

**BEFORE CANTERBURY REGIONAL COUNCIL**

**And**

**SELWYN DISTRICT COUNCIL**

IN THE MATTER of the Resource Management  
Act 1991.

AND

IN THE MATTER applications CRC164541 for  
a water permit to dam water  
and land use consent to store  
water, and RC155704 for a  
land use consent to construct  
and maintain a water storage  
pond near Sheffield.

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**DECISION OF COMMISSIONERS APPOINTED BY  
CANTERBURY REGIONAL COUNCIL AND  
SELWYN DISTRICT COUNCIL**

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**27 July 2016**

**Commissioners:**

John Lumsden, Christchurch

Ken Lawn, Christchurch

Raewyn Solomon, Christchurch

## **DECISION SUMMARY**

- 1     Having carefully considered the relevant reports and documentation supplied with the application, submissions, the Section 42A Report, and the evidence presented to us during the course of the hearing, we have determined that the proposal by Central Plains Water Limited to dam up to 2.08 million cubic metres of water on land parcel RS 19009, located at the corner of Coxs Road and State Highway 73 near Sheffield, should be allowed to proceed, as proposed, subject to the imposition of conditions.
- 2     In terms of Section 113(1)(a) of the Resource Management Act 1991, we are required to give reasons for our decision. Throughout Chapter 6 of this decision we have considered the environmental effects that were brought to our attention and have drawn our own conclusions as to how each of these issues impacts on our decision. Having done so, we have undertaken an overall evaluation of the adverse impacts of the proposal in light of the expected benefits.
- 3     In Chapter 8 of our decision we have examined the proposal with reference to Part 2 and Section 104, of the Resource Management Act 1991, and have had regard to a number of matters brought to our attention including the relevant policies and objectives in the Canterbury Regional Policy Statement, the Land and Water Regional Plan, and the Selwyn District Plan.
- 4     We have concluded that the proposal is consistent with the sustainable management of natural and physical resources and, thus, the purpose of the Resource Management Act 1991, as expressed in Part 2.
- 5     In exercising the powers delegated to us by Canterbury Regional Council we have resolved to grant resource consent application CRC164541 for the term of 35 years as sought by Central Plains Water Limited, pursuant to s.104 of the Resource Management Act 1991.
- 6     In exercising the powers delegated to us by Selwyn District Council, we have also resolved to grant land use consent RC155704 as sought by Central Plains Water Limited, and as set out in the application documents, pursuant to s.104 of the Resource Management Act 1991.
- 7     In accordance with Section 108 of the Resource Management Act 1991, conditions are attached to these consents. We are satisfied that the conditions that have been included

will mean that there will be no adverse effects of any significance arising out of the proposal.

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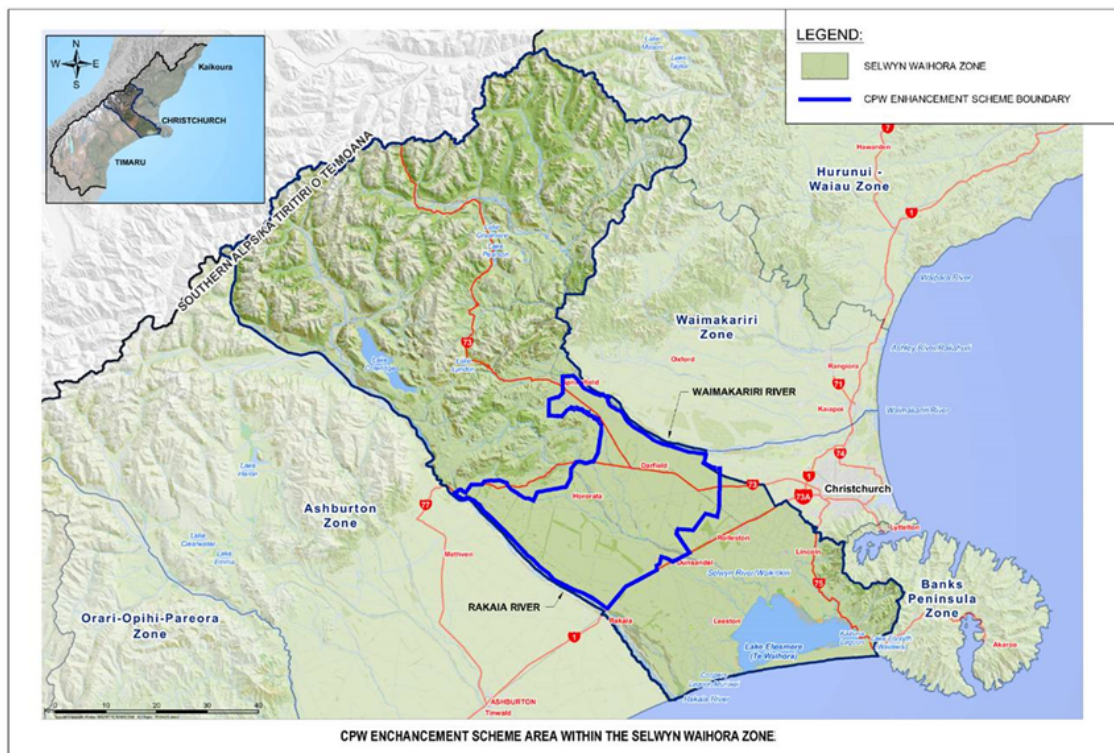
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# 1 INTRODUCTION

## 1.1 Background

[1] Central Water Plains Water Trust was formally constituted in March 2003 by Christchurch City and Selwyn District Councils to facilitate sustainable development of Central Canterbury's water resource. The Trust led the applications for resource consents for the Central Plains Water Enhancement scheme (**CPW Scheme**). Central Plains Water Limited (**CPW**) is a shareholder-owned company that is responsible for the construction and operation of the CPW scheme and is the applicant for the current consents.

[2] The CPW Scheme is located within the Selwyn Waihora Zone as shown in Figure 1.



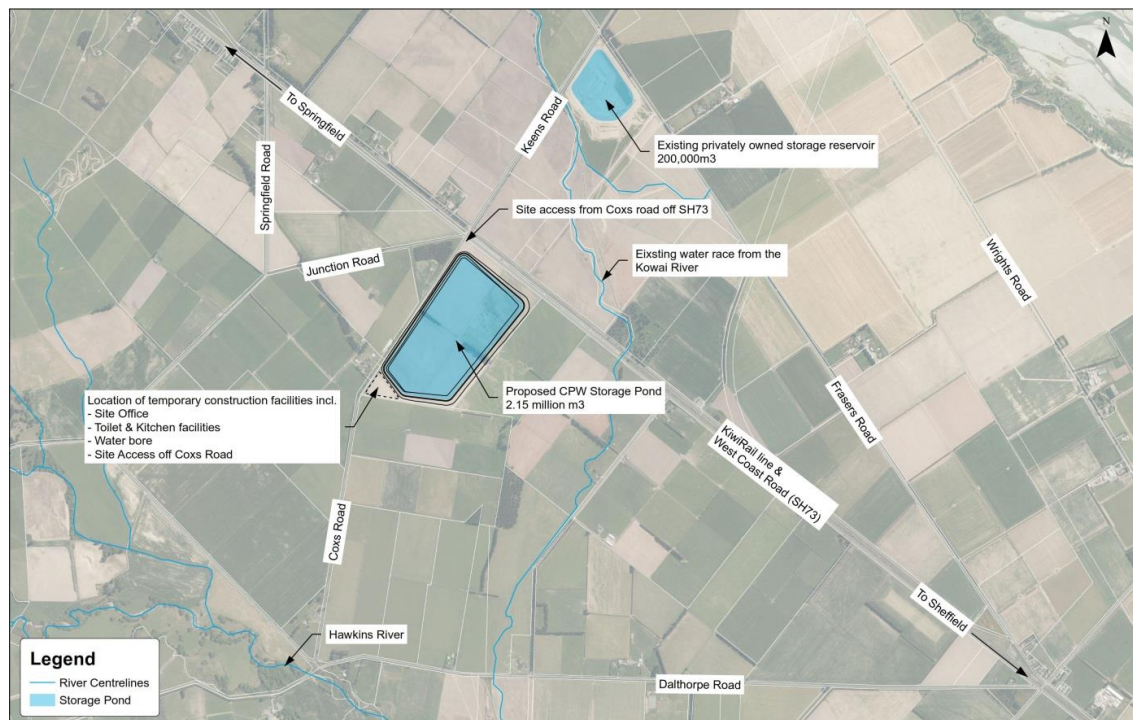
**Figure 1: Selwyn Waihora Zone and CPW scheme boundaries**

[3] CPW has applied for resource consent to dam up to 2.08 million cubic metres of water ( $\text{M m}^3$ ) on land parcel RS 19009, located on the corner of Coss Road and State Highway 73 (SH73), near Sheffield. Water stored within the dam will largely be sourced preferentially from the Kōwai River supplemented with water from the Waimakariri River. The proposal is also referred to as the **Sheffield Scheme**. Site location and key features are shown below on Figure 2 below.

[4] The applications were lodged on 9<sup>th</sup> December 2015 and were jointly publicly notified by on Saturday 2<sup>nd</sup> April 2016 in 'The Press', Tuesday 5<sup>th</sup> April 2016 in the 'Selwyn Times' and Wednesday 6<sup>th</sup> April 2016 in the 'Central Canterbury News'.

[5] A total of 42 submissions were received of which 34 were in support of the proposal, 4 were opposed and another 4 were neutral. A list of submitters is appended to this decision.

[6] This application, the hearing and our decision are subject to the terms of the Resource Management Act 1991 (RMA), as amended in October 2013.



**Figure 2: Site plan and key features**

## 1.2 Hearing Procedure

[7] Independent commissioners, jointly appointed to hear and determine the resource consent application, were:

- **Mr John Lumsden**, Christchurch (Chair);
- **Mr Ken Lawn**, Christchurch; and
- **Ms Raewyn Solomon**, Christchurch.

[8] The hearing was held, initially in the Ball Room at Wigram Base, Christchurch. It commenced on Monday, 27<sup>th</sup> June 2016 and was adjourned on Tuesday 28<sup>th</sup> June 2016. The hearing was re-convened in the afternoon of Tuesday 5<sup>th</sup> July 2016 at Canterbury Regional

Council's (CRC) offices in Christchurch, and was adjourned later in the afternoon on that day. On Thursday 7<sup>th</sup> of July 2016, we issued our Minute No 3 formally closing the hearing.

[9] A site visit was undertaken on Tuesday 28<sup>th</sup> June 2016. We were accompanied by Mr Mark Tipper, who is the Environmental Planning and Consents Manager for CPW, but who was otherwise not involved in the hearing. Parties to the hearing were informed and did not raise any objection to Mr Tipper accompanying us. We also met at the site a submitter, Mr Hawkins, on whose land the proposed pond would be located. Mr Hawkins drove us over the pond site on his property. The merits or otherwise of the proposal were not discussed during the site visit.

[10] At the commencement of the hearing the Chair asked if there were any jurisdictional or procedural matters that the applicant or submitters wished to raise. No such matters were raised and the hearing proceeded.

### **1.3 Appearances**

[11] Legal submissions on behalf of CPW were presented by **Ms Alanya Limmer**, Tavendale and partners, Christchurch. Ms Limmer was assisted by Ms Johanna King.

[12] Ms Limmer called the following witnesses who presented evidence on behalf of CPW:

- Ms Susan Goodfellow** – CPW Scheme and consultation
- Mr Daniel Murtagh** - Sheffield Scheme and relationship with the CPW Scheme
- Ms Katharine Watson** – Archaeology
- Mr Murray Gillon** – Pond design and dam safety
- Mr William Veale** – Dam break and flooding analysis.
- Mr Ian McIndoe** – Reliability of irrigation, efficiency of water use and hydrological effects.
- Mr Andrew Macfarlane** – Economic effects.
- Mr Daniel Murray** – Planning considerations and conditions of consent

[13] We also note here that evidence, on behalf of CPW, was provided by Mr Kim Goodfellow (on Landscape and Visual effects) and Mr Edward Percy (on land values) but these witnesses were granted leave by us to not appear as their evidence had not raised any issues with submitters.

### ***Submitters in Support***

[14] **Mr Andrew Gillanders** – Farmer on land next to Hawkins River

[15] **Mr Brian Hawkins** – Farmer and owner of proposed pond site.



### ***Submitters in Opposition***

[16] **Mr Andrew Eccleshall** – Te Ngāi Tūāhuriri Rūnanga and Te Taumutu Rūnanga and Te Rūnanga o Ngāi Tahu (TroNT)

[17] **Mr Joseph Hullen** - Te Ngāi Tūāhuriri Rūnanga and Te Rūnanga o Taumutu and Te Rūnanga o Ngāi Tahu.

### ***Council Reporting Officers***

[18] **Ms Andrea Richardson** – Consents Planner, Canterbury Regional Council.

[19] **Mr Nick Boyes** – Consultant Planner, Planz Consultants Ltd., on behalf of Selwyn District Council.

## **1.4 Acknowledgements**

[20] We gratefully acknowledge the contributions and help received from counsel, witnesses, submitters and council staff. In particular, we thank all parties for the manner in which they conducted themselves during the hearing.

## **2 THE APPLICATION**

### **2.1 Description of the proposed activity**

[21] CPW proposes to construct, use and maintain a large-scale water storage dam capable of impounding up to 2.015 million cubic metres (**Mm<sup>3</sup>**) of water on the corner of Coxs Road and SH73. The proposal is a sub-component of the CPW Scheme and will service an area of land, between the Hawkins and Waimakariri Rivers of approximately 3,500 ha, centred on Sheffield. Water used to fill the dam will largely be delivered by pre-existing water races owned and operated by Selwyn District Council (**SDC**). The applicant will supply the water within these races but the infrastructure owned by SDC will be used and is already consented. The water will be sourced from the Kōwai and Waimakariri Rivers.

[22] The proposed dam is part of Stage 2+ of the CPW Scheme and, as noted, will service approximately 3,500 hectares of land. The primary purpose of the dam is to increase the reliability of water supply to customers from 83% to 96%. The presence of the dam will also significantly reduce distribution costs as water delivery will rely on gravity as opposed to pumping from the headrace located down-plains. See Figure 2 above for details on the dam location.

[23] The main features of the dam include:

- a footprint of approximately 34 ha;
- a ring embankment ranging in height from 3.2 to 11 m;
- an 8 metre setback to be maintained between the property perimeter and dam embankments, except for the northern side of the property bordering with SH73, where a 50 m setback will be maintained;
- a maximum quantity of water to be stored of 2.08 Mm<sup>3</sup>;
- a 1.5 mm HDPE geomembrane liner system ;
- an emergency spillway on the southern embankment that will also be fitted with an HDPE geomembrane liner; and
- automated inlet and outlet structures that will be installed to monitor water depth/height within the dam.

## 2.2 Consents sought

[24] Resource consents are required from Selwyn District Council (**SDC**) and Canterbury Regional Council (**CRC**). The SDC land use consent has a discretionary activity status under Rule 1.7.6 due to the earthworks exceeding a volume of 5,000m<sup>3</sup>, the earthworks will not be rehabilitated and replanted to the same state as the existing land, and through the need to store diesel to support plant and machinery during the construction period. A small area of the land is potentially contaminated from a former offal pit, and therefore consent is also sought from SDC under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. The overall activity status for the CRC consents is also discretionary.

[25] It is noted that a number of activities associated with the Sheffield Scheme are presently authorised by existing resource consents. These include the water supply to the pond (sourced from the Kōwai and Waimakariri Rivers), construction of a pipeline and pump station network to deliver and distribute water to and from the pond, and application of water to land and discharges from any associated land intensification.

[26] We note that the applicant has lodged two other resource consent applications with CRC. These are

- CRC164542 – to discharge stormwater to land and discharge fugitive dust to air during the construction phase of the dam and associated structures

- CRC164543 – to discharge stormwater to land and discharge fugitive dust to air during the developed phase of the dam.

At the request of the applicant these applications have been placed on hold pending the outcome of this application. CRC has accepted that these applications do not need to be concurrently processed with the applications before us, and that the adverse effects of these two applications are likely to be less than minor, and, therefore, will not require notification.

[27] It is also noted that further consents will be necessary for the physical works to convey water from the Waimakariri River to the proposed water storage pond, although the allocation of water from the Waimakariri River is already consented.

[28] An application will also be required for a building consent, which in the case of a large dam would be processed and issued by CRC.

### **3 EXISTING ENVIRONMENT**

#### **3.1 Physical environment**

[29] The site of the proposed CPW pond is on private property located at the corner of Coxs Road and State Highway 73, Sheffield. The site is legally described as RS19009 and is approximately 40 ha in area. An adjacent site, RS 20983, will be used to temporarily stockpile soil during the construction period. Both sites are owned by Thorndale Farm Springfield Limited. Agreement has been reached and the written approval of the landowner is being obtained.

[30] The site is typical of much of the rural landscape on the mid-Canterbury Plains, with the landscape including shelterbelts, hedges, amenity trees, open paddocks, residential and agricultural buildings, and roads. As the site has been modified by the removal of the original native vegetation, then further modified by the development of built structures and associated infrastructure, the receiving environment retains only a moderate level of natural character.

[31] The site is generally flat but rises to the southwestern end, and has gentle undulations from the northwest to the southwest corner. The rural character of the site is moderate to high as it includes the SH73 road corridor with views of a rural landscape and mountains screened through intermittent trees or shelterbelts. Amenity value of the site and surrounds is described as moderate to high due to the abundant green, open space rural land uses, and the close visual proximity to the Southern Alps.

[32] The region in which the proposed pond site is located is considered a seismically active area. There have been a large number of faults identified in the area as well as significant historic earthquakes. Figure 6.5 in the Preliminary Design Report (Appendix A) showed the location of mapped faults near the proposed CPW pond site from the latest version of the National Seismic Hazard Model (NSHM) obtained from the GNS Science website.

## 4 SUMMARY OF EVIDENCE AND SUBMISSIONS

### 4.1 Applicant's opening submissions

[33] **Ms Alanya Limmer**, counsel for CPW, introduced the proposal. She said it was significant that CPW is not applying to take more water. The intent of her submissions was to focus on those matters that remain in dispute based on the S.42A Report and the evidence filed by Te Ngāi Tūāhuriri Rūnanga, Te Taumutu Rūnanga and Te Rūnanga o Ngāi Tahu, otherwise known as the Ngāi Tahu submitters.

[34] She also said it was understood that both Orion and New Zealand Transport Agency (NZTA) were now satisfied that the proposed conditions met their concerns.

[35] We are aware that, on storage pond projects such as this, and particularly those that are located in a seismically active area, the prospect and risks attached to a rupture of the dam, and subsequent inundation of surrounding land, can be matters of significant concern to those potentially at risk from flooding. Ms Limmer noted that, in this case, no submitters had provided evidence with respect to dam safety. Nevertheless, we propose to examine the evidence provided to us by CPW in order to satisfy ourselves that, in the event that consent is granted, the risks of dam failure are acceptably low.

[36] Ms Limmer also noted that CPW's evidence concerning visual effects, landscape, hydrology, reliability of irrigation supply, economic and social effects, was not disputed in any expert evidence to the contrary.

[37] Ms Limmer summarised the matters in contention and referred to Mr Eccleshall's summary of issues according to the Ngāi Tahu submitters. These were:

- a lack of assessment of the effects of storing water on water resources as opposed to taking water directly for irrigation;
- the absence of a Cultural Impact Assessment (CIA); and
- the proposed duration of consent.

[38] She also noted that the S.42A Report had suggested that the insurance conditions of consent needed to be scrutinised, that certain benefits of the proposal, such as hydrological benefits, could not be taken into account, and also that a CIA had not been done.

[39] With respect to the effects of storage on water Ms Limmer submitted that there are several sub-issues attached to this topic. One of these is whether or not any other consents are required. We note that this is a matter that would normally be canvassed by the council during the notification stage<sup>1</sup>. In the event, we note that no other consents were identified by Mr Eccleshall or anyone else. Ms Limmer submitted that no other consents were required as CPW already holds consent to abstract a certain volume of water from the Kōwai and Waimakariri Rivers for the purpose of providing for irrigation.

[40] Also relevant to the effects of storage of water is the need for an annual volume limit as per Policy 4.53<sup>2</sup>. She said the abstraction consents do not restrict their permission to direct irrigation only - either expressly or impliedly, and that whereas the Waimakariri River Regional Plan (**WRRP**) governs abstraction from the relevant waterbodies, it does not establish a separate consenting requirement for takes that utilise storage, and nor does it have different minimum flow requirements for takes that go to storage. Accordingly, she maintained that the storage of water was not a “use” under s.14 of the RMA and that the nature of the proposal is storage and the effects of doing so are before us. She supported Mr Murray’s view that Policy 4.53 is not a relevant matter for our consideration.

[41] Ms Limmer went on to discuss the absence of a Cultural Impact Assessment (**CIA**). We shall return to this matter later in more detail when we come to consider the effects of the proposal on cultural values in Chapter 6.

[42] Ms Limmer referred to Ngāi Tahu’s opposition to the proposed 35 year consent duration. She told us evidence would be provided by Mr Murtagh explaining the costs involved in establishing the storage pond and associated infrastructure and the expected life of the infrastructure, and there is no evidence as to why a shorter term is necessary.

## **4.2 Summary of evidence presented on behalf of the applicant**

[43] As we have already noted above [12], Ms Limmer provided expert evidence from 10 witnesses on behalf of CPW. The following is a brief outline, generally in the order in which they appeared, of their qualifications and evidence. We do not attempt to cover here everything

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<sup>1</sup> Resource Management Act 1991 s.91

<sup>2</sup> Canterbury Land and Water Regional Plan

that was said as, where relevant, their evidence is discussed in more detail when we consider the principal issues and effects in Chapter 6.

[44] **Ms Susan Goodfellow** is the General Manager Environmental at CPW. Ms Goodfellow has a Landscape Architecture Degree and a Masters of Landscape Architecture with a resource management focus and has over 20 years professional experience. In her evidence she provided an overview of the CPW scheme and explained the relationship between the CPW Scheme and the Sheffield Pond, which is the subject of this application. She also described the consultation undertaken by CPW including with relevant Rūnanga, and provided details of the insurance cover that would be held by CPW. Ms Goodfellow also told us the proposed Sheffield Scheme equates to approximately 14% of the new irrigation that will be enabled by the overall CPW Scheme.

[45] **Mr Daniel Murtagh** is employed as a Design Engineer & Project Manager for CPW. He holds a Bachelor of Engineering Degree (Hons) (Mech) from the University of Waikato and has been responsible for leading the development of the Sheffield Scheme, including the proposed storage pond. In his evidence he explained the history of the Sheffield Scheme and provided an overview of the proposal including the preference for a single storage pond rather than the alternative of individual on-farm storage facilities, its construction and the means by which water would be distributed. He explained why it was not possible to extract water from Lake Coleridge via the Rakaia River and thus an in-scheme pond was required to increase water reliability to >94%. He told us that once the site is established, topsoil and underlying loess material would be stripped progressively from one end of the construction zone to the other. The direction and size of the stripped area will depend on the final earthworks quantities and the overall haul balance within the construction zone. After the topsoil and loess is stripped, the low lying gravels will be excavated and used to construct the engineered embankment. An intake on the Waimakariri River at about map reference NZMS 260 L35:271-639 will be constructed and water will be pumped from this intake up the terrace (approximately 85m vertically) onto the plains. From this point, the water will be transported via an open channel race parallel with Keens Rd in the direction of the storage pond. Water from the Kōwai River will be taken via the two existing intakes (Upper and Lower) owned and operated by SDC. CPW are proposing to upgrade these intakes to allow the gates to be automatically adjusted according to scheme demand and river conditions in order to ensure compliance with the consent conditions.

[46] **Ms Katharine Watson** is the director and senior archaeologist at Underground Overground Archaeology Ltd. She said she holds a Master of Arts (with Distinction) in Anthropology (from the University of Otago) and has some 16 years experience working as an

archaeologist in Canterbury and on the West Coast. In her evidence she described the archaeological assessment undertaken for the Proposal, the potential adverse effects on known and unknown archaeological sites, and details of the archaeological authority granted for the Proposal. She also addressed the concerns raised by the Ngāi Tahu submitters. We shall have more to say about Ms Watson's evidence when we discuss the effects of the proposal on cultural values in our examination of the issues and effects in Chapter 6.

[47] **Mr Murray Gillon** is a civil engineer and a dam engineering specialist with Damwatch Engineering Ltd (**Damwatch**). He holds Bachelor and Master of Civil Engineering degrees from the University of Canterbury and has some 45 years experience in the fields of geotechnical and dam engineering. In his evidence, Mr Gillon described the final preliminary design of the Sheffield storage pond (**pond**), including details of its size, location and key safety features. He also discussed the requirements of the New Zealand Dam Safety Guidelines (**NZSOLD Guidelines**) and explained how they would assure safe construction, commissioning and operation of the proposed pond. He also described the pond design with respect to seismic and flooding events, and the probability of pond failure with respect to potential failure modes. He also addressed submitter concerns and responded to Mr Titus Smith's comments for the S.42A Report. We shall refer to the matters raised by Mr Gillon concerning dam design and safety later in Chapter 6.

[48] **Mr William Veale**, who is a Senior Civil Engineer at Damwatch, provided evidence in relation to the construction, use and maintenance of the proposed pond. He holds Bachelor and Master of Civil Engineering degrees from the University of Canterbury and is a Chartered Professional Engineer. He also told us he has 10 years experience in civil and hydraulic engineering related to dams, rivers and irrigation schemes as well as specialist expertise in flood risk assessment and dam break analysis. In his evidence he addressed the dam break flooding hazard and assessed the consequences and possible mitigation. He also commented on matters raised in the S.42A Report. We shall canvass what Mr Veale had to say on these matters later when we come to consider the effects of dam break and flooding hazards in Chapter 6.

[49] **Mr Ian McIndoe** is a Soil and Water Engineer, currently employed as Managing Director of Aqualinc Research Ltd. He holds the qualifications of BE (Hons) from Canterbury University and Dip Bus Stud (Finance) from Massey University. Mr McIndoe told us he had 39 years experience in water resources, hydrology and irrigation-related work, and has specialised in water allocation for irrigation and the effect of water restrictions on irrigation reliability and performance. In his evidence, Mr McIndoe explained why a pond of the capacity proposed is needed in order to provide a reliability of supply of at least 94% across an area of 3750

hectares. He also discussed whether irrigation development would be likely without storage of water; and the merits of a single pond, as proposed, versus on-farm storage ponds, and also the hydrology of the Waimakariri and Kōwai Rivers, and the effects of the proposal on those rivers. We shall consider further what Mr McIndoe had to say on these matters when we canvass the effects of the proposal on water quality in Chapter 6 of this decision.

[50] **Mr Andrew Macfarlane** farms on his own account and also works as a farm management consultant with some 35 years experience. He provided evidence in relation to the construction, use and maintenance of a storage pond at Sheffield and assessed the economic benefits of the Proposal as well as the other benefits that arise as a consequence. Mr Macfarlane provided helpful evidence from an economic perspective concerning the merits of the proposal and its importance to farming in the Sheffield area. These are matters that we consider further when we come to discuss the economic effects of the proposal in Chapter 6.

[51] **Mr Daniel Murray** is an Associate Director – Planning with AECOM New Zealand and has 18 years experience in the planning and resource management sector. Mr Murray has a Bachelor of Resource Studies with First Class Honours, majoring in Natural Resources Engineering, from Lincoln University and also holds a Certificate of Proficiency in Advanced Planning Theory and Practice, from the University of Auckland. Mr Murray provided helpful planning evidence that included a brief summary of the applications made; the applicable regional and district planning rules and confirmation of the activity status; a description of the existing environment of the proposal with a view to establishing the nature and extent of environmental effects under consideration; and confirmation of the written approvals received and, therefore, on which properties effects can be disregarded. He also identified the relevant objectives and policies under various RMA planning instruments and other relevant documents and provided an assessment of the proposal against the relevant objectives and policies. We provide our interpretation of the statutory requirements in Chapter 8 of this decision and will return to what Mr Murray had to say at the appropriate time.

[52] **Mr Tim McMorran**, who was called by Ms Limmer to give evidence during her Right of Reply on behalf of CPW, is Principal Engineering Geologist and Associate at Golder Associates (**Golder**). Mr McMorran's qualifications include a BSc (geology and chemistry) and MSc (Hons) in engineering geology from University of Canterbury. His MSc thesis assessed tectonic geomorphology, paleoseismicity and seismic hazard associated with the Hope Fault in North Canterbury. In his evidence he described the scope of the work that had been undertaken for Damwatch, and responded to a number of questions that we had raised, together with comments from Mr Smith in the S.42A Report.



### 4.3 Submissions and evidence from submitters

[53] As we have already noted, a total of 42 submissions were received of which 34 were in support of the proposal, 4 were opposed and another 4 were neutral.

At the hearing, we heard submissions and evidence from **Mr Andrew Gillanders** and **Mr Brian Hawkins** in support, and from **Mr Andrew Eccleshall** on behalf of Te Ngāi Tūāhuriri Rūnanga and Te Taumutu Rūnanga and Te Rūnanga o Ngāi Tahu and **Mr Joseph Hullen** on behalf of Te Ngāi Tūāhuriri Rūnanga and Te Rūnanga o Taumutu and Te Rūnanga o Ngāi Tahu, both in opposition to the proposal.

[54] **Mr Gillanders** farms alongside the Hawkins River. He indicated that floods in the Hawkins River were not uncommon. He told us that the build-up of gravel under the Bangor Road bridge exacerbates the flooding problem and sought that the excess gravel be removed.

[55] As we have noted, **Mr Hawkins** owns the land on which the proposed pond would be located. He spoke about the difficulties of dryland farming in the district and how irrigation would open up new opportunities, and that replacing the present open water races with a piped system would allow for a much more efficient use of the water assuring best management practices can be used on the farm. In his submission he acknowledged that he is a shareholder in CPW.

[56] **Mr Eccleshall** has a Bachelor of Arts degree in Urban Studies from Victoria University, Melbourne. He has been working in resource management in New Zealand since 1999. Since 2016, he has worked as a planner/environmental advisor for Mahaanui Kurataio Ltd (**MKL**), which is a management advisory company established by six rūnanga in the Canterbury region. This includes Te Ngāi Tūāhuriri Rūnanga and Te Taumutu Rūnanga being the rūnanga who represent those who hold mana whenua within the takiwā that this proposal is located. Te Ngāi Tūāhuriri Rūnanga and Te Taumutu Rūnanga, and Te Rūnanga o Ngāi Tahu have jointly made submissions in opposition to the applications. Mr Eccleshall provided evidence on behalf of both submissions and on behalf of all three parties. He noted that Mr Joseph Hullen had also filed a brief of evidence on behalf of the three parties. He used the term Ngāi Tahu to refer to the parties and their submissions. Mr Eccleshall's evidence focussed on the resource consents required and the merits of assessing them together; and the requirement for a CIA or other measures to enable an appropriate assessment of the effects of the proposal on Ngāi Tahu values. We shall refer to Mr Eccleshall's evidence in more detail when we come to assess the effects of the proposal on cultural values in Chapter 6.

[57] **Mr Hullen** has worked as a cultural monitor. He said he is routinely engaged by Te Ngāi Tūāhuriri Rūnanga and MKL as a consultant to compile Cultural Values Statements and CIA reports. His evidence referred to the need for a CIA and expressed similar sentiments to Mr Eccleshall. We shall refer to his evidence again later in Chapter 6.

#### **4.4 Canterbury Regional Council and Selwyn District Council Joint Section 42A Report**

[58] The Officers S.42A Report was prepared as a joint report covering both the consents before CRC and SDC. We found that combined approach very helpful. The joint report was prepared by Ms Natalie van Looy for CRC, and Mr Nick Boyes (a consultant) for SDC. Ms van Looy left the employment of CRC prior to the hearing, and her report was adopted and presented by Ms Andrea Richardson.

[59] The Section 42A report had been pre-circulated and at the hearing the officers spoke to the reports and the matters raised by other parties. In the pre-circulated report the officers described the applications, and their background and history. They set out an assessment of the relevant legal and planning documents (National Policy Statements, National Environmental Standards and Regulations, Canterbury Regional Policy Statement, and Regional and District Plans). They provided a detailed assessment of the actual and potential effects of the application, and of the objectives and policies of the relevant Plans, and of Part 2 of the RMA. They recommended that the applications be granted subject to a list of recommended conditions.

[60] At the hearing, and following the evidence presented by other parties, Ms Richardson spoke to a number of matters that were raised during the hearing. She reiterated that an annual water volume was not necessary. An annual volume is not required by the Waimakariri Regional Plan, and it would not serve any purpose for water efficiency, which have already been considered in the existing water take consents. She considered that some minor changes to the height, volume and freeboard of the dam were within the parameters of the consents applied for. She considered that the accidental discovery condition in the Proposed SDC conditions would be sufficient rather than requiring a cultural impact assessment (this was prior to the offer made by the applicant to include conditions requiring cultural as well as archeological monitoring). Mr Smith presented a short review of earthquake evaluations presented at the hearing on behalf of the applicant.

[61] Mr Boyes (for SDC) also spoke to a number of matters raised in the hearing. He agreed that the proposed minor changes to the height, volume and freeboard of the dam were within the parameters of the consents applied for. After having heard the evidence from Ngai Tahu, he

agreed that some form of cultural monitoring as well as archeological monitoring may be appropriate. He commented on an issue raised by submitters about the build up of gravel under the Bangor bridge over the Hawkins River, and advised that he would pass the concerns on to the relevant authorities.

[62] We note that one of the matters included to the SDC land use consent is the storage of diesel to support plant and machinery during the construction period. At Para 260, the S.42A Report had this to say:

*Whilst acknowledging that this is a matter referred to in the District Plan, it is considered that other legislation, namely the Hazardous Substances and New Organisms Act 1996, and associated regulations, adequately deals with the safe storage and handling of diesel. It is apparent that many second generation District Plans are no longer including provisions relating to hazardous substances on that basis. As the mitigation of risks associated with storing and handling diesel (and any other similar products) on the application site are dealt with under this legislation, in my view there is no need to consider this further.*

[63] We accept the Officer's view on this matter and, since no conditions have been suggested or offered concerning this activity, we accept that none are needed and do not propose to impose any in the event that we are minded to grant consent.

#### **4.5 Applicant's closing submissions**

[64] The applicant's counsel, Ms Limmer, presented closing submissions at the reconvened hearing on 5<sup>th</sup> July 2016, on behalf of CPW. She reminded us that, although the application had attracted very little opposition, the evidence presented had addressed a wide range of effects to assist us.

[65] In closing Ms Limmer referred to

- i) the potential to disturb archaeology of cultural significance;
- ii) effects on water quantity in the Kōwai and Waimakariri Rivers;
- iii) annual volume limits and efficient use;
- iv) the viability of the proposed Pond site and design from a seismic perspective;
- v) the appropriate term of consent; and
- vi) the removal of gravel beneath the bridge at Bangor Road.

[66] In order to respond to matters raised by Mr Smith in the s.42A Report and some of our questions, Ms Limmer re-called Mr Gillon to answer further questions on dam design and safety, and also Mr Tim McMorran from Golder Associates to answer questions relating to the seismic hazard assessment.

[67] Generally we shall address what Ms Limmer and the recalled witnesses had to say on these matters when we canvass the issues and effects of the proposal in Chapter 6.

[68] Ms Limmer submitted that Ngāi Tahu had not presented any evidence as to why a 10 year consent term is necessary or appropriate under the circumstances.

[69] In discussing the removal of the gravel build-up under the Bangor Road bridge over the Hawkins River, Ms Limmer noted that CRC has the necessary regulatory and policy mandate to maintain the flood-carrying capacity of the Hawkins River. A condition was also offered to include a Cultural Monitoring Programme that would provide for a Cultural Monitor to be on site during the pond excavation stage.

## **6 PRINCIPAL ISSUES AND EFFECTS**

### **6.1 Introduction**

[70] This section considers the principal issues and effects relevant to this proposal. Because of the effects-based nature of the RMA, we shall review the effects of the proposal on a range of relevant matters, largely as identified in the Fourth Schedule of the RMA. This approach is consistent with s.104 of the RMA.

[71] In carrying out our assessment, we have reviewed the evidence and submissions concerning each of the principal issues, and the effects on the environment that were brought to our attention. While we have not repeated everything we heard, we have endeavoured to record here the more important aspects of the material presented to us on behalf of CPW and submitters, and also from the reporting officers. At the conclusion of our discussion of each issue we provide our findings with respect to that issue. This, in due course, provides the basis for our decision and, in terms of our duties under the RMA, this section is also consistent with s.113.

### **6.2 Dam Failure Risk and consequent inundation**

[72] The proposal is sited in an area with known potential natural hazard risks associated with earthquake activity and flooding. This section examines the extent to which these risks may or may not be exacerbated by the proposal. Confidence in the ability of the embankments to withstand shaking in a severe earthquake is a fundamental part of ensuring that those who may be affected by flooding in the event of a dam failure are able to accept that the risk of such an event is acceptably low.

### *The applicant*

[73] Evidence on dam design and the risks associated with a dam failure, on behalf of CPW was presented by Mr Gillon. The consequences of the potential flooding and inundation that could result from a failure of the dam was covered in the evidence proved by Mr Veale. We shall cover here the essence of what they both had to say on these matters.

[74] We note that the integrity of the dam design and its robustness is more a matter for the building consent process rather than an issue to be considered at a resource consent hearing. Nevertheless, we believe that the consequences of dam failure can have such serious environmental impacts in terms of infrastructure damage and possible loss of life, that we need to be assured that the likelihood of such an event occurring during the life of the dam is acceptably small and, therefore, it is an important matter for us to consider.

[75] Mr Gillon noted that the preliminary pond design submitted to Ecan had been revised to achieve more optimal use of the land parcel. The design so refined continues to be considered a preliminary design. The changes were mainly concerned with raising the pond invert level by 0.4 m (from RL 349.2 to RL 349.6 m), and increasing the freeboard at the embankments from 1.3 to 1.4 m. The full supply level has been raised from 357.5 m to 357.6 m and the dam crest has been raised by 0.2 m from 358.8 m to 359.0 m. Also, it is proposed that the loess and topsoil excavated during the pond excavation, but which is not suitable for embankment construction, would be placed as a bund on the outer slopes of the northeastern and eastern embankments. There was no suggestion that these changes were not within the scope of the application.

[76] Mr Gillon explained that, although the proposed Sheffield Pond is referred to as a “pond” in his evidence, it is classified as a large dam under the Building Act 2004 as it has embankment heights greater than 4 m and stores more than 20,000 m<sup>3</sup> of water. The water in the pond is to be retained by a ring dam, shaped to fit the parcel of land purchased by CPW to accommodate the proposal. He said the ring dam is an embankment dam constructed from gravel won from the footprint of the pond and lined with a geomembrane. The perimeter embankment ranges in height from approximately 3.3 m to 11.5 m. The materials in the pond footprint have been determined from test pits excavated at the site. The method and findings of the geotechnical investigation are detailed in Damwatch 2015<sup>3</sup> He also noted that the gravel intended for construction of the embankments is free draining, making it easy to compact into a robust embankment; although the porous nature of the embankment means a geomembrane liner is required so as to retain the water stored in the pond. Water will be delivered to the pond

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<sup>3</sup> Damwatch, 2015. Sheffield Ponds Geotechnical Investigation Report

through a pipeline designed by CPW, which will pass over the dam embankment. Water will be drawn from the pond through a delivery pipe under the Eastern embankment.

[77] In his description of the key safety aspects of the proposed design, Mr Gillon said the overriding assurance of dam safety relies on the proper choice of and adherence to the guidelines, standards, methods and operational programmes that are used to ensure safety in the design, construction and operation phases of the Pond. The NZSOLD Guidelines provide primary guidance and have been adhered to in the preliminary design of the pond. The key physical safety aspects of the pond design are the features that are present to resist the natural and operational hazards of: earthquake ground motions; rainfall, flood and operational overfilling; and internal erosion and structural collapse resulting from excessive leakage. These features must be robust and maintained over the operational lifetime of the structure. They are:

- i) the compacted gravel embankments forming the ring dam;
- ii) the pond lining;
- iii) the emergency spillway; and
- iv) the delivery pipe under the Eastern dam embankment.

[78] Mr Gillon said two important findings of the geotechnical investigation were that the foundation gravels are sufficiently dense that liquefaction will not occur, and that groundwater is several metres below the pond foundation.

[79] According to Mr Gillon, in the absence of liquefaction in the foundation, the highly compacted embankment gravels will remain stable in the event of very severe earthquake ground motions. The combination of the low groundwater level and the free draining gravel in the embankments means that any leakage through potential tears or holes in the liner will flow downwards into the foundation gravels and not exit on the embankment slopes. This means that there is an extremely low likelihood of the pond failing as a result of leakage through the liner.

[80] Mr Gillon then moved on to explain to us the New Zealand Dam Safety Guidelines (**NZSOLD Guidelines**) published by the New Zealand Society on Large Dams, which is a technical group of the Institution of Professional Engineers New Zealand (**IPENZ**) and a member of the international dam engineering society, the International Commission on Large Dams (**ICOLD**). The NZSOLD Guidelines were revised and re-issued in 2015 and were reviewed by an international dam safety expert prior to publication. The NZSOLD Guidelines provide a set of minimum design, construction, commissioning and operational procedures that apply to each level of Potential Impact Classification (**PIC**).

[81] The NZSOLD Guidelines recognise that if a dam were to fail it would have the potential to impose a localised risk on society and deals with such risk by classifying dams as having a “Low”, “Medium” or “High” PIC. These categories are based on the consequences of dam failure looking at the potential impacts to life and the potential socio-economic, financial and environmental effects resulting from failure. The PIC purely reflects the consequences of dam failure and does not take the probability of occurrence into account. The NZSOLD Guidelines are widely accepted in New Zealand as defining standards of dam safety acceptable to society and regulatory authorities as evidenced by their widespread use in Resource Consent Conditions for dams since the passing of the Resource Management Act in 1991 and for assessing building consents for dams.

[82] Mr Gillon told us that the PIC for the proposed Sheffield pond is “High” based on the PIC assessment undertaken by Damwatch. The design standards and performance criteria recommended by the NZSOLD Guidelines for a High PIC dam have been adopted for the preliminary design and will also be adopted for the detailed design, which will follow. In particular, the guidelines for earthquake, flood and freeboard design have been followed and addressed by appropriately qualified and experienced persons with internal review by senior experienced Damwatch engineers.

[83] Mr Gillon went on to explain the design criteria for a high PIC dam. He said that, ultimately, although a dam may be damaged in a Maximum Credible earthquake (**MCE**), it must be able to safely contain the reservoir contents in its post-earthquake condition. He said that a site specific seismic hazard assessment had been carried out by Golder Associates (the **Golder Report**) who are a well-qualified specialist consulting firm with national and international capability. We shan’t repeat here everything in the Golder Report as it was included with the application documents<sup>4</sup>.

[84] Mr Gillon said that the preliminary design adopted the 1 in 10,000 Annual Exceedance Probability (**AEP**) ground motion, developed by a probabilistic approach, for determining the embankment cross section. The Golder Report assessed this ground motion as having a peak horizontal ground acceleration of 0.92g. To put this in perspective, we note that the 2011 Darfield earthquake (Magnitude 7.1) generated a maximum ground motion of 0.164g at Springfield, which is close to the Sheffield Pond site. He told us that the pond embankment slopes, crest width and liner have been determined based on the earthquake ground motion hazard together with constructability considerations for placement of the geomembrane liner.

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<sup>4</sup> Golder Associates: *Seismic Hazard Assessment: Sheffield Irrigation Impoundment – Option 5*; September 2015



[85] In discussing the liner design, Mr Gillon said the design of the pond is heavily influenced by on-site gravels, which will act as the foundation and embankment bulk fill material. Since the gravels are free draining the internal slopes of the embankment and the base of the pond will be lined with a geomembrane liner, which will limit water losses and act to protect the internal embankment slopes from erosion due to wave action. To achieve this an exposed 1.5 mm thick HDPE geomembrane liner has been adopted, based on an assessment of cost and physical properties of an HDPE geomembrane, which can be expected to last 30-50 years, depending on site conditions and installation, before requiring replacement. According to Mr Gillon, The Dam Safety Management System will have a requirement that the HDPE liner is physically tested at 5 year intervals to determine whether its properties are still such that it can meet the earthquake design requirements. At such time that it fails to meet these requirements, the liner will be replaced.

[86] In accordance with the NZSOLD Guidelines, a freeboard of 1.4 m has been adopted based on estimated wave run-up, combined with extreme flood or rainfall events.

[87] Mr Gillon went on to tell us, in his discussion of potential failure modes that, for failure to occur, leakage has to emerge on the outer slopes of the embankments in sufficient volume that it will cause slope failure. According to Mr Gillon, as the embankments are both founded on and constructed from permeable gravels, any leakage would be dominated by vertical flow down into the groundwater below the foundation rather than horizontal flow necessary for leakage to emerge on the outer slopes of the embankments. Together, with the limiting of leakage flow to the area of potential tears in the liner, this provides a large measure of the protection against potential failure by leakage.

[88] Mr Gillon assessed the annualised failure probability for the potential failure modes associated with the preliminary design of the proposed CPWL Sheffield Pond as being less than  $3 \times 10^{-7}$ .

[89] Given that Mr Gillon's assessment of the probability of failure is very small, we shall now canvass what Mr Veale had to say about the extent of flooding likely in the event of failure of the pond embankment.

[90] Mr Veale told us that information in the Damwatch report<sup>5</sup> had been used to identify the population and transportation networks at risk in the potential dam-break flood inundation area. He said that this information assists in the preparation of an Emergency Action Plan,

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<sup>5</sup> Damwatch 2015: *Sheffield Water Scheme Storage Pond: Dam Break Flood Hazard Assