PROVINCIAL DEVELOPMENT UNIT
New Zealand Government

2.26 HEKEAO HINDS WATER ENHANCEMENT FEASIBILITY PROJECT

PGF Application		**For: Approval**	
Applicant:	Hekeao Hinds Water Enhancement Trust (not yet formed) (Environment Canterbury is the current sponsor)	**Pipedrive ID #**	Commerci
Entity Type:	Trust	**PGF Funding Sought:**	$Commercial Inform
Region	**Canterbury**	**Total Project Value:**	$Commercial Informatio
Tier:	**3 - Infrastructure**	**Co-contribution rate:**	Comm %
Sector:	**Water Storage**	**Funding Structure:**	Grant

We recommend that the SROs:

a) **Approve** $950,000 in grant funding from the PGF fund towards the Hekeao Hinds Water Enhancement Feasibility Project.

b) **Approve** the funding subject to:

- Consultation with relevant RED Ministers
- Due diligence in respect of the proposed applicant (Trust not yet formed)
- Contract conditions and scope of work including the matters raised by DoC below

c) Commercial Information

d) **Note** the letters of support received from Commercial Information

Proposal:

Managed aquifer recharge (MAR) is the purposeful recharge of high quality water to aquifers for multiple benefits. Project phases 1 & 2 (from 2015-2018) have proven the potential of the MAR concept and developed a preliminary Business Case for the Hinds Plains in Canterbury.

The purpose of this project (Phase 3) is to complete MAR feasibility investigations, finalise the MAR Business Case, and confirm implementation support with the Hinds community.

Commercial Information

Assessment against the PGF criteria:

Eligibility Criteria

No issues were identified from an eligibility criteria perspective. The project is not for 'three waters' infrastructure, nor does it relate to 'large scale' water storage (no water storage is being built, merely water being injected back into aquifers).
The feasibility study prohibition has a carve-out for water storage projects.

Productivity Potential

Economic impact

Recent economic analysis has estimated the increase in the community cost of meeting relevant Canterbury Land and Water Regional Plan (LWRP) Plan Change 2 targets (average groundwater nitrate-nitrogen concentration < Commer mg/l) without the anticipated MAR contribution at $Commercial Information per year. Progressing and optimising MAR performance is therefore considered essential to minimising the economic impacts of Plan Change 2.

The Hekeao / Hinds Zone is one of the most productive agricultural regions in New Zealand, with a wide variety of land uses including specialist small seeds. The attached 2018 MRB economic analysis assesses annual regional spend contribution at $Commercial Information.

The objective of this project is to protect existing economic activity levels, not to intensify existing activity. In fact, advice from ECan has provided comfort that from a regulatory perspective, this project will not result in intensification. The Project should also support transition away from dairying to high value non-dairy uses (e.g. high value small seeds, which are proven in this catchment).

Environmental impact

The zone also has a high proportion of residents (~80%) drinking from private groundwater supplies. A recent Environment Canterbury report for the Tinwald sub-catchment of the Hinds Plains (attached) concluded:

- "Nitrate concentrations have been elevated in parts of the study area since at least the mid-1980s, and groundwater quality monitoring wells show increasing nitrate concentrations over time. The majority of samples have nitrogen isotope and groundwater chemistry indicative of a dominant inorganic fertiliser source mixed with a lesser proportion of effluent."
- "In the Tinwald study area, two wells < 50 m have been dated at between 12 and 63 years. We expect ages would increase with depth as in the greater Ashburton area" {where} "ages vary from 0 to 200 years old."

Policy objectives and regional priorities

The project arises from and is part of the implementation of the Canterbury Water Management Strategy, under the governance of the Canterbury Mayoral Forum. Water quantity and quality goals set by the Ashburton Water Management Committee are being implemented through the LWRP.

Three complementary approaches are supported: restricting irrigated area, reducing nutrient leaching (Comme% reduction by 2035) and MAR. Analysis presented during the formation of the LWRP indicates that together these approaches can reduce the average annual groundwater concentrations of nitrate-nitrogen to <Commer g/m3 by 2035.

As nutrients take years to decades to travel through the Hinds groundwater system, a key urgent requirement for MAR is the management of nutrients leached by the previous generation of land uses.

Refer to Appendix One for an assessment of the Project against the PGF's water storage investment principles.

A key consideration for SROs is whether PGF funding is appropriate for remediating post environmental issues.

PGF Criteria	Assessment Commentary	Rating

		(0✓ to 5✓)
Link with fund and government outcomes		
Creates permanent jobs Delivers benefit to the community	Recent economic analysis has estimated the increase in the community cost of meeting relevant Canterbury Land and Water Regional Plan (LWRP) Plan Change 2 targets (average groundwater nitrate-nitrogen concentration < Commer mg/l) without the anticipated MAR contribution at $ Commercial Information per year. Progressing and optimising MAR performance is therefore considered essential to minimising the economic impacts of Plan Change 2. The Hekeao / Hinds Zone is one of the most productive agricultural regions in New Zealand, with a wide variety of land uses including specialist small seeds. The attached 2018 MRB economic analysis assesses annual regional spend contribution at $ Commercial Information . The objective of this project is to protect existing economic activity levels, not to intensify existing activity. In fact, advice from ECan has provided comfort that from a regulatory perspective, this project will not result in intensification. The Project should also support transition away from dairying to high value non-dairy uses (e.g. high value small seeds, which are proven in this catchment).	✓✓✓
Increased utilisation and returns of Maori asset base	Mahinga Kai opportunities for mana whenua in the Hekeao/Hinds River system and Hekeao/Hinds Drain system have reduced significantly over the last century. Previous project phases have shown the ability to enhance these assets via increased flows, native re-vegetation, pest management and other habitat enhancements. A new Mahinga Kai site for the lower Hekeao/Hinds catchment has been identified and is proposed to be established during this project. Additional catchment recharge sites are required to provide enhanced support for Hekeao/Hinds Drain flows and these are proposed to be established during this project.	✓✓
Enhanced sustainability of natural assets	Key relevant natural assets in the Hinds Plains are the water and land resources. The project will improve ground and surface water ecological function as well as decrease groundwater nitrate concentrations (reversing a 150-year legacy). The current LWRP PC2 requires farmers to also significantly reduce nutrient losses (Comm % by 2035) from current (mainly) pastoral land uses to	✓✓✓✓✓

	meet community agreed limits. This will require investment by them in system improvements and land use change over time to more environmentally sustainable options. Local mahinga kai knowledge has and will continue to be critical in finding a new sustainability balance (culturally, environmentally and economically) for the district.	
Mitigation of climate change effects	Relevant climate change challenges for the Hinds Plains include increasing evapotranspiration, reducing summer rainfall (but increasing rainfall intensity), and less snowmelt. This results in lower groundwater levels, lower summer river flows but increased flow variability and flooding risk. MAR counters these challenges by strategically managing the increase in groundwater levels. As groundwater moves much more slowly than surface water, the water taken from rivers is not time critical. This means water is only taken for MAR when it does not cause adverse effects for the supply river.	✓✓✓✓✓
Additionality		
Adding value by building on what is already there Acts as a catalyst for productivity potential in the region	The water quantity and quality challenges being addressed by this project are due to a significant extent to decisions made or not made following formation and implementation of the Resource Management Act by central and local governments, and the subsequent actions of local land/water users Commercial Information Local funding includes cash from Commercial Information as an advance on proposed targeted rates for the full MAR scheme implementation. This funding is limited to the amount approved through the Long term Plan process. Commercial Information Central government funding is required to reflect the collective responsibility of past generations to reverse and improve this legacy situation in a way which ensures the continued socio-economic and ecological prosperity of the Hinds Plains. Commercial Information	✓✓✓

