

## What Was the Purpose of Our Review?

- 101 Public sector entities, especially local authorities, are involved in large-scale capital projects. These projects:
- can be complex and, therefore, expose all parties to considerable risk;
  - are generally expensive;
  - often involve a number of entities from both the private and public sectors; and
  - are often unique in nature and not likely to be repeated.
- 102 The purpose of our review was to see what messages for good practice we could find from looking at one such large-scale project. While much is known about the circumstances of the breach of the Opuha Dam, the lessons for public authorities that might be involved in such projects have not hitherto been explored.

## Why Did We Choose the Opuha Dam Project?

- 103 The Opuha Dam project made headlines on 5 February 1997 when the dam was breached, releasing a large volume of water – causing both a danger to the public in the vicinity of the river and significant damage to public and private property downstream from the dam.
- 104 In addition to the public interest in the project arising from the public money invested in it, we were concerned that the apparent “failure” of the project was significant because of:
- six public authorities being involved, two in a regulatory capacity;
  - the dam being ultimately owned by a local authority trading enterprise; and
  - a related local authority trading enterprise having engaged the contractor.
- 105 In examining the circumstances surrounding the breaching of the dam and its consequences, we were not concerned with what caused or who was responsible for the breach. Apportionment of blame is the responsibility of the courts after taking account of technical specialist argument and expert opinion.

- 106 However, we did consider it our role to see whether the public authorities:
- *regulating the project* had acted in accordance with, and had fulfilled, their statutory duties; and
  - *investing in the project* had taken appropriate steps to establish that the project was, and continued to be, a sound investment.
- 107 The public authorities involved in the project and the nature of their involvement are shown in Figure 1 opposite.
- 108 Our ultimate aim was to identify any lessons that could be learned from the project to the benefit of any public authority being similarly involved in the future. Such lessons could include drawing on good management practice and avoiding identifiable shortcomings.
- 109 Consequently, this report is not about the causes of the dam breach. Nor does it in any way attempt to establish who was responsible for the breach. It also does not cover the actions of private sector entities, except where they affect the public sector.

## How Did We Carry Out the Review?

- 110 We established expectations about how the public authorities involved should have managed their respective interests and then assessed the degree to which the authorities met those expectations. We made our assessment principally by examining the events preceding the dam breach, but we also took account of subsequent events that affected the interests of the public authorities that had invested money in the project.
- 111 We visited each public authority, interviewed appropriate staff, and reviewed source documentation to confirm what we had been told.

## What Are the Main Messages from Our Review?

- 112 The Building Act 1991 together with the Building Code made under that Act<sup>1</sup> impose specific requirements on the construction of all buildings, including large dams. This legislation is concerned with the risks that water flows may pose to buildings, and the risks that buildings which are subject to water flows may pose to people and to other property, should those water flows cause the collapse of a building.

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<sup>1</sup> The Building Code is set out in the First Schedule to the Building Regulations 1992 (SR 1992/150).

*Figure 1  
Public Authorities Involved and Their Roles*

AUTHORITY	INVOLVEMENT
<b>Alpine Energy Limited</b>	Owner (through Timaru Electricity Limited) of a 50% equity interest in Opuha Dam Partnership, and able to appoint four of the eight members of the Executive Committee of Opuha Dam Partnership.
<b>Canterbury Regional Council</b>	Responsible for issuing various resource consents – see Appendix 1 on pages 59-61.
<b>Mackenzie District Council</b>	<p>Exercising regulatory functions in dealing with applications:</p> <ul style="list-style-type: none"> <li>• to modify the Mackenzie District Transitional Plan; and</li> <li>• for the issue of building consents for the dam and downstream weir (see Appendix 2 on pages 62-63).</li> </ul> <p>Owner of a 4.96% equity interest in Alpine Energy Limited.</p> <p>Provided \$1,125,000 of loan capital to Opihi River Development Company Limited (a partner in Opuha Dam Partnership).</p>
<b>Opuha Dam Limited</b>	A local authority trading enterprise, acting as trustee of the assets of Opuha Dam Partnership and (under power of attorney from the partners) contracting party with the dam builder.
<b>Opuha Dam Partnership</b>	A local authority trading enterprise formed to construct, operate, manage, and control the dam, generation plant, and all related facilities.
<b>Timaru District Council</b>	Owner (through TDC Opuha Investments Limited) of a 14.9% equity interest in Opuha Dam Partnership. As a result, is able to appoint one member of the Executive Committee of Opuha Dam Partnership. Also has a 47.5% equity interest in Alpine Energy Limited.

# INTRODUCTION

Figure 2  
Location of the Opuha Dam Project



Map by Terralink Limited.



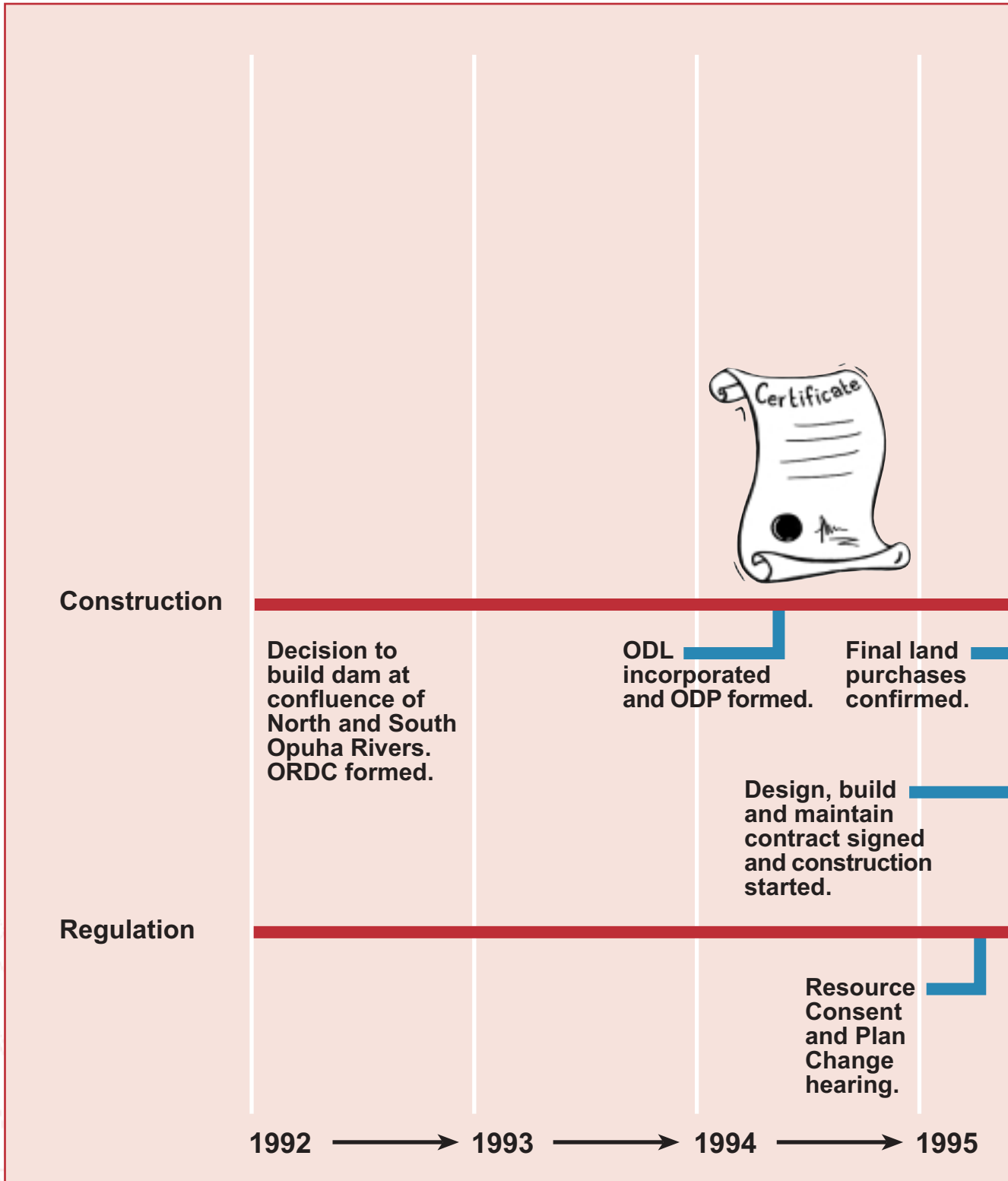
- 113 The Resource Management Act 1991 is concerned with the management of effects on the environment of allowing certain activities, including the activities of erecting dams in river beds and of damming water. In the case of the Opuha Dam project “effects” on the environment were brought about by the sudden release of flood waters that had collected behind the partially constructed dam and the resulting discharge of dam materials into the Opuha River.
- 114 There is a grey area between the Resource Management Act and the Building Act concerning dam breaches. Uncertainty surrounds the extent to which consent authorities under the former Act can rely on procedures under the latter Act to address and guard against negative environmental impacts resulting from failures during construction.
- 115 Government agencies have given some consideration to changes to the legislation to address dam safety issues. We consider that clarity in this area is necessary and suggest that the matter be revisited. However, until such time as the law is clarified, local authorities or other public authorities with a regulatory role need to co-ordinate their procedures to ensure that both environmental risks and building risks are adequately addressed.
- 116 **The main messages for a local authority or other public authority that has a regulatory role in a major project are that it should:**
- **Ensure that all decision-makers are fully aware of their statutory responsibilities and, in particular, are provided with appropriate advice in relation to risk. If an independent person is appointed in an advisory or decision-making role, the authority should ensure that the person has the appropriate expertise, experience and qualifications to enable them to meet all relevant statutory requirements and appreciate the issues involved.**
  - **Wherever practicable, establish procedures that ensure that all material relevant to the conditions of consent (whether a building or resource consent) are physically incorporated in the consent or, if this is not possible, the consent includes clear cross-reference to the identity of that material. This is important to establish the certainty and enforceability of the conditions of consent.**
  - **Ensure that the risks associated with the design and construction of a project are fully assessed by in-house staff or consultants, and that the conditions of consent (whether building or resource) adequately cover the risks identified. This is particularly important when a project (as in the case of the Opuha Dam with the diversion of flood water) has design, construction and environmental impact implications.**

