Council Seminar  
2 August 2006  

Presentations: 
Central Plains Water Trust  
AEE (23 June) & Resource consent applications  

Purpose of presentations  
• To present to Council technical assessments of the AEE and supporting documents,  
• To gain Council’s consensus on a position in respect of CPWT’s resource consent applications,  
• In the event of submission, to provide, via Council, direction to staff and Council’s Working Party (Crs. Buck, Broughton & Withers) for informing a draft submission.

Review Approach  
• Review of AEE & supporting documents in terms of Social, Economic & Environmental Effects,  
• Review of issues raised by Working Party & Cr. Buck’s paper, Environmental concerns and questions Central Plains Irrigation Scheme,  
• Significant issues likely to be environmental around water quantity and water quality potential impacts on Christchurch’s water supply – therefore greatest focus.

Presentations  
• Introduction  
• Financial & Economic  
  • Bruce Gemmell, Partner, KPMG 2.00pm  
• Environmental  
  • Peter Callander, Director, PDP 3.00pm  
• Legal  
  • Aidan Prebble, Goodman Steven 3.30pm  
• Social  
  • Alan Bywater, Programme Manager 4.00pm
The Applications & the AEE

- Applications relate to construction and operation activities of a proposed irrigation scheme
- Proposal involves abstraction of water from Rakaia & Waimakariri Rivers & use of that water for irrigation of approx. 60,000 ha.
- Area of the proposal covers at total of 101,800ha and is located between the respective northern & southern boundaries of the Rakaia & Waimakariri Rivers.

The Scheme’s Operation

- Proposal involves,
- “...delivering water to the supply area from run-of-river water via a race system when water is available in the rivers with the shortfall in demand being made up with water from storage.” section 1.2, AEE, June 2006.
Glossary

Abbreviated Description

CCC Christchurch City Council
CPW Central Plains Water
CPWT Central Plains Water Trust
CPWL Central Plains Water Limited
GHD GHD Limited
McFarlane McFarlane Rural Business Limited
NIWA National Institute of Water & Atmospheric Research
URS URS New Zealand Limited

Contents

Draft for discussion purposes

• Our people and relationships
• Scope
• Critique process
• Information relationships
• KPMG matrix summary
• Key critique findings – economic inputs
• Key critique findings – financial inputs
• Critique findings – financial outputs
• Critique findings – economic outputs

Our people and relationships

Draft for discussion purposes

Our People

Bruce Gemmell
- Managing Partner, KPMG Christchurch
- Chartered Accountant, BBS Accounting and Finance from Massey University
- Extensive experience in infrastructure analysis, operation and support

Matthew Biddick
- Manager, KPMG
- BCom, Hons in Accounting and Finance from Lincoln University
- Experienced in preparing, reviewing business plans, feasibility studies and statistical models

Troy Newton
- Concurring Reviewer, Director KPMG Wellington
- Extensive involvement in large community projects, nationally and internationally

Relationships

Matthew Biddick
- Manager, KPMG
- BCom, Hons in Accounting and Finance from Lincoln University
- Experienced in preparing, reviewing business plans, feasibility studies and statistical models

Troy Newton
- Concurring Reviewer, Director KPMG Wellington
- Extensive involvement in large community projects, nationally and internationally

Scope

Draft for discussion purposes

• KPMG engagement letter dated 25 July 2006 requires a critique of:
  • The Central Plains Water, Aide Memoir, Full Scheme Financial Projections, October 2004 (“Aide Memoir”) author unknown, Deloitte Christchurch (financial input)
  • The Central Plains Water Economic and Social Impact of Proposed Irrigation Schemes (“Butcher Report”), prepared by Butcher Partnership Limited

• KPMG facsimile dated 26 July 2006 extends the scope of the critique to encompass:
  • The McFarlane report Analysis of Central Plains Water on Farms Impact (“McFarlane report”)
  • We have had discussions with:
    • Walter Lewthwaite of URS - consulting engineers and environment scientists
    • Allan Watson and Bob Penter of GHD - engineering consultants
    • Andy McFarlane of McFarlane Rural Business Limited – rural business adviser
    • Phil Donnelly of Philip Donnelly Associates Limited – economic consultant
    • Bruce Irvine of Deloitte – Chartered Accountant
  • We have been provided with a copy of:
    • Deloitte’s model from which Aide Memoir was prepared
    • A capital cost update from URS, undated

