Sustainable Farming Fund

Ministry of Agriculture and Forestry
Te Manatū Ahuwhenua, Ngāherehere

Final Report Template

Project Title: Hurunui Community Water Project Stage 2

Project Number: 07/051

Date of Report: 31/08/09

Note: The Final Report is due in the SFF Office within two months after the project completion date.

If any material supplied in, or attached to, this report contains confidential information, or is otherwise unsuitable for wider dissemination, please clearly mark accordingly and highlight directly with your Project Adviser (including the reason for wishing to treat the material in this manner).

This information from Sections 2 – 5 and Section 11 will be published on the SFF website unless you advise us otherwise.

1. Milestone Summary Table

Milestone Number	Milestone [As per SFF contract schedule]	Completion Date	Percent Complete	Original Est. or Actual
1	Update the water supply and demand balance for the currently preferred development option. This will provide information on the sensitivity of reservoir capacity to changes in water availability, which is an essential input to negotiations on water allocation rules and environmental flow regimes.			

06/08
08/09

100%

2

Undertake detailed site investigations of the selected storage sites to provide information required for activity 3 and 5. This work will involve geotechnical field work (drilling and test pitting) and topographical surveys at the storage sites.

06/08
06/09

100%

3

Establish a community consultation committee to represent a wide range of stakeholders with interest in the Project. The committee's role will be to advise in the development and implementation of a communication strategy for the Project, and to act as a sounding board for the subsequent Project milestones (especially the environmental studies).
Report on SFF website with details of consultation committee, formal terms of reference and communication strategy.

07/08
09/09

100%

4

Consult with conservation, recreation, environmental interests, & with Ngai Tahu, to understand their concerns and so mitigate adverse effects and enhance positive outcomes of the Project to the maximum extent possible. Identify specific environmental studies required to address specific concerns.

Executive summary on SFF website detailing progress with the community consultation and recommendations for the environmental investigation programme.

09/08
09/09

100%

5

Undertake environmental investigations, including field work, to determine the potential environmental effects of constructing and operating the water supply system, and of increasing the irrigated area in the catchment
Report on environmental monitoring progress

12/08
06/09

100%

6

Negotiate critical elements of the Project concepts with key stakeholders. Such elements will include water allocation rules, environmental flow regimes, sustainable farming practices, and community outcomes

Executive summary with key outcomes from the critical element negotiations

03/09
09/09

100%

7

Refine construction methodology and reservoir design in light of field data obtained from milestone 2 and the key stakeholder agreements from milestone 5, and refine the development cost estimates.

03/09
03/09

100%

8

Undertake a pre-feasibility level design of the distribution system, estimate its cost and consult with affected landowners.

09/08
06/09
100%

9

Assess the socio-economic effects of the Project for the region and for a range of land uses, against the bench-mark of “doing nothing”.

Report details of socio-economic impacts for the region
Report bench-marking information

09/08
09/09
100%

10

In addition to the specific dialogue with key stakeholders identified in milestones 3 & 5, there will be continuous consultation and extension work with:
(a) Farmers within the Project area (including those with existing water rights);
(b) The wider regional community,
(c) Environment Canterbury Councillors,
(d) Hurunui District Councillors and
(e) Central Government – Ministers and officials.
to keep them all up to date with the Project plan as it is refined and developed

Extension information made available on SFF when completed	06/09 08/09 100%	
	11	
Final Report	06/09 08/09 100%	

2. Project Objectives

(Why did you do this project? What were your key objectives at the start of the project? Outline if any of these objectives changed during the course of the project.)

The HWP sought to identify and develop the optimum water management regime for the Hurunui catchment. The community interests have elected to work collectively on the optimum regime rather than progress individual interests which may yield a sub-optimum result.

The next step in the development of the Project was to provide individual landowners, potential investors, and the wider community, with greater certainty about the environmental & technical feasibility, and socio-economic benefits of the Project. This required more detailed investigations based on field investigations and extensive consultations, to assess the environmental impacts and reduce the technical & financial risk of the Project to such a level that investors will commit to it. Such information is also required to secure environmental support.