- Plan and implement a systematic approach to monitoring compliance with the conditions of consent (whether building or resource).
  - Ensure that its review procedures are directed at the critical phases of the project and are not limited to being applied at standardised review times.
- 117** A local authority or other public authority should ensure that it has (either on its staff or by engagement specially for the purpose) the relevant expert advice for the purposes of:
- assessing proposals and establishing the integrated management regime referred to in paragraph 119;
  - advising on consent conditions; and
  - monitoring compliance with the consent and other statutory procedures.
- 118** In particular, decision-makers and advisers need to identify critical times of risk in the construction process. In other words, the right expertise needs to be applied to the project at the appropriate times to allow risks to be identified and minimised or avoided.
- 119** The over-riding message for any local authority or other public authority that invests in a major project is to have an integrated management regime, including:
- sound and enforceable contractual arrangements – to enable the contractor to be held accountable;
  - adequate insurance – to protect the investment;
  - a sound overall project management structure – to be able to recover and continue with the project should problems be experienced;
  - a quality assurance system (for example, peer reviewers and experts) in place at the appropriate stages – to ensure that the project is being completed in accordance with the appropriate professional standards; and
  - a system for monitoring its investment.

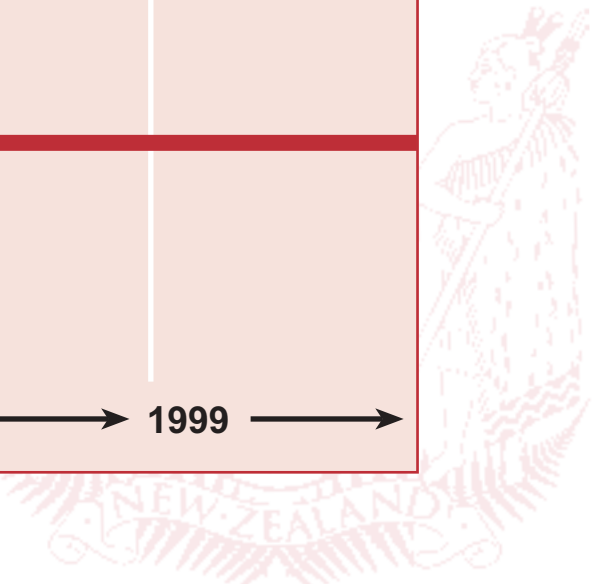
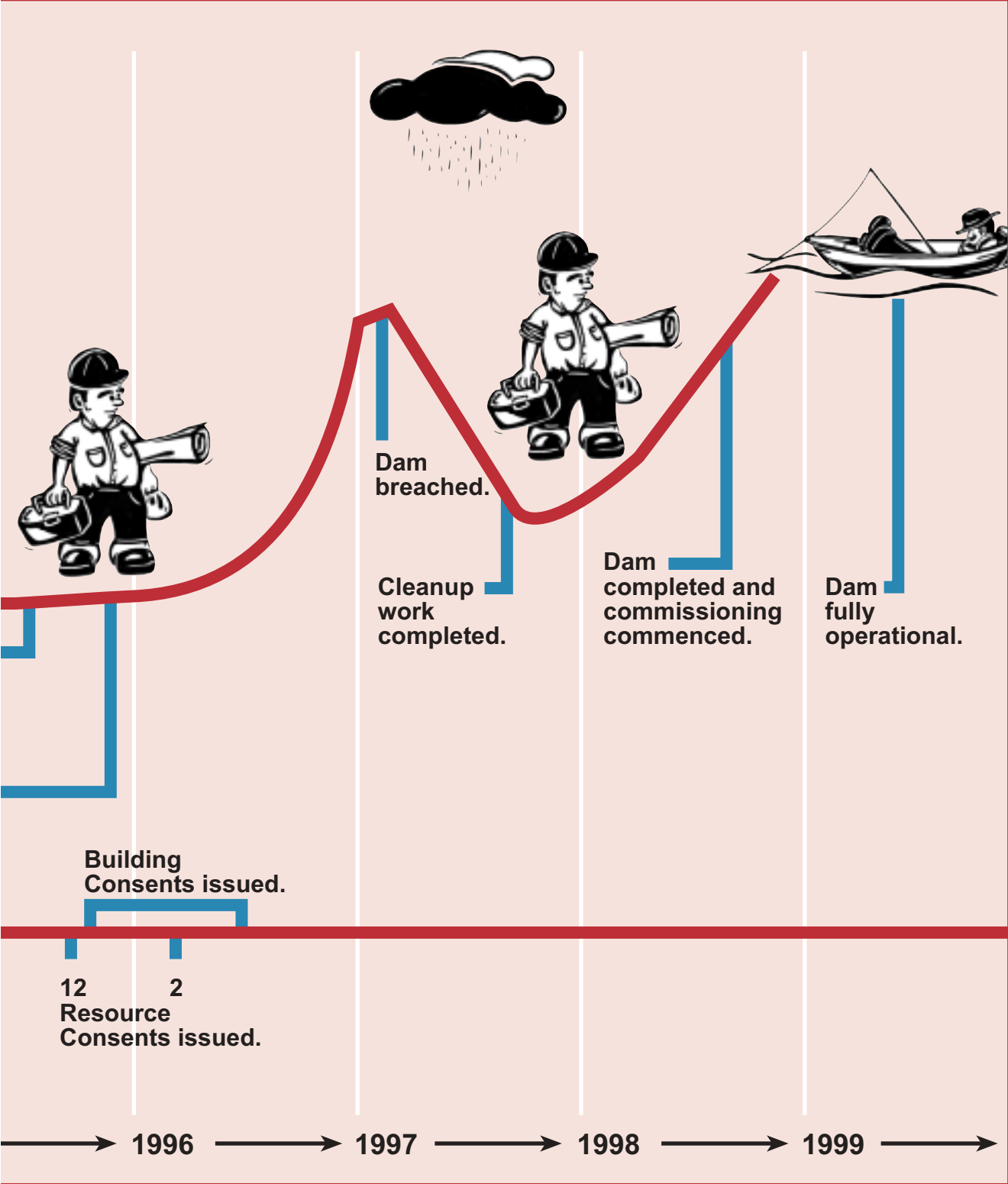
## History of the Project

- 201 The question of getting better access to water in the South Canterbury region has received considerable attention over at least the last 20 years.
- 202 During the early years, a canal from Lake Tekapo to the Timaru region was proposed. But this was shelved by 1992 in favour of a dam being built at the confluence of the North and South Opuha Rivers. The advantages of the dam project were seen to be:
- summer irrigation to an estimated 16,000 hectares of farmland (including the economic benefits as a spin-off from the increased production of the farmland);
  - a power scheme; and
  - a lake for recreational use.
- 203 Opihi River Development Company Limited (ORDC) was formed in 1992, and in 1993 the company approached Timaru District Council and Mackenzie District Council with a view to having them invest in the project. At that time three principal parties were to be involved in the project – ORDC, Alpine Energy Limited (Alpine Energy), and Electricity Corporation of New Zealand Limited (ECNZ).
- 204 The proposal was that:
- Alpine Energy and ECNZ would jointly finance the construction of the dam;
  - ECNZ would build and operate the dam; and
  - 14 years after commissioning the dam, ownership of the power station and half the dam would be transferred to Alpine Energy.
- 205 In February 1994 Opuha Dam Limited (ODL) was incorporated, with the express purpose of being the interim entity through which the dam project would be financed and undertaken. That role was later assumed by Opuha Dam Partnership (ODP), after some initial transactions had taken place through ODL.
- 206 ODL was subsequently approved as a “requiring authority” under the Resource Management Act 1991 – which meant that it had access to (but in the event did not use) powers under the Public Works Act 1981 to compulsorily purchase land.