• This document must be read in conjunction with Appendix one which details the specific purpose and use to which the KPMG report can be put.
To complete our critique we have:

- Finalised and considered the documents detailed in the previous section.
- Determined how the documents relate to each other.
- Compared the document actions for either clarification of the information in the reports provided. We do not make value judgments or consider the timeframe for completing the assessment of the project.
- Prepared an index to your final report.

The following details the chronological order in which each contributing document was prepared and its relevance to the final application:

- June 2000: AEE
- June 2000: Butcher Report
- Jan 2002: Waianiwaniwa Reservoir and associated irrigation proposal
- Nov 2000: URS
- June 2006: AEE
- June 2006: Butcher Report
- June 2006: Waianiwaniwa Reservoir and associated irrigation proposal
- June 2006: AEE
- June 2006: Update

Information relationships:

- Economic Inputs
  - Waianiwaniwa valley scheme
  - Financial Inputs
  - Waianiwaniwa valley scheme
- Economic Outputs
  - Waianiwaniwa valley scheme
  - Financial Outputs
  - Waianiwaniwa valley scheme

<table>
<thead>
<tr>
<th>Key critique findings - economic inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Inputs</td>
</tr>
<tr>
<td>Economic Outputs</td>
</tr>
</tbody>
</table>

KPMG matrix summary:

- Economic Inputs
  - Waianiwaniwa valley scheme
  - Financial Inputs
  - Waianiwaniwa valley scheme
- Economic Outputs
  - Waianiwaniwa valley scheme
  - Financial Outputs
  - Waianiwaniwa valley scheme
### Key critique findings - financial inputs

**Economic Inputs**

-  1. The cost of the scheme is considered high, and it is noted that the scheme capital costs are identified.
-  2. Some costs can be managed as they have been completed elsewhere.
-  3. Valuation issues need to be addressed.
-  4. Some costs have been conservatively assessed based on expert opinion.
-  5. Financial inputs were not given significant attention.
-  6. Information is not available on administration or compliance costs.
-  7. The scheme has been assessed for financial inputs.
-  8. Costs have been assessed assuming no restriction on the scheme.

**Economic Outputs**

-  1. The relationship between input expenditure and output opportunity has been determined.
-  2. The economic and financial conclusions drawn in the documents provided have been determined using general high-level assumptions derived from industry standard data or the combined experience of the advisors.
-  3. Our analysis leads us to conclude the scheme costs have been assessed assuming no restriction on the scheme.

### Critique findings - financial outputs

**Economic Inputs**

-  1. Financial inputs have been assessed at a level that cannot be independently verified.
-  2. The economic and financial conclusions drawn in the documents have been determined using general high-level assumptions derived from industry standard data or the combined experience of the advisors.
-  3. Our analysis leads us to conclude the scheme costs have been assessed assuming no restriction on the scheme.

### Conclusions

-  1. Our analysis leads us to conclude:
   -  a. The economic and financial conclusions drawn in the documents have been determined using general high-level assumptions derived from industry standard data or the combined experience of the advisors.
   -  b. Further financial analysis will be required, however given the diverse potential environmental, cultural and social impacts of this application, we are not entirely surprised that further detailed analysis has been deferred until the consent process identifies which issues are likely to require further financial input.
   -  c. If conditional consents are granted, then the applicant will need to reassess the project's viability.
CPW offers a focal point for managing a significant number of risk issues with varying economic costs but high social, environmental, and cultural impact. In these examples, the commercial and community imperatives around these risks and their mitigation may diverge. The following are three examples of such concerns:

1. **The Rakaia Gorge Project**:
   - The project is designed to mitigate the impacts of the Rakaia Gorge, which will involve significant land acquisition and environmental compensation.
   - Costs will ultimately drive the economic viability of the scheme.

2. **The Ngai Tahu Cultural Impact**:
   - The Ngai Tahu's cultural heritage and identity are threatened by the proposed dam.
   - The impact of the scheme will be felt by the Ngai Tahu.