Connected to regional stakeholders and frameworks		
Alignment with regional priorities	This project aligns with the 10 target areas of the Canterbury Water Management Strategy (CWMS) and the relevant sections of the Canterbury Long Term Plan and Ashburton District Long Term Plan. It is supported by specific rules in Plan Change 2 to Canterbury's Land and Water Regional Plan (Policies 13.4.9, 13.4.12 and 13.4.14) as well as the proposed region-wide MAR rules. The Hekeao Hinds Water Enhancement Trust meet monthly, with membership from Mana Whenua, Regional and District Councils, water distribution and user groups, Fish and Game and local businesses. This group regularly updates the Ashburton CWMS Zone Committee and is supported by local, regional and central government staff and contractors. The project has been featured at national and international conferences and visited by NZ Government Ministers, MPs, Officials, LGNZ Regional CEOs Forum and community/interest groups.	✓✓✓✓✓
Support from local governance groups (inc. Councils, Iwi/Hapu)	Letters of support have been received from Commercial Information Commercial Information	✓✓✓✓
Governance, risk management and project execution		
Robust project management and governance systems	The project will be managed by Environment Canterbury staff, to build on the partnerships generated during the pilot project. Key project partners are central and local government, local environmental, cultural, social and economic interests (represented by HHWET Trustees as per the attached Trust Deed). ECan procurement approaches will be used. Experienced MAR technicians will be contracted.	✓✓✓✓✓
Risk management approach	Project will utilise ECan's risk management frameworks.	✓✓✓✓
Future ownership / operational management	To be developed as part of this phase of the project.	✓✓✓

Analysis of the benefits and costs

Primary economic impact of the project (if implemented), will allow economic activity to continue whilst also improving environmental outcomes. As above, the increase in the community cost of meeting relevant LWRP Plan Change 2 targets (average groundwater nitrate-nitrogen concentration < Commerc mg/l) without the anticipated MAR contribution at $Commercial Information per year.

Financial Analysis

The proposed budget for the Project is set out below.

Cost Description:	$ (excluding GST)
Project management (in-kind)	$Commercial Information
Monitoring and Operations- MAR sites and catchment	$Commercial Information
Meeting and outreach support	$Commercial Information
Existing MAR site optimisation	$Commercial Information
Additional MAR concept testing and development	$Commercial Information
Business Case development and implementation	$Commercial Information
Total	$Commercial Information

The PDU considers that this budget is reasonable, noting that the last item includes implementation as well as business case development.

Funding Arrangements

Proposed funding arrangement is a grant. There is no revenue source for the funding to be a loan. Funding would be provided using the PGF's standard grant funding agreement, will stop / go milestones to limit PGF risk. The applicant would be required to agree to carry-out the Project in a manner consistent with the PGF's water storage investment principles.

Due Diligence and Ownership

The PDU is waiting on advice from ECan as to who the proposed trustees of the trust will be. Commercial Information

Due diligence will be carried out once the trust is formed, and the trustees are appointed.

Risk Assessment

The key risks to the PDU and proposed mitigations of this investment are as follows:

Type of risk	Risk description	Mitigations	Risk Rating L/M/H
	Required water and / or land cannot be secured.	• Required water currently is consented and / or contracted for other purposes. Some of this water has been provided to the pilot project and discussions are underway regarding	Medium