Figure 3  
Timing of Major Events in the Opuha Dam Project







- 207 ECNZ withdrew from the project at this time.
- 208 ODP was formed (with effect from 1 April 1994) by Timaru Electricity Limited, ORDC Limited, Timaru District Council, South Canterbury Farmers Irrigation Society Limited, and Levels Plain Irrigation Company Limited.
- 209 On 10 October 1995, ODP and ODL made a declaration of trust to the effect that:
- ODP was the beneficial owner of the project assets;
  - ODL held the assets as trustee for ODP; and
  - ODL agreed to manage the dam project under ODP's direction.
- 210 During 1994 and 1995, ODL negotiated with Doug Hood Limited to construct the dam and associated works on a “design, build and maintain” basis. The negotiations resulted in the project being estimated to cost \$25 million. That sum was considered too high, and a selective tender was called.<sup>2</sup> The project designer (Tonkin & Taylor Limited) prepared a tender package and five contracting companies were asked to submit a tender.
- 211 The selective tender resulted in a contract to build the dam being awarded to Doug Hood Limited in October 1995. The contract price was \$16 million.
- 212 At the beginning of February 1997 the dam was approximately half completed – the top of the dam was 22 metres below its final height of 50 metres. By this stage the spillway was 80% completed and, consequently, could not be used to divert floodwater.
- 213 By 5 February 1997 – after three days of heavy rain – the water behind the half-completed dam had built up to such a level that it threatened to spill over the dam. Because Opuha is an earth dam and the spillway provision or other flood relief system was not in place, the contractor cut a channel in one side of the dam to avoid the water spilling over it. However, the force of the flood water through the channel caused roughly one-third of the compacted fill material that had already been placed in the dam to be eroded and washed downstream – causing damage to roads, fencing and river protection works.

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<sup>2</sup> An open tender was not called on the grounds of the level of documentation required and the time that would be involved.

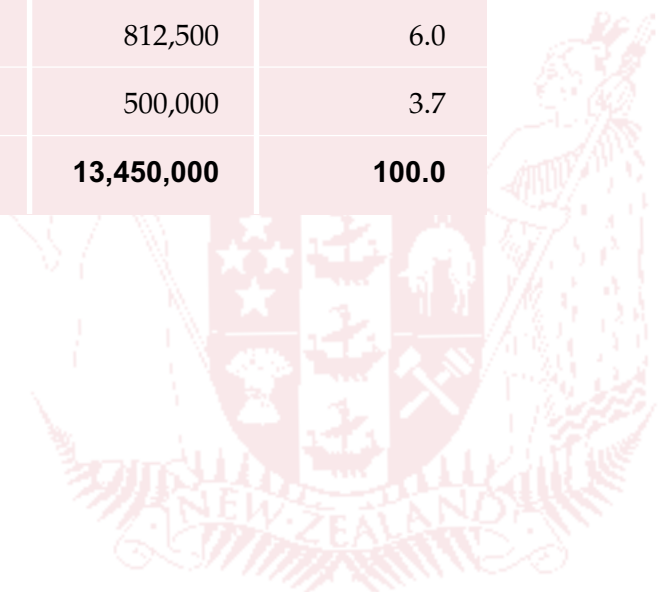
- 214 Construction of the dam recommenced later in 1997. Commissioning began by the end of 1998, and the dam has been operating at full efficiency since April 1999.
- 215 Affected farmers were paid compensation for individual property damage and losses, and a confidential out-of-court settlement was reached between ODL and its insurers. A partial settlement for river control and protection works was made.
- 216 Canterbury Regional Council negotiated a settlement for damage to flood protection works on behalf of the Opihi River rating district ratepayers.

### Who Owns the Dam?

- 217 ODP is the beneficial owner of the dam, including the surrounding land. ODP is a local authority trading enterprise. Until December 1998, the equity interests in ODP were as shown in Figure 4.

*Figure 4  
Founding Equity Interests in Opuha Dam Partnership*

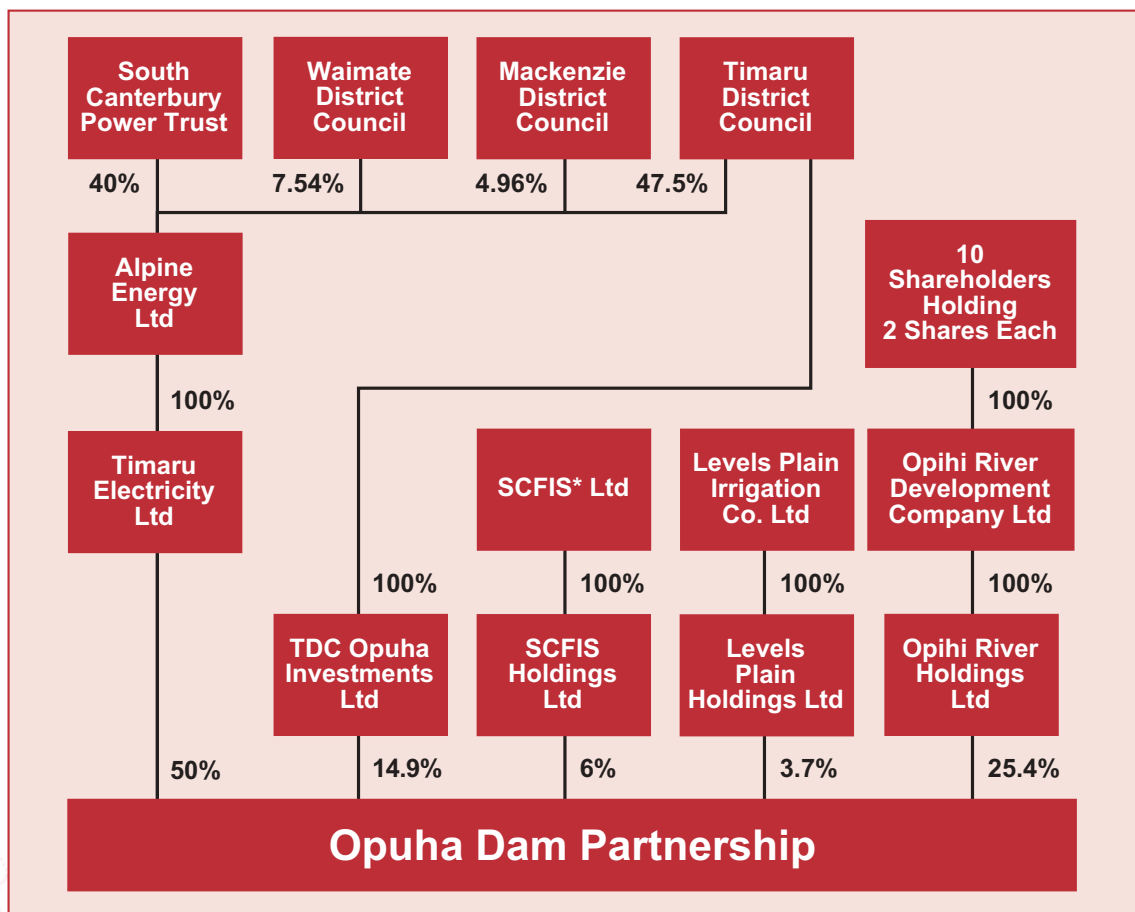
	NUMBER OF \$1 UNITS	%
Timaru Electricity Limited	6,725,000	50.0
Opihi River Holdings Limited	3,412,500	25.4
TDC Opuha Investments Limited	2,000,000	14.9
South Canterbury Farmers Irrigation Society Holdings Limited	812,500	6.0
Levels Plain Holdings Limited	500,000	3.7
<b>Totals</b>	<b>13,450,000</b>	<b>100.0</b>



## BACKGROUND

- 218 All of the equity investors in ODP are wholly owned subsidiaries. (For example, Timaru Electricity Limited is owned by Alpine Energy.) Figure 5 below shows the detail of all the ownership relationships.
- 219 The limited liability companies listed in Figure 4 on page 21 were formed to hold the equity units in ODP in order to “protect” the parents from the unlimited liability of the Partnership. Profits and losses from operating the dam are shared in proportion to the number of equity units held.