The objectives have not changed in principle. Rather, the external environment has changed radically in the meantime, with the imposition of Water Conservation Order Hearings which redirected some of the research and consultation and resulted in an earlier Resource Consent Application than originally envisaged. Investigative research became more expansive than anticipated, particularly on the hydrology side. The decision by ECan to accept a “Take, Use and Discharge” resource consent application allowed the project to concentrate research into the environmental effects of the project, rather than spending too much time on the engineering design, which may never be granted. Consultation with stakeholders and the community was made complex by the antagonistic legal framework created by the WCO, but the project made the research as transparent as possible through a series of meetings, workshops, public forums and frequent mailings, media releases and website updates.

3. Approach

(What did you do – how did you go about it?)

The approach was to take the research step by step, and work with a multi-functional team of technical experts to develop the most feasible scheme from an environmental, engineering and aesthetic point of view. Once the topography was confirmed, it was possible to work on refining the hydrology. The initial research into the existing hydrology showed that it would be necessary to develop a full-scale simulation of the river and its tributaries so that any changes could be mapped, and assumptions changed. As this developed results, the team started to meet and discuss the effects of changing assumptions to improve the overall outcome. The core team consisted of the hydrologists, engineers, landscape architects, environmental specialists and project manager. The process was iterative, and the experts worked together to establish a greater understanding of the project design and potential effects.

Alongside this process, the project manager worked with a communication team to keep in touch with as many stakeholders as achievable, with a view to incorporate other ideas as early as possible. Ideas such as the position and underwater design of the weir were developed from speaking to concerned stakeholders who were worried about the appearance of the outlet, noise and minimising the effect on the stretch of river down from the outlet. The level that the lake could be operated at was developed by having the hydrologists, landscape experts and environmentalists working closely together to establish how different storage volumes could affect the margin of the lake.

4. What were the main findings from this project?

The project intention was to establish the feasibility of storing water within Lake Sumner and South Branch. The following were the main findings:

1. The irrigable area was established at 42,180 hectares, with more than 90% of the land confirmed as likely to irrigate by farmer questionnaires. Water demand was driven by soil types, evapo-transpiration and precipitation records from NIWA.
2. Lake Sumner could sustain a dynamic storage of 40 Mm3 (of which 27 Mm3 is static), while keeping the lake level within the natural 3.2 metre range, and only 1.5 metres higher than average in summer. This allows for buffering of the lake level during floods.
3. South Branch could sustain a live storage of 111 Mm3 if the dam height is 75 metres. While this height is above the level of the gorge, it iss necessary to achieve the volume of water storage needed. If the dam iss kept within the gorge at 40 metres, it would reduce storage to less than half, and after drawdown effects are considered, could have greater environmental issues than a larger dam.
4. At these capacities, the irrigable area could be irrigated at a rate of 0.5m3/s and at almost 100% reliably, with drought years reducing the irrigable season by a few weeks. With simulated reliability measurements created over 36 years, it was found that water ran out on two years, when the irrigation season would have to end early in March or April.

5. The capital cost of the proposed structure, along with the estimated distribution costs for the area would be in the range of $5000 to $6000 per hectare, and even at the accuracy of +/- 30% would be feasible compared to other irrigation projects.
6. Environmental effects that were positive included the ability to increase water flows during the dry summer months, and the facility to release flushes in all but the driest conditions.
7. Potential environmental effects of concern were highlighted in the ecology report produced for the AEE. The key issue was the loss of a section of braided river turf-land in the inundated reservoir area for the South Branch, which may not be easy to replace. The other land that is inundated is more easily replaced by like vegetation on the same estate. Most of the other effects have mitigation solutions.
8. The economic value of the water for irrigation alone was estimated at around $200-300 million GDP per annum, with more than 800 jobs created for the district. This takes into account the fact that for each hectare that is irrigated, there are subsequent flow-on benefits for local suppliers and industry. About 22% is on-farm revenue, of which only 1-2% of this GDP increase results in profit for the farmers. The other 78% goes to creating supporting industries in the district.
9. The other issues that were investigated included river and coastal morphology, architecture, climate change, recreational effects, potential for hydro-generation, and a simplistic location of the intake.