		consenting / contracting additional water. • Current trial sites are on a combination of public and private land, via written agreements with the landowners. There have been no issues to date securing the required land, though access arrangements required changes following the *M. Bovis* outbreak. Automation of sites during this project phase will decrease access requirements and risks to landowners. Additional potentially required sites have been identified (see preliminary Business Case). The local community are well connected, and these contacts plus the anticipated on-going community support for MAR are the key mitigation.	
	Outcome not viable or durable at end	• Water is available at commercial rates as a backup. • An alternative way has to be found to farm within limits, which the MRB economic assessment puts at $[Commercial Inf] per annum • More intense community collaboration processes will be put in place	Low
	Key project partner withdraws its support	• The HHWET Trust Deed provides the opportunity for all sectors of the community to be represented on the Trust and involved in the project.	Low
	Hinds Plains water quality and / or quantity declines at a faster than anticipated rate	• The regularity and spread of catchment monitoring has increased significantly during Phase 1&2 of the project. This monitoring now captures water quantity and quality throughout the groundwater system, thus providing an increasingly detailed picture of the state of the system. Canterbury's Land and Water Regional Plans are reviewed every ten years on average, with additional "omnibus" plan changes also possible if a planning response is required to system changes and / or community expectations.	Low
	External influences (e.g., *M. Bovis*, price shocks, climate change)	• The MAR project has continued to operate in parallel with the management of the *M. Bovis* outbreak. Lessons learned will be valuable for similar future challenges. A connected community and modern water distribution infrastructure are providing mitigations against climate and price changes. In addition to Canterbury Water Management Strategy opportunities the new Ashburton District Council Surface Water Strategy is providing	

		further collaborative opportunities to build resilience against external influences.	

Consultation undertaken or implications:

DOC: supportive, subject to the following (which can be carried out as part of the scope of works):

Evaluation from local operations, RMA and freshwater technical staff is required to ensure that the proposal, if supported, produces beneficial outcomes for DOC's interest in freshwater habitats.

Additionally it is important to flag the potential for perverse outcomes for certain key habitats that may be dependent on current hydrology and environmental conditions (i.e., increased flow in mudfish habitat could be detrimental, and could enable trout to move in – trout could also be an issue for other native fish and invertebrates). Mudfish tend to be found in the cross-cut drains, as opposed to the primary drains (apart from maybe at low flows). To counter these potential adverse effects, detailed monitoring should be used to inform an adaptive management approach. Monitoring is proposed, but it's hard to tell from the application how much will be done, where, etc. It could well be that this information isn't available yet. There will need to be a direct feedback loop so that targeted monitoring of these habitats (especially for mudfish) can inform management changes to the scheme (if needed). For example, increased flows could enable trout to move into new habitats with high native fish values. In such instances trout should be excluded. DOC should be kept informed of this work as well.

Supporting proposal:	Yes Application Will Be Proactively Released Separately
Appendices:	Supporting information provided by applicant, letters of support.
Author of paper:	Privacy o Letters of Support are Withheld in Full Due to Commercial Sensitivity

Appendix 1: PGF Investment Principles for Water Storage

From Cabinet paper:
Access to a reliable and manageable source of water is a key enabler of jobs and sustainable growth in the primary sector and is a driver of regional prosperity. Many regions have significant primary sector potential that could be enabled or enhanced through access to reliable water provided by small scale storage and distribution infrastructure.

As a government we have identified three objectives for freshwater (including establishing a new Crown-Māori relationship for freshwater):

- Stopping further degradation and loss
- Reversing past damage
- Addressing water allocation issues.

In addition, through cross-party discussions on the PGF investment in water storage and infrastructure, including managed aquifer recharge, we have identified a set of principles that are core to our values as a Government. The principles are reflected below (with an assessment of the Projects against these principles).

PDU comment:
This project directly addresses the first two of the objectives directly: stopping further degradation and loss, and reversing past damage.

The project relates to managed aquifer recharge, as per the last paragraph.

Principles for water storage investment

Principle	**Assessment**
Economic	
Water storage will strengthen regional economies by shifting land use to higher value, non-dairy, sustainable uses.	The updated modelling carried out as part of the last phase (reflecting the required nutrient leaching reductions), identified movement away from intensifying dairying as a critical movement. For example, high value cropping would require more reliable water than pasture. (The Ashburton zone is one of the world's best high value seed growing areas. There is potential to shift from dairying to high value cropping).
Water storage will help address disparities in Māori access to water for land development.	The project does not have a specific focus on this issue.
Community	
Small scale community level projects will be supported rather than mega irrigation schemes.	The project is small scale – estimated build cost of $Commercial Information
There must be public benefit from government funding of a project.	The project will deliver public benefit, through both improved environmental outcomes, as well as

	regional and community economic benefit.
Projects will involve stronger partnerships at the local level, including with regional councils.	The project will be led by the applicant (a trust), in partnership with Environment Canterbury. Ashburton District Council is also a key participant. Also critical for this project is appropriate partnerships and involvement at the community level going forward. A strong platform has been built for these projects by the council driven processes carried out over the last couple of years.
The Crown Irrigation Investments Limited (CIIL)'s programme of work will not be progressed, although communities that were involved in CIIL initiatives can submit PGF proposals that align with our objectives.	This project was not part of the CIIL programme of work.
Environment	
Water storage proposals should demonstrate that they will support land use that does not increase, and ideally reverses, negative impacts on water quality.	The primary objective of this project is improving water quality.
Proposals should maintain the health of waterways.	
Water storage proposals should incorporate activities that improve water quality – e.g. activities that improve E coli levels and ecological health, restoration and protection projects such as improvements in wetlands, fish and wildlife habitats, riverbanks, biodiversity activities, soil health and sediment control.	
Water storage will not be used to increase the intensity of ruminant agriculture or other land uses in a catchment where this puts greater cumulative pressure on water and risks compromising water quality.	
Climate change	
Where practicable, proposals should demonstrate how they will contribute to mitigating or adapting to climate change effects and a just transition to a low emissions economy.	Relevant climate change challenges for the Hinds Plains include increasing evapotranspiration, reducing summer rainfall (but increasing rainfall intensity), and less snowmelt. This results in lower groundwater levels, lower summer river flows but increased flow variability and flooding risk. MAR counters these challenges by strategically managing the increase in groundwater levels. As groundwater moves much more slowly than surface water, the water taken from rivers is not time critical. This means water is only taken for MAR when it does not cause adverse effects for the supply river.
Proposals should consider the potential to contribute to community resilience to climate change. Strengthening municipal water supply is not an objective of PGF funding. However, the PGF will work with councils to include municipal supply as a component of wider water initiatives, if it enables councils to contribute more to regional water management.	

Water storage investment priorities

Priority regions for investment in water storage include Northland, Hawke's Bay, Tairāwhiti and the Bay of Plenty. These regions have the greatest proportion of Māori collectively owned land and the greatest capability to bring land into sustainable productivity through water storage. The needs of other regions are also being considered, for example, supporting diversification of the Southland economy to improve economic and climate resilience.

PDU comment: this project is not in a priority region.

The three priorities for PGF investment in water storage are discussed below.

- *Feasibility studies to inform investment decisions* - Feasibility studies will investigate the viability of potential water storage and distribution projects. They will consider whether the project can deliver on the community and Government objectives for water storage and inform decisions on whether to invest in a specific water storage project.

- *Contribution to construction costs* - The PGF will also contribute to construction costs of water storage facilities, particularly for activities that relate to Government priorities including water quality, bringing Māori land into production and where possible, helping communities to prepare for the impacts of climate change. Given the short timeframes associated with investment by the PGF, we will progress construction projects that can be submitted, signed off and ideally have construction underway over the next two years. I have directed officials to work with applicants to develop applications that could cover feasibility studies and/or construction costs. We anticipate only a small number of current projects will reach this stage. Officials will explore what investments could bring Māori owned land into production in the regions. This work will inform, and be informed by, the Government's work on Crown-Māori relationship on freshwater.

- *Regional assessments of water storage, use and management needs* - The PGF will also contribute to assessments of a region's water storage, use and management needs over 30 – 50 years. These assessments will enable regions to determine the best investment opportunities to increase land use productivity on a sustainable basis. Some of the issues that will be considered as part of these assessments include improvements to water quality, opportunities for bringing Māori collectively owned land into production and areas where Government could partner with local authorities as a component of water storage proposals to strengthen resilience in water availability in light of climate change. It is not expected that the assessments will result in projects that will receive funding within the PGF timeframes. The assessments would instead provide a basis for future investments given the time they will take.