*Figure 5  
Ownership Relationships 1995 to 1998*



\*South Canterbury Farmers Irrigation Society.

- 220 Timaru District Council withdrew from ODP on 15 December 1998, selling its equity interest to the three private sector partners (see paragraph 460 on page 46).
- 221 Also in the year ended 31 March 1999, the other four partners contributed a further \$6,500,000 of equity capital – Timaru Electricity’s contribution being \$3,250,000.

## Management Structure

- 222 ODP had an Executive Committee of eight directors – four of whom were appointed by Alpine Energy (through its wholly owned subsidiary Timaru Electricity Limited) and one by each of the other four partners. The Executive Committee members had a mix of financial, legal and project management skills.
- 223 The project was undertaken in the name of ODL (in terms of the declaration of trust and power of attorney) but controlled by ODP, the Executive Committee of which was empowered to negotiate the purchase of properties and the finance terms.
- 224 In addition, when ODL (the Principal) entered into a contract with Doug Hood Limited (the Contractor), ODL appointed a principal's representative whose main responsibility was to oversee the day-to-day administration of the construction contract.

## How the Project Was Funded

- 225 In January 1995 the total budgeted cost of the project was \$30.2 million – to be funded 50% by equity capital and 50% by loan capital (mostly bank loans, but including loans of \$775,000 each from Alpine Energy and ORDC). The financial statements of ODP show that, as at 31 March 1999, the total cost of the dam and power station was \$30.5 million.

## Two Types of Investment

- 226 For the purposes of our review we split investments in the project into two types – equity investments, and loan funding. We focus separately on these two aspects later in this report – see Part 4 *Involvement as an Equity Investor* (pages 35-47) and Part 5 *Involvement as a Lender* (pages 49-55).
- 227 We made this distinction because the security, length of investment, and rights, powers and risks attaching to equity investments are different to those attaching to loans. For example:
- A subscriber for equities acquires an ownership interest that gives the subscriber (among other things) voting rights – and may include being able to appoint one or more directors to the board responsible for the management of the company.
  - A lender, on the other hand, acquires no ownership rights.



228 The equity investments in the Opuha Dam project were both direct (for example, Alpine Energy's shareholding through Timaru Electricity Limited) and indirect (for example, Mackenzie District Council's shareholding in Alpine Energy). Timaru District Council had both a direct interest through TDC Opuha Investments Limited as well as an indirect interest through Alpine Energy. (See Figure 5 on page 22.)

### Project Management

229 During the project planning phase in 1994, ODL's main concerns were that the cost of building the dam would exceed the budget or the contractor would not complete the work. ODL addressed these concerns by:

- asking only competent contractors to bid for the contract;
- entering into a "design, build and maintain contract" for a fixed price, with the consequence that the contractor carried the risk of any cost over-run;
- requiring the contractor to put up a performance bond of \$5 million; and
- checking that the insurance arrangements put in place by the contractor adequately protected ODL's (and, hence, ODP's) interests.

230 ODL also put in place the contract management arrangements described in paragraphs 420-425 on pages 39-40.



## The Two Regulatory Authorities Involved

- 301 Two local authorities were involved in the project in a regulatory capacity:
- **Canterbury Regional Council** was responsible for the issue of the resource consents (which are summarised in Appendix 1 on pages 59-61); and
  - **Mackenzie District Council** was responsible for dealing with an application to modify the Mackenzie District Transitional Plan to provide for a dam and lake and the issue of building consents for the dam structure and the downstream weir (as detailed in Appendix 2 on pages 62-63).

## Conflicts of Interest

- 302 We expected that both Canterbury Regional Council and Mackenzie District Council would have taken steps to identify potential conflicts of interest (e.g. investor and regulatory functions) and to ensure that any conflicting interests did not influence the exercise of their regulatory functions.

### Canterbury Regional Council

- 303 Canterbury Regional Council provided some funding support to the entities involved in the initial resource investigations. The Council considered that, as a consequence of its financial support, it had a potential conflict of interest and therefore appointed commissioners to deal with the consent applications.
- 304 *We consider that Canterbury Regional Council properly identified the potential conflict of interest relating to the resource consent applications and took suitable steps to avoid it.*

### Mackenzie District Council

#### Plan Change

- 305 Mackenzie District Council identified that it had a potential conflict of interest through its 4.96% ownership interest in Alpine Energy, which (through Timaru Electricity Limited) in turn had a 50% ownership interest in each of ODP and ODL. In addition, the Council was intending to purchase shares in and lend money to ORDC which, through Opihi River Holdings Limited, had a 25% interest in ODP (see Figure 5 on page 22).

- 306 This potential conflict of interest in the proposed change to the District Plan was avoided by the appointment of commissioners (see paragraph 313) to hear the application and make a recommendation to the Council. (The commissioners' recommendation was that Mackenzie District Council adopt the proposed change to the District Plan, and the Council adopted the recommendation.)
- 307 *We consider that Mackenzie District Council properly identified the potential conflict of interest relating to the District Plan change and took suitable steps to avoid it.*

### Building Consents

- 308 Mackenzie District Council faced the same potential conflict of interest in relation to the applications for building consent as it faced in relation to the application to change the District Plan.
- 309 This situation is not unusual, because section 24 of the Building Act 1991 requires territorial local authorities to receive, consider, approve or refuse applications for building consents. Building work undertaken in relation to other Council-owned properties would therefore also present a potential conflict.
- 310 The Council dealt with the conflict by delegating to its officers responsibility for considering and determining the applications for the building consents.
- 311 *We consider that Mackenzie District Council properly identified the potential conflict of interest in relation to the applications for building consents and dealt with it appropriately.*

### Evaluating Applications for Consent

- 312 We expected that both Canterbury Regional Council and Mackenzie District Council would have dealt with the applications for consent in accordance with their statutory responsibilities.

#### Canterbury Regional Council

- 313 Canterbury Regional Council and Mackenzie District Council appointed joint commissioners to hear the applications for both resource consents and the proposed District Plan change. The commissioners were experienced and checked that all applications complied with the relevant sections of the Resource Management Act 1991.

- 314 Canterbury Regional Council appointed the commissioners (with the full powers of the Council) as a consent authority to hear and determine the applications for resource consent. The Council convened the required consultation process and there is evidence that extensive consultation was undertaken.
- 315 *We consider that Canterbury Regional Council dealt with the applications for resource consent in accordance with its statutory responsibilities.*

### Mackenzie District Council

#### Plan Change

- 316 The joint commissioners heard the application for the proposed District Plan change (in conjunction with the applications for resource consent) and assessed whether the proposal complied with the relevant sections of the Resource Management Act.
- 317 The commissioners made their recommendation to Mackenzie District Council, which the Council accepted.
- 318 *We consider that Mackenzie District Council dealt with the application to change the District Plan in accordance with its statutory responsibilities.*

#### Building Consents

- 319 The Building Act applies to dams that retain more than 3 metres in depth and more than 20,000 cubic metres in volume of water. The main purposes of the Act that relate to dams are to:
- *Safeguard people from possible injury...[and]*
  - *Provide for the protection of other property from physical damage...*
- 320 All buildings covered by the Building Act must comply with the Building Code (see paragraph 112 on page 10). The Building Act and the Building Code specifically require buildings to withstand the combination of loads that they are likely to experience during construction or alteration and throughout their lives. They also require buildings to have a low probability of rupturing, becoming unstable, losing equilibrium, or collapsing during construction or alteration and throughout their lives. Account must be taken of all physical conditions likely to affect the stability of buildings, including water and other liquids.

- 321 Section 50 of the Building Act allows territorial authorities to accept certain documents as establishing compliance with the provisions of the building code. Section 43(8) states that *a territorial authority may, at its discretion, accept a producer statement<sup>3</sup> establishing compliance with all or any of the provisions of the building code.*
- 322 Mackenzie District Council recognised that it did not have the appropriate expertise. It therefore established an advisory team of planners, lawyers and engineers to handle the Council's statutory and regulatory roles.
- 323 The Council, in accordance with the Building Act, relied on producer statements covering:
- design – from designers and peer reviewers (appointed by the principal);
  - construction – from contractors; and
  - construction review – from designers and peer reviewers.
- 324 *We consider that Mackenzie District Council dealt with the applications for building consent in accordance with its statutory responsibilities.*

### Monitoring Consent Conditions

- 325 **We expected that both Canterbury Regional Council and Mackenzie District Council would have had appropriate monitoring controls and procedures in place to ensure that the conditions of the consents issued were being complied with.**

#### Canterbury Regional Council

- 326 The papers presented to the hearing and the decision of the commissioners tended to focus on the dam as a built structure and its impact on the surrounding environment. Little consideration appeared to be given to problems that might arise during construction – which, in view of the size of the dam, could potentially have a significant impact on the environment – and any conditions that might be needed to avoid those problems.

