition of any PGF funding agreement.
2. **New Technology and appropriate capability** – HBRC does not possess specific skillsets and experience with inversion procedures and interpretation 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. Close contact with SkyTEM from HBRC and GNS Science will be a pre-requisite prior to mobilisation.
3. **Permitted Activities** - Necessary approvals required from landowners, stakeholders and local authorities have not been scoped or sought. 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.

Consultation undertaken or implications:

Consultation with other relevant agencies is underway, including Ministry for Primary Industries, Ministry for the Environment, Ministry of Foreign Affairs and Trade.

Supporting proposal:	Yes
Appendices:	Yes – Applications and supporting letters are as annexes
Author of paper:	SH/RW, PDU Investment Team