5. What difference has this project made to your group / community of interest / industry?

(Include intangible benefits where significant — e.g. “enabled us to develop a strong on-going working relationship with the scientists”).

Without this funding, it is doubtful that much of the research could have been completed. The SFF funds were used to establish much of the background for the environmental research and engineering feasibilities. It also enabled a fully-fledged consultation programme to be launched with the help of Landcare and an enthusiastic communication team.

6. If you did the project again what would you do differently?

(i.e. what worked and what didn’t?).

While the Landcare consultation approach (using deliberative multi-criteria evaluation) was useful in establishing criteria for the project and giving some structure, it was felt that it was a little too ambitious for the early stage of the project. It has the potential to create a non-threatening way to discuss some of the more contentious issues, but we tried to include too many people in the workshop (we had 27 instead of the recommended 12-20) and tried to cover too much material in a short time. The fact that a Water Conservation Order announcement was made in the middle of the two sessions also meant that the applicants for the WCO did not come back for the second discussion. That could not be helped and was bad luck in terms of timing.

It would have been good to have had more time to consult in more detail with all stakeholders, but given the adversarial WCO processes that were going on, none of them really wanted to engage with the project in a meaningful way.

7. Is there anything the SFF could have done differently?

I have found the people that we deal with at SFF to be accommodating in terms of timing and requirements, and also interested in the progress of the project. I have no complaints.

8. Is there anything that you have learnt that would be useful for new project teams?

The new approach taken with regards to simulations of the hydrology model has given us a powerful tool for analysing and developing the optimum storage scheme. It has been written in Matlab so is not an off-the shelf product, but then our rivers are all unique. It builds on established methods of developing demand series for the command area, and then uses existing flow data to create simulations of the effects. The integrated model enables us to make changes in assumptions on anything from outlet conformation, flow assumptions for mitigation, to which reservoir to draw water from. The resulting information can be used to compare reliability, effects on flow at different points in the river, levels of water in the storage lakes, and possibilities of releasing flushing flows.

9. Where to from here – what are the next steps?

The next steps are highly dependent on the legal framework. The project is subject to hearings on both the WCO and the Resource Consent process. It will require some additional research to fill in some of the gaps in knowledge, and the team will continue to consult widely now that the project is gaining some attention. Recent meetings with Fish and Game and DoC and the canoeing associations have shown a desire from both sides to work together to understand the effects of the project in a morecollaborative process and the project is keen to develop that approach. Similarly, steps with Ngai Tahu to develop a cultural impact assessment have been initiated in the last few months, and that relationship will continue to develop.

10. Financial summary

Provide a brief comment as to whether the project was completed on budget; whether there is any grant money left unspent. Please provide a financial statement to summarise the incomings/ outgoings over the life of the project – you can either attach a copy of your own financial statement or use the “final financial template” available at our website http://www.maf.govt.nz/sff/forms/index.htm

The project cost more than anticipated, and all the grant money was required, as expected.

11. List and attach any major outputs from the project.

Documents attached:

- Updated Communication plan
- Assessment of Environmental Effects – (950 pages - can obtained or viewed at ECan)
- Other supporting documents and maps to be found on website www.hurunuiwater.co.nz

If appropriate, we would like to publish a copy of the above on our website: please provide an electronic copy for this purpose preferably in Word format.

Report Confirmation

Name: Amanda Loeffen	Confirmation	Date 7th September 2009
	I hereby confirm the above information is true and correct:	

Submission Note - By the due dates Final Reports should be sent:

1. Electronically to the SFF Process Coordinator **and** copy/cc. your Project Adviser (usually in the same e-mail as the final Request for Payment (R4P) form).

Please ensure you put your project number in the e-mail's subject line:
e.g., 06/999 Final report 2007.

2. In hardcopy, together with any associated attachments, to **both** the Process Coordinator **and** your Project Adviser.

Appendix 25