<sup>3</sup> Defined by section 2 of the Building Act 1991 to mean *any statement supplied by or on behalf of an applicant for a building consent or by or on behalf of a person who has been granted a building consent that certain work will be or has been carried out in accordance with certain technical specifications.*



327 Canterbury Regional Council considers that, given the specific controls in the Building Act on how buildings must perform both during and after construction, a consent authority under the Resource Management Act:

- is entitled to assume that such matters will be adequately and appropriately dealt with under the Building Act; and
- is not required to satisfy itself as to such matters, nor to impose conditions which may duplicate or could (perhaps) be inconsistent with Building Act controls.

328 That is where the grey area between the Building Act and the Resource Management Act arises.

329 In any event, the resource consents issued were not complete in themselves in that condition 2 in Resource Consent document CRC950567 states:

*The design, construction and operation of the dam shall be in accordance with the principles as presented in evidence to the hearing and as contained in the technical documents provided to the Canterbury Regional Council in support of this application.*

330 Supporting papers were not attached to the consent, making it difficult for both the regulatory authority and the consent holder to interpret any condition with any degree of specificity by referring to evidence presented at a hearing.

331 The papers presented to the hearing referred to the passage of floods during construction in terms that:

*...because of the limited capacity of the conduit, additional flood flow will be routed past the dam using two by-pass channels and keeping parts of the dam higher than elsewhere to force the flow through the channels.*

332 *We consider that, given the nature of the project (particularly once it gained height), there needed to be much more detailed specification of the conditions to be observed during the construction of the dam from the point of view of managing the passage of floods.*

333 The need for more detailed specification of conditions was borne out by events. The Canterbury Regional Council compliance monitoring officer's visit to the site in October 1996 coincided with the blocking off of the left-hand diversion channel and the diversion of floodwaters through the conduit. Nevertheless, the officer did not notice anything amiss because, from his point of view, the consent conditions had not prescribed what he should look for in relation to diversion channels.

- 334 The compliance monitoring officer intended to visit the site three-monthly. The works were logged as having been started in October 1995. The compliance monitoring officer visited the site in January 1996, and we were told that there were frequent informal communications with ODL's representative. However, the first formal compliance inspection did not take place until October 1996.
- 335 The officer told us that there was a rapid build-up in the height of the dam over the period October 1996 to January 1997, and he was collecting information to carry out a monitoring visit when the dam was breached in February 1997.
- 336 The compliance monitoring officer did not achieve his intended programme of site visits. Given the nature of the project, we would have expected that the visits would have been timed to coincide with the critical phases of the construction process, rather than being timed at predetermined regular intervals. Canterbury Regional Council told us that its officers were under the impression that responsibility for supervising the technical aspects of construction was covered by the Building Act requirements.
- 337 *We have concerns about the adequacy of Canterbury Regional Council's consent compliance monitoring – it did not achieve its intended programme of monitoring and did not adequately time its site visits. However, we recognise that the conditions of the resource consent were such that the Council would have had significant difficulty in determining precisely what the construction requirements were.*
- 338 *We also note that the Council had taken into account that the consents had been granted on the basis that the construction process would be adequately supervised by appropriately experienced professionals employed independently of the Council.*

### Mackenzie District Council

#### Plan Change

- 339 A council is required by section 35 of the Resource Management Act to monitor the suitability and effectiveness of any plan for its district. The proposed change to the District Plan (Plan Change 22), having been adopted by Mackenzie District Council, is now incorporated in the Proposed District Plan.
- 340 Therefore, the monitoring of Plan Change 22 will be undertaken as part of the broad requirement to monitor suitability and effectiveness, and in conjunction with monitoring compliance with any resource consents granted for development within the Opuha Zone.

**341** *We consider that Mackenzie District Council met our expectation that it would have monitoring controls and procedures in place to ensure that the conditions of the plan change would be complied with.*

### Building Consents

**342** Mackenzie District Council issued five building consents. All consents were *consents under the Building Act 1991 to undertake building work in accordance with the attached plans and specifications so as to comply with the provisions of the building code.*

**343** The Council received producer statements in support of the building consents from the designers and the peer reviewers. To monitor compliance with the Building Code, the Council relied on the producer statements, as it had the discretion to do under the Building Act.

**344** *We consider that Mackenzie District Council monitored the conditions of the building consents in accordance with the Building Act 1991.*

### ***In the light of the Opuha Dam project, the messages for regulatory authorities are:***

*A public authority that is a regulatory authority should:*

- Identify potential conflicts of interest (e.g. investor and regulatory functions) and take appropriate steps to ensure that any conflicting interests do not influence the exercise of its regulatory functions.*
- Ensure that it deals with applications for consent in accordance with its statutory responsibilities and the relevant national best practice guidelines.*
- Ensure that any conditions attached to a resource or building consent are certain, enforceable, and clearly understandable by both the consent holder and anyone responsible for compliance monitoring.*
- Have appropriate monitoring controls and procedures in place to ensure that the conditions of consent are complied with.*



## Rationale and Objectives for Investing

401 We expected that, before deciding to invest equity capital in ODP, Alpine Energy and Timaru District Council would have identified the rationale and objectives for purchasing an equity interest in the project that were consistent with their long-term strategies, investment policies, and statutory powers.

### Alpine Energy

402 Alpine Energy's two main reasons for investing in the project were to:

- benefit the local region and business sector; and
- obtain commercial benefits for itself.

403 The dam's potential for power generation meant that Alpine Energy would be able to achieve increased self-sufficiency in the generation and supply of electricity. Also, the spin-off benefits of irrigation would increase the demand for electricity supplied by Alpine Energy.

404 The investment in ODP was part of Alpine Energy's long-term strategy and was included in both its 1994-95 and 1995-96 business plans.

405 The investment was within Alpine Energy's statutory powers. Having looked at various scenarios in relation to purchasing the electricity generated from the Opuha Dam, and being mindful of the energy sector reforms, it decided in 1998 not to do so. (The electricity would instead be sold on the open market.)

406 In addition to investing in equity capital in ODP through its subsidiary Timaru Electricity Limited, Alpine Energy provided bank guarantees for project cost over-runs incurred by ODP and the reconstruction loan to ODP, and lent ODP directly \$775,000 for construction finance and \$1,120,000 for temporary finance (see also paragraphs 454-456 on pages 45-46).

407 Alpine Energy also decided to enter into a management and financial services agreement with ODL. This agreement effectively meant that Alpine Energy became responsible for managing the physical and financial resources of ODP through the agency of ODL.



## INVOLVEMENT AS AN EQUITY INVESTOR

**408** *We consider that Alpine Energy met our expectation in that, before deciding to invest in equity capital in ODP, it:*

- *identified the rationale for investing;*
- *considered whether the investment was consistent with its long-term strategy; and*
- *was conscious of how the changes to legislation in relation to the energy sector reforms affected its statutory rights and powers.*

### Timaru District Council

**409** Timaru District Council's investment was two-fold – it had (through TDC Opuha Investments Limited) a direct interest of 14.9% of the equity capital of ODP and an indirect equity interest through its 47.5% ownership interest in Alpine Energy. (See Figure 5 on page 22.)

**410** The Council considered that the benefits of the scheme were:

- the provision of a reliable long-term water source for the Timaru District;
- increased economic activity within the District; and
- improved irrigation for the area.

**411** The Council disclosed its proposed financial involvement in the project of \$2 million in the 1993-94 annual plan.

**412** The involvement was within the Council's statutory powers.

**413** *We consider that Timaru District Council met our expectations in that, before investing in equity capital in ODP, it:*

- *identified the rationale for investing; and*
- *included its involvement in the project in its annual plan.*

**414** *The Council also acted within its statutory powers.*

### Assessing Risk

415 We expected that, before investing in equity capital in ODP, Alpine Energy and Timaru District Council would have taken steps to be satisfied that the risk of losing the investment was minimised. These steps would include ensuring:

- sound and effective contractual arrangements;
- a sound overall project management structure; and
- adequate insurance cover.

416 The arrangements were as described in paragraphs 417-427 following.

### Contractual Arrangements

417 The contract was a “design, build and maintain contract” for a fixed price. Thus, for the price agreed, the Contractor was to design, construct, complete and maintain the dam in accordance with the design specification (prepared by Tonkin & Taylor Limited) included with the *Instructions to Tenderers*.

418 A contract of that nature facilitated holding the Contractor to account and reduced the risk to ODP of escalation in the construction cost.

419 In addition, the Contractor was required to put up a performance bond of \$5 million to ensure completion.

### Project Management

420 Both the project designer (Tonkin & Taylor Limited) and the Contractor had previous experience with earth dams.

421 ODL appointed a principal’s representative to oversee the contract and the design, construction and completion of the contract works. This involved (among other things) responsibility for the day-to-day administration of the contract, liaising with the various parties, setting up monthly site meetings, and preparing monthly status and stakeholder reports.

## INVOLVEMENT AS AN EQUITY INVESTOR

- 422 ODL appointed three peer reviewers:
- The first reviewer was contracted to provide a review of the mechanical and electrical plant supplied, installed and commissioned by Kvaerner Energy Pty Limited. The job included looking at the design and suitability of the plant purchased – including safety standards and operating maintenance procedures.
  - The other two reviewers undertook peer review during the design, construction and commissioning of the hydraulic structures. One reviewer covered the geotechnical aspects of the dam embankment and the downstream regulating weir, including the interface between the earthworks and adjacent structures. The other reviewer looked at the structures themselves.
- 423 All three peer reviewers were required to visit the site during critical periods of construction. None of them *were responsible for the techniques, methods, programmes, sequences or procedures adopted by any contractor*. The reviewers were looking at the final construction in terms of compliance with the Building Act 1991, not the construction methodology.
- 424 In addition, a “supervisory mentor” (or principal’s peer reviewer) was appointed to supervise the Principal’s representative. This person reported directly to the Board of ODL.
- 425 A consulting engineer was appointed to the position of Principal’s peer reviewer. The assigned tasks were to provide the Principal’s representative with technical support and to liaise with and advise the Principal’s representative on contract management issues. The objective was to ensure that the project was completed on time and on budget by giving timely advice to ODL on technical and contractual issues.

### Insurance

- 426 The contract stipulated that:
- the Contractor had to indemnify the Principal against all losses and claims for injuries or damage to any person or property that might arise out of the construction and maintenance of the dam; and
  - the Contractor and subcontractors had to insure against any liability in respect of construction.
- 427 ODL checked the insurance arrangements.

### Alpine Energy

428 Before recommending investing in the project to its shareholders, Alpine Energy (among other things) sought confirmation that:

- The construction contract was for a fixed price and performance-based for timing, specifications, and cost. Alpine Energy's legal advisers provided this confirmation.
- The project management was competent.
- The insurance contracts and cover were adequate. Alpine Energy asked for a status report on all insurance arrangements – including those of the contractor – and updates on any changes to the insurance contracts.

429 *We consider that Alpine Energy met our expectation of assessing the risks to its investment before investing in the equity capital.*

### Timaru District Council

430 When Timaru District Council was first approached in 1993 for finance for the project, the intention was for the Council to pay a grant towards the cost of the project. However, having considered this option, the Council decided that it preferred to contribute by way of equity capital.

431 From the information we obtained from the Council, when assessing risk the Council was concerned that:

- It would pay the agreed \$2 million only when satisfied that its investment would be secure.

The \$2 million was paid to ODL in two portions – \$1 million in September 1994 and \$1 million in August 1995. (The equity interest was subsequently transferred to ODP – see paragraph 205 on page 17.)

The second payment was conditional on the capital structure being finalised, verification that the construction work had begun, certification that the funding for the project was in place, and receipt of the financial statements of ODL and ORDC for the period to 31 March 1995.

- Its liability in relation to the project would be limited to \$2 million.

The Council formed a wholly owned limited liability subsidiary company – TDC Opuha Investments Limited – to hold the investment in ODP.

- 432 Timaru District Council received a copy of the *Shareholder Information* package sent out by ODL in August 1995. The package included details of the proposed construction contract, insurance, and project management arrangements.
- 433 The package was provided to Council members and discussed later that month. However, the record shows that the discussion tended to concentrate on the viability of the project and the ownership of the resource consent – rather than the contractual relationship, insurance cover, and project management arrangements.
- 434 *We consider that Timaru District Council met our expectation of assessing the risks to its investment before investing in the equity capital.*

### Rate of Return

- 435 **We expected that, before investing in equity capital in ODP, Alpine Energy and Timaru District Council would have taken steps to be satisfied that an acceptable rate of return over a defined period would be received from the investment.**

#### *Alpine Energy*

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- 436 Alpine Energy sought advice from two external consultants. One consultant assessed the rate to be in the range 7.05% to 7.39% on a 50-year time horizon; the other (using a simulation model) indicated an expected mean rate of 9.68% over a 50-year project life.
- 437 Alpine Energy's investment policy required a rate of return of 7% or better.
- 438 *We consider that Alpine Energy met our expectation of being satisfied, before investing in the equity capital, that it would receive an acceptable rate of return from the investment.*

#### *Timaru District Council*

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- 439 Having decided to invest equity capital in the project rather than make a grant (paragraph 430), the Council sought external advice, which indicated that possible after-tax rates of return would be 8.00% to 8.24% over a 50-year project life. The Council considered that this was adequate.
- 440 *We consider that Timaru District Council met our expectations of being satisfied, before investing in the equity capital, that it would receive an acceptable rate of return from the investment.*



## Information

**441** We expected the Executive Committee of ODP to have responsibility for monitoring the progress of the project, but that the investors would retain a key interest in seeking assurance that the Committee was overseeing progress in a responsible manner. One means of ensuring that the investors received adequate information would have been for ODP to communicate their information requirements through a Statement of Corporate Intent.

### *Alpine Energy*

**442** ODP first produced a Statement of Corporate Intent for the year ended 31 March 1997 and included a Statement of Objectives and Service Performance in its financial statements for that year.<sup>4</sup>

**443** The Board of Alpine Energy managed Alpine Energy's interest directly rather than through its wholly owned subsidiary company, Timaru Electricity Limited. The four directors of ODP appointed by Alpine Energy fed information about the project directly back to Alpine Energy.

**444** In addition, the Board of Alpine Energy included the Opuha Dam project as a standing agenda item at its monthly meetings. The agenda papers included (among other things) details of the:

- Stakeholders Report prepared by the Principal's representative;
- minutes of the most recent meeting of the Board of ODL; and
- Principal's peer reviewer reports.

**445** *We consider that Alpine Energy met our expectation in ensuring that it received sufficient information to determine that the Executive Committee of ODP was overseeing (through ODL) the progress of the project in a responsible manner.*

### *Timaru District Council*

**446** Timaru District Council decided to manage its ownership interest through its wholly owned subsidiary company, TDC Opuha Investments Limited (TDCOIL).<sup>5</sup>

<sup>4</sup> ODL (although a local authority trading enterprise) did not produce either a Statement of Corporate Intent or a Statement of Service Performance because of its status as a "shell" company.

<sup>5</sup> Renamed from Timaru District Council (No. 2) Limited in February 1997.

## INVOLVEMENT AS AN EQUITY INVESTOR

- 447 TDCOIL had one representative on the Board of ODL who reported back on the proceedings of the Board meetings. In addition, TDCOIL regularly received:
- the Stakeholders Report, which covered the timeliness, quality, and costs of the project; and
  - 6-monthly financial reports (it was agreed that these could be requested more often).
- 448 *We consider that Timaru District Council met our expectation in ensuring that it received sufficient information to determine that the Executive Committee of ODP was overseeing (through ODL) the progress of the project in a responsible manner.*

### Monitoring the Investment

- 449 We expected that both Alpine Energy and Timaru District Council would have been monitoring their respective investments to establish that:
- the return on the investment (either being received or likely to be received) remained consistent with what was considered acceptable; and
  - the value of the investment was being maintained.
- 450 The dam breach clearly had a significant financial impact on the project, and the monitoring undertaken by both Alpine Energy and Timaru District Council could be expected to reflect that situation. Indeed, we would expect the “monitoring” after the costs arising from the breach had become apparent to have included a reconsideration of continued financial involvement in the project.
- 451 In May 1998 ODP asked each partner to contribute additional equity capital to cover \$1.5 million of cost over-runs – mainly for land purchase costs, legal and accounting fees, and insurance costs. The over-runs had been temporarily met out of bank finance but the bank required the cost to be covered by additional equity capital from the partners in September 1998 (i.e. on completion of construction).

## *Alpine Energy*

- 452 When assessing the expected rate of return on its investment, Alpine Energy sought advice from two external consultants (see paragraph 436). Among the advice received was an investment analysis model for the project, stating the assumptions on which the model was based and projecting for the period 1995 to 2045:
- an operating statement – including revenue, expenditure, and net income before and after tax;
  - a balance sheet;
  - a cash flow schedule; and
  - dividend provisions.
- 453 Initially, Alpine Energy's monitoring of its investment centred on the timeliness of completion of the project to ensure that the projected revenue streams would occur at the expected time. After the dam breach, the main concern was to ensure that the project would be completed and remain viable.
- 454 By 31 March 1998, Alpine Energy's gross investment in the project was reported as \$7.5 million – comprising equity capital (contributed to ODP through Timaru Electricity Limited) of \$6,725,000 and a loan (directly to ODP) of \$775,000. However, Alpine Energy also:
- in 1996-97 provided a bank guarantee for the project over-runs;
  - in 1997-98 guaranteed 50% of the bank reconstruction loan to ODP of \$6,500,000; and
  - in 1998-99 –
    - lent ODP a further \$1,120,000 for short-term funding requirements pending capital restructuring; and
    - contributed a further \$3.25 million of equity capital – of which \$750,000 represented its 50% share of the \$1.5 million of cost overruns and \$2.5 million represented additional capital to reduce ODP's debt interest burden.
- 455 At 31 March 1999, Alpine Energy reviewed the carrying value of its investment in the project and, based on forecast discounted cash flows, wrote down the value of the investment by \$2,241,000.

## INVOLVEMENT AS AN EQUITY INVESTOR

- 456 In 1999-2000 Alpine Energy increased its equity investment by a further \$2,275,000 – \$1,895,000 of which was in exchange for the cumulative loans to ODP at 31 March 1999.
- 457 Alpine Energy continues to monitor the financial performance of ODP against the 50-year investment analysis model (which was updated in 1998 to reflect the change in ODP’s capital structure).
- 458 *We consider that Alpine Energy:*
- *met our general expectation that it was monitoring its investment;*
  - *has a commitment to long-term involvement in the project indicated by its continued and increasing financial support;*
  - *properly continues to monitor the value of its investment on an annual basis.*

### Timaru District Council

- 459 In May 1998 ODP asked Timaru District Council to contribute an additional \$223,050 of equity capital. The documentation provided by ODP in support of the request set out different funding scenarios and an updated financial model based on the revised capital structure and taking into account the new construction completion schedule.
- 460 The Council asked for an independent review of the revised income streams and capital structure. The review was completed in August 1998 and – as a result of the review and the fact that, with the completion of the project, the Council’s objective of regional development would be achieved – the Council approved instead the sale by TDCOIL of its partnership units in ODP. (In accordance with the partnership deed, the units were sold to ORDC, SCFIS, and Levels Plain Irrigation Company Limited.)
- 461 As at the date of sale (15 December 1998), ODP’s accumulated losses had decreased the value of the Council’s investment of \$2,000,000 by \$880,544 to \$1,119,456. The proceeds of sale were \$360,000, bringing the total loss to the Council to \$1,640,000.
- 462 *We consider that Timaru District Council met our general expectation that it was monitoring its investment. Although the Council had determined (but did not receive) an acceptable monetary rate of return on its investment, its principal objective for the investment was regional development. The Council decided as a matter of policy that, having achieved that objective, it should cease financial involvement in the project.*

### ***In the light of the Opuha Dam project, the messages for equity investors are:***

*Before investing equity capital in a project, a public authority should:*

- *Identify and document its objectives and the rationale for purchasing an ownership interest in the project, and ensure that these are in line with its long-term strategies, investment policies, and statutory powers.*
- *Satisfy itself that the risk of losing its investment is minimised. For major projects this includes ensuring that the project has:*
  - *sound and effective contractual arrangements;*
  - *a sound overall project management structure; and*
  - *adequate insurance cover.*
- *Satisfy itself that it will receive an acceptable rate of return from the investment over a defined period.*

*Having invested equity capital in a project, a public authority should:*

- *Obtain sufficient information from the controlling body for the project to determine that the body is overseeing progress of the project in a responsible manner.*
- *Monitor its investment to establish that:*
  - *the return on the investment (either being received and/or likely to be received) remains consistent with what is considered acceptable; and*
  - *the value of the investment is being maintained.*
- *Monitor its investment for continuing consistency with its objectives and the rationale for investing, and, when circumstances change, reappraise its financial involvement in the project.*





- 501 Mackenzie District Council provided \$1,125,000 for investment in the project. Of that sum:
- first \$125,000 and then \$350,000 was intended as a subscription for equity capital; and
  - the balance of \$775,000 was for loan capital.
- 502 The Council invested the \$1,125,000 in Opihi River Development Company Limited, which is a partner in ODP and was set up as a vehicle for small investors to be involved in the project.

### Rationale and Objectives for Investing

- 503 We expected that Mackenzie District Council, before advancing money by way of a loan, would have established that investment in the project was in line with its long-term strategies, investment policies, and statutory powers.
- 504 Before deciding whether to invest in the project, Mackenzie District Council checked that it had the power to do so. It was advised that:
- it was able to invest under the general powers of investment set out in section 223r of the Local Government Act 1974; and
  - in deciding whether to invest, it had to exercise the care, diligence and skill that “a prudent person of business” would exercise.
- 505 When considering whether the investment was in line with its long-term strategies, the Council took the view that the dam project would provide development opportunities for the District and be an asset from which the community would benefit. Council staff told us that conservative estimates suggested a regional benefit in the order of \$80 million in addition to on-farm construction work.
- 506 *We consider that Mackenzie District Council met our expectation in that, before advancing the loan capital, it established that the investment in the project was in line with its long-term strategies, investment policies, and statutory powers.*

### Assessing Risk

- 507 We expected that Mackenzie District Council, before advancing money by way of loan capital, would have taken steps to be satisfied that the risk of losing the investment was minimised.
- 508 Mackenzie District Council considered its proposed investment over a period of two years. In October 1994 it decided to invest \$125,000 in share capital and provide a loan of \$1,000,000 to ODL. In considering the rate of return before making that decision, the Council concluded that the investment would not provide a return similar to that which could be expected from Government stock, but that it could achieve considerable long-term benefits for the community associated with development opportunities for the District.
- 509 In October 1995 the Council decided to change from investing in the project through ODL to investing through Opihi River Development Company Limited (ORDC). The decision was based on the small size of the investment and a view that the Council would be better served by investing in ORDC. At the same time, the Council decided to change the proportions invested to \$350,000 of equity capital<sup>6</sup> and \$775,000 of loan capital.
- 510 The Council considered different methods of securing its \$775,000 loan – including debenture and negative pledge – and settled on an arrangement for South Canterbury Finance Limited to guarantee both principal and interest payments until \$3.6 million of the \$5.5 million of share capital offered had been subscribed for.
- 511 The deed of acknowledgment of debt also contained negative covenants – under which ORDC agreed not to breach certain specified pledges, including that it would not lend money, dispose of assets, materially alter the nature of its business, or borrow or raise money without written consent from Mackenzie District Council.
- 512 *We consider that Mackenzie District Council met our expectation in that, before advancing the loan capital, it adequately assessed the risk of loss to its investment and took steps to protect the investment.*

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<sup>6</sup> The shares were to be part of a public share issue intended to raise \$3 million of new capital. As a result of the dam breach, the share issue did not proceed, and the \$350,000 became an unsecured, interest-free, loan (the value of which the Council wrote down to zero in 1997-98). The share issue finally took place in October 1999 (see paragraph 521).

## Rate of Return

- 513** We expected that Mackenzie District Council, before advancing money by way of loan capital, would have taken steps to satisfy itself that it would receive an adequate rate of return from the investment.
- 514** Mackenzie District Council negotiated commercial interest rates on the \$775,000 loan. The rate varied based on the 90-day Bank of New Zealand bank bills bid rate, and the interest was payable quarterly. As mentioned in paragraph 510, payment of the interest was guaranteed.
- 515** The Council told us that, when deciding on the mix of share and loan capital, it assessed the effect of the mix on the rate of return. The Council was happy that the loan would return a commercial rate of interest, and that the investment in shares need not be based on a purely financial return as it took into account benefits to the community.
- 516** *We consider that Mackenzie District Council met our expectation in that, before advancing the loan money, it satisfied itself that it would receive an adequate rate of return from the investment.*

## Monitoring the Investment

- 517** We expected that Mackenzie District Council would have monitored its investment to establish that:
- it was receiving interest at the agreed rate; and
  - the value of the investment was being maintained.
- 518** From August 1996 Mackenzie District Council sent quarterly invoices to ORDC for the interest due on the \$775,000 loan. However, no interest was paid and by 30 June 1999 \$150,000 of unpaid interest had accrued.
- 519** The Council told us that after the dam breach in February 1997 its primary concern was to assist the project to completion. For this reason the Council decided not to:
- pursue payment of the outstanding interest on the loan; or
  - require repayment of the unsecured loan of \$350,000 (or to attempt to insist on interest being paid on this loan).

## INVOLVEMENT AS A LENDER

- 520 The Council has annually valued its investment in ORDC for financial reporting purposes. At 30 June 1998 the Council wrote its total investment of \$1,125,000 down by \$350,000, representing the unsecured loan (originally intended as equity capital) that the Council considered to be a doubtful debt. The loan of \$775,000 retained its value because repayment was guaranteed.
- 521 In late October 1999 ORDC made its long-delayed share issue, increasing its issued capital from only \$10 to \$4,213,826. At 31 March 1999 (the previous balance date) ORDC had negative shareholders' equity of \$1,340,643.
- 522 By the time of the share issue, the Council's investment had increased to \$1,275,000 – comprising the unsecured loan of \$350,000, the secured loan of \$775,000, and \$150,000 of capitalised interest. In place of that debt, the Council was issued with:
- 675,000 \$1 redeemable preference shares guaranteed by South Canterbury Finance Limited; and
  - 1,200,000 50 cent ordinary shares – nominally valued at \$600,000 but reported by ORDC at an issued value of \$720,520.
- 523 Thus, the secured portion of the Council's investment fell from \$775,000 to \$675,000. In addition, however, at 31 March 2000 the shareholders' equity in ORDC was no more than \$2,866,176 (reflecting net accumulated losses of \$1,847,600), representing 37 cents a share on ordinary capital after allowing for redemption of the preference capital. Consequently, the Council in its financial statements at 30 June 2000 valued its investment of \$1,275,000 in ORDC as follows:

Ordinary shares	\$444,000
Preference shares	\$675,000
<b>Total</b>	<b>\$1,119,000</b>

- 524 *We consider that Mackenzie District Council met our general expectation that it was monitoring its investment. The Council chose as a matter of policy not to enforce payment of interest and to continue with its investment despite the investment having lost value. The Council is hopeful that the value of the ordinary shares will rise over time.*



### ***In the light of the Opuha Dam project, the messages for lenders are:***

*Before advancing money by way of loan for a project, a public authority should:*

- *Establish that the investment in the project is in line with its long-term strategies, investment policies, and statutory powers.*
- *Satisfy itself that the risk in relation to the investment is minimised.*
- *Satisfy itself that it will receive an adequate rate of return from the investment.*

*Having advanced money by way of loan for a project, a public authority should:*

- *Monitor its investment to establish that:*
  - *the interest due is received; and*
  - *the value of the investment is being maintained.*
- *Monitor its investment for continuing consistency with its long-term strategies, investment policies, and statutory powers, and, when circumstances change, reappraise its financial involvement in the project.*





## Appendix 1

# Resource Consents Issued by Canterbury Regional Council

Canterbury Regional Council issued the following Resource Consents:

### **CRC950567 Land Use Consent Granted 9 October 1995**

To place structures in and disturb the bed of the Opuha River by forming access roading, excavation for foundations and for fill material for the construction of a dam of dimensions approximately 50 metres high and 370 metres long and associated structures; and by excavating the bed of the river by up to 8 metres for approximately 800 metres downstream of the dam.

*Conditions included that:*

- The design, construction and operation of the dam shall be in accordance with the principles as presented in evidence to the hearing and as contained in the technical documents provided to the Canterbury Regional Council in support of this application.
- The works referred to in the above condition shall be implemented under the supervision of persons with appropriate experience in the supervision of civil engineering construction works.

### **CRC950568 Land Use Consent Granted 9 October 1995**

To place a structure in and disturb the bed of the Opuha River by forming access roading, excavations for foundations and for fill material for the construction of a weir approximately 5 metres high, located 1600 metres downstream of the proposed dam.

### **CRC950569 Land Use Consent Granted 9 October 1995**

To excavate dam foundations and related access roading on land of greater than 20 degree slope.

**CRC950570 Discharge Permit Granted 9 October 1995**

For the discharge of contaminants (sediments) and water from the construction site at the weir to the Opuha River via sedimentation ponds/infiltration basins during the construction of the weir.

**CRC950571 Discharge Permit Granted 9 October 1995**

For the discharge of cooling water from the proposed powerhouse to the Opuha River downstream of the proposed dam, at a rate of 10 litres per second.

**CRC950572 Discharge Permit Granted 9 October 1995**

For the discharge of sump drainage water, which may include hydrocarbons, from the proposed powerhouse to the Opuha River downstream of the proposed dam, at a maximum rate of 30 litres per second.

**CRC950575 Water Permit Granted 9 October 1995**

To use water for the purpose of generating hydro-electricity.

**CRC950576 Discharge Permit Granted 9 October 1995**

For the discharge of contaminants (sediments) and water from the construction site at the dam to the Opuha River via sedimentation ponds/infiltration basins during the construction of the dam.

**CRC950577 Discharge Permit Granted 9 October 1995**

To discharge water through the dam and over the spillway to the Opuha River and to the Opuha River via Gooseberry Stream.

**CRC950578 Discharge Permit Granted 9 October 1995**

To discharge water over the weir to the Opuha River.

**CRC950579 Water Permit Granted 9 October 1995**

To dam the Opuha River with a dam of dimensions described in CRC950567. The dam will create a lake with surface area of up to 710 hectares.

**CRC950580 Water Permit Granted 9 October 1995**

To dam the Opuha River with a weir described in CRC950568.

**CRC961627 Land Use Consent Granted 13 March 1996**

To disturb the bed of the South Opuha River and to erect a structure in the bed of the South Opuha River at or about map reference I37: 299-905 for water level recording purposes.

**CRC961628 Land Use Consent Granted 13 March 1996**

To disturb the bed of the North Opuha River and to erect a structure in the bed of the North Opuha River at or about map reference J37: 399-957 for water level recording purposes.

Canterbury Regional Council issued Certificates of Compliance in respect of:

- Diverting the flow of the North and South Opuha Rivers around the construction area for the Opuha Dam Scheme during the construction of the dam and to discharge the flows into the Opuha River downstream of the construction area.
- Diverting the flow of the Opuha River around the construction area of the proposed weir for the Opuha Dam Scheme some 1.4km below the Opuha Dam and to discharge the flow back to the Opuha River immediately below the weir.





## Appendix 2

# Building Consents Issued by Mackenzie District Council

Mackenzie District Council issued the **first consent** for the downstream weir (earth-works only) on **9 November 1995**. The consent was subject to:

- Designers and peer reviewers continuing to maintain professional indemnity insurance for six years following completion of the total project.
- A full copy of the Quality Management Plan being supplied when developed.
- Two other conditions that related to land title issues.

Producer statements were received from the designer (Tonkin & Taylor Limited) and the peer reviewer (Auckland University) prior to the consent being issued. Both gave assurance that if the dam was built in accordance with the drawings, specifications and other documents submitted with the application then the building work would meet the provisions of the Building Act and Building Code.

The Council issued the **second consent** for the downstream weir (structure only) on **13 December 1995**. The consent was subject to two conditions relating to land title issues.

Producer statements were received from the designer (Tonkin & Taylor) and the peer reviewer (Works Consultancy Services Limited) prior to the consent being issued.

The Council issued the **third consent** for the dam, culvert and plunge pool area on **30 January 1996**. No conditions were attached to the consent.

Producer statements were received from the designer (Tonkin & Taylor Limited), and the peer reviewers (Works Consultancy Services Limited and Auckland Uniservices Limited) prior to the consent being issued.

The Council issued the **fourth consent** for the power station structure in **May 1996**. The consent was subject to:

- Designers and peer reviewers continuing to maintain professional indemnity insurance for six years following the completion of the total project.
- Copies of the Quality Management Plan being provided as they are completed.
- Producer statements for the construction being supplied on completion of the project.

Producer statements were received from the designer (Tonkin & Taylor Limited) and the peer reviewers (Auckland Uniservices Limited and Works Consultancy Services Limited) prior to the consent being issued.

The Council issued the **fifth consent** for the spillway and tower structures on **4 June 1996**. The consent was subject to:

- The provision of quality assurance reports at quarterly intervals as agreed with [the engineer employed by Mackenzie District Council].
- The designers and peer reviewers continuing to maintain professional indemnity for six years following completion of the total project.
- Producer statements for the construction at the completion of the project.

Producer statements were received from the designer (Tonkin & Taylor Limited) and the peer reviewers (Auckland Uniservices Limited and Works Consultancy Services Limited) prior to the consents being issued.

Once the dam had been completed, producer statements were received for the construction peer review from the Contractor (Doug Hood Limited), the designer (Tonkin & Taylor Limited) and the peer reviewers (Opus International Consultants Limited and Auckland Uniservices Limited). Effectively, the producer statements said that the building works had been completed in accordance with the design.