3. **The Water Quality Impact**: The scheme requires supplementary measures to address water quality concerns.

It appears from the documents provided, that the majority of the identified environmental, social, cultural and economic concerns can be mitigated or managed at cost. However, there are a handful of concerns that the company, the Trust, and the greater community will have to accept as inevitable outcomes of proceeding with the project because these concerns are difficult to manage or mitigate.

These costs will ultimately drive the commercial viability of the scheme. The perceived "on-farm" benefit has demonstrated the economic possibilities available to plains landowners. The Ngai Tahu spiritual concerns regarding the mixing of Rakaia, Waimakariri, and Selwyn waters will remain an issue. The possibility of further nitrate infiltration in mid Canterbury's groundwater will require further study. The impact this scheme will have on the Canterbury mudfish is an inevitable outcome of proceeding with this proposal because these concerns are difficult to manage or mitigate.

The economic concerns can be mitigated or managed at a cost. In the circumstances, no warranty of accuracy or reliability is given.
Potential Effects of Central Plains Water Scheme on Christchurch City Groundwater

Pattle Delamore Partners Ltd
Peter Callander
Christchurch

Presentation Structure

1. Outline of the CPW Scheme
2. Overview of Christchurch Groundwater
3. Issues arising
   - Effects on Waimakariri River flow
   - Effects from changes in land-use within the CPW Scheme area
CPW – Run of River?

Water to be sourced in the following order:
1. Run-of-river irrigation from Rakaia River
2. Run-of-river irrigation from Waimakariri River
3. Irrigation supplied from a “substantial” storage reservoir
4. Filling of storage reservoir from Waimakariri River

Note: No change from original CPW Feasibility Study
Priority of supply will ultimately be determined by consent conditions

Contours of piezometric surface in metres above mean sea level and direction of groundwater flow (May 1985) – from NCCB 1986

Intake Road
Harewood Crossbank

Contours of piezometric surface in metres above mean sea level and direction of groundwater flow (May 1985) – from NCCB 1986

Intake Road
Harewood Crossbank
Risks
- Evaluation of issues requires judgement of risk
- There are no absolute certainties, just different levels of risk
- No risk is not an option
- Minor adverse effects are acceptable under the RMA
- Mitigation measures are an important safeguard

CPWT Issues for CCC

<table>
<thead>
<tr>
<th>Issue</th>
<th>Potential Effects</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Changes to Waimakariri River</td>
<td>a) Alterations to Christchurch aquifer recharge</td>
<td>Minor</td>
</tr>
<tr>
<td></td>
<td>b) Loss of future water supply option for urban Christchurch</td>
<td>Minor</td>
</tr>
<tr>
<td>2. Land Use Changes in Irrigation Scheme area</td>
<td>a) Raised groundwater levels</td>
<td>Minor</td>
</tr>
<tr>
<td></td>
<td>b) Deterioration in groundwater quality</td>
<td>Uncertain</td>
</tr>
</tbody>
</table>
1a. Christchurch Aquifer
Recharge From Waimakariri River

- Not precisely defined
- Appears to be relatively constant at a range of river flows
- CPWT will only alter river level by ~20cm at maximum abstraction rate
1a. Christchurch Aquifer
Recharge from Waimakariri River
- No adverse effect is indicated for City water supply wells
- There is a degree of uncertainty
- An effect to be monitored (groundwater levels and river flows)
- Mitigation: review conditions of resource consent regarding CPWT’s water allocation regime

1b. Waimakariri River as a Future Water Supply Option for CCC
- CPWT does not physically limit future abstraction
- A reliable allocation for Christchurch City is already problematic
- Will require a change to the River allocation plan
- No action required in terms of CPWT consent application

2. Land Use Changes Within CPW Scheme Area
2a. Raised Groundwater Levels

- Information for urban Christchurch has been left out
- It should be sought
- More an issue for land use rather than for water supply
- Effects may be altered by changes in groundwater abstractions
2a. Raised Groundwater Levels
- Improved well yields
- Less filtration of contaminated drainage water
  - Septic tanks
  - Offal pits
  - Old landfills
- Slight alteration to groundwater flow patterns

2a. Raised Groundwater Levels
- Unlikely to be a significant impact for urban Christchurch wells
- Could affect wells in western Christchurch
  - Improve yields
  - Localised contamination from point sources

2b. Groundwater Quality
- Nitrates - mobile and extensive
- Microbes - localised effect
- Pesticides - less significant
- Phosphorous - less significant
AEE Assessment of Nitrate

- Bulk mixing model (averaging)
  - 7 g/m³ Nitrate-N in drainage water
  - mixing with all of Central Plains shallow groundwater
  - 2.5 g/m³ average increase in groundwater
- No variation assumed
  - Effects will vary over time
  - Effects will be greater in some areas
  - Biggest effect in areas where rainfall recharge dominates

2b. Groundwater Quality

AEE hints at potential adverse effect
- Not well quantified
- Could take decades to show up
- Assumes no special management measures
- Could be more significant than indicated in the AEE due to the scale of the Scheme
Changes in Land Use Assumed by CPWT Economic Assessment

<table>
<thead>
<tr>
<th>Changes in Land Use Assumed by CPWT Economic Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to CPW</td>
</tr>
<tr>
<td>Total Surface area</td>
</tr>
<tr>
<td>Land that can potentially be irrigated within the Scheme boundaries</td>
</tr>
<tr>
<td>Land irrigated within the Scheme boundaries</td>
</tr>
<tr>
<td>From the CPWT</td>
</tr>
<tr>
<td>From groundwater</td>
</tr>
<tr>
<td>Total irrigated area within the Scheme Boundary</td>
</tr>
</tbody>
</table>

2b. Groundwater Quality

Mitigation

CPWT
- Irrigation Scheme Sustainability Code (not yet available)
- Provide alternative water supplies
- Other measures (related to water management)

Environment Canterbury
- Proposed NRRP controls in Zone 1
CPWT Issues for CCC Groundwater

<table>
<thead>
<tr>
<th>Issue</th>
<th>Potential Effects</th>
<th>Suggested Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Changes in Waimakariri River</td>
<td>Alterations to Christchurch aquifer recharge</td>
<td>Monitor and seek future mitigation</td>
</tr>
<tr>
<td></td>
<td>Loss of future water supply option for urban Christchurch</td>
<td>No Action</td>
</tr>
<tr>
<td>2. Land Use Changes in Irrigation Scheme area</td>
<td>Raised groundwater levels</td>
<td>Monitor and seek future mitigation</td>
</tr>
<tr>
<td></td>
<td>Deterioration in groundwater quality</td>
<td>Seek further information now</td>
</tr>
</tbody>
</table>

Conclusion of Effects on Christchurch Groundwater

- Positive - more reliable well yields in western (rural Christchurch)
- Negatives - less flow in Waimakariri River
  - potential movement of poorer quality groundwater in the direction of the City aquifers

Conclusion of Effects on Christchurch Groundwater

The potential effects on Christchurch City groundwater may be of a minor nature.

More information required from CPWT on management of groundwater quality issues.

Seminar on Central Plains Water Enhancement Scheme
The Scheme has been publicly notified so any person may make a submission on it
The City Council is entitled to make a submission
A submission may state whether it is in support of, or in opposition to, the application (or can be neutral)

Contents of submissions
- A submission should be directed at resource management issues. These generally relate to:
  - The Social, economic and cultural well-being of communities;
  - Sustaining the potential of resources to meet the reasonably foreseeable needs of future generations;
  - Safe-guarding the life-supporting capacity of air, water, soil and eco-systems; and
  - Avoiding, remedying or mitigating any adverse effects of activities on the environment.

Contents of submissions (cont’d)
- In many cases, social and economic benefits to a community must be balanced against adverse effects of an activity on the environment

Risk
- It is now well established that the Act does not involve a “no risk” regime.
- However, it does include a “precautionary principle” where there is a threat of serious or irreversible harm to the environment.
Risk (cont’d)

- Whether caution is to be applied is a discretionary matter to be exercised by the decision-maker as part of the overall judgment of whether to grant or decline consent.
- This means risk assessment is a matter of fact to be determined in the circumstances of each case.

Risk assessment involves factors such as:
- The evidence of adverse effects or risk to the environment (rather than mere suspicion).
- The gravity of the adverse effects if they do occur.
- The level of uncertainty regarding the extent or nature of the potential environmental harm; and
- Whether the adverse effects are irreversible.

The Waimakariri River is close to becoming fully allocated in terms of reliable water supply.

Due to priority issues, unless a Regional Plan specifically allocates water for activities such as drinking water supply, the Council would require a resource consent to take water for this purpose.

Loss of future water supply option

- The Waimakariri River is close to becoming fully allocated in terms of reliable water supply.
- Due to priority issues, unless a Regional Plan specifically allocates water for activities such as drinking water supply, the Council would require a resource consent to take water for this purpose.

Priority

- The relevant scheme of the Act is as follows:
  - The Act works on a first come, first served basis for resource consent applications;
  - All existing consent holders have a right to their consented water for the duration of their consent (unless this is reviewed by Ecan);
  - Even if the Council applied for Waimakariri River water now, all existing applications would have priority.
Priority (cont’d)

- This means that if, in the future, the Council decides it needs River water for drinking water supply, its best option is likely to be to apply for a change to the Regional Plan.

Options

- Options open to the Council include:
  - To not lodge a submission on the application;
  - To make a submission in support of the application e.g. economic, social benefits, etc.
  - To make a submission in opposition to the application e.g. requesting that it be declined

Recommendations

- To make a neutral submission e.g. potential benefits/uncertainty as to adverse effects, more information required, additional mitigation measures.

- Too much uncertainty as to adverse effects of activity on groundwater quality to unreservedly support the application.
- Unlikely that there will be hydrological evidence to justify a submission that consent should be declined because of significant groundwater effects.
The level of uncertainty and further information/mitigation measures required to address groundwater quality issues justifies a more neutrally framed submission. This would require further information to address uncertainty as to adverse effects and additional mitigation resources.

It is open to the Council to lodge a submission on the uncertainty issues as a primary submission. If these cannot be satisfactorily addressed by the applicant, then a secondary submission could request that the application be declined in accordance with the precautionary approach.

Social Impacts
- Approach taken to focus on social impacts on Christchurch
- Based on reading the report and professional judgement

Recreational Impact - Reservoir
- Report discusses recreational opportunities relating to reservoir but little about the existing recreational opportunities lost.
- Apparent contradiction in comments on value of fishery in reservoir
<table>
<thead>
<tr>
<th>Recreational Impacts - Reservoir</th>
<th>Recreational Impacts - Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Impact of contact recreation on reservoir limited due to distance from Christchurch and operational requirements.</td>
<td>• Depend largely on the shape and form of the canals and waterways.</td>
</tr>
<tr>
<td>• Uncertainty over possible recreational opportunities identified e.g. separate lake from area where dam fill removed, white water kayaking course.</td>
<td>• Consideration of design of canals e.g. shape of canal and bridges, to facilitate recreational use.</td>
</tr>
<tr>
<td>• Also unclear the degree to which they would significantly benefit Christchurch.</td>
<td>• Some of these likely to have environmental effect</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recreational Impacts - Potential</th>
<th>Other Social Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Opportunities for canal side properties etc.</td>
<td>• Social impacts largely on communities in Selwyn District</td>
</tr>
<tr>
<td>• Important to build in opportunities for public access along canals, ability to change their use etc – even if potential not realised initially</td>
<td>• Social impacts on Christchurch mostly through economic impact of companies supplying agricultural services to farmers within the scheme area</td>
</tr>
<tr>
<td>• Need for Company/Trust to control access to the water to enable it to cover the costs of conversion to recreational use?</td>
<td>• May be minor impact on Christchurch through activities where town and country come together</td>
</tr>
</tbody>
</table>
End Slide – Where to from here

- **Key dates:**
  - Council meeting, 17 August to formally adopt response
  - Submission date – 5 p.m., 18 August.

- **A suggested process:**
  - Assuming a possible submission, Council give a direction to working party today to formulate a draft submission for Council meeting, 17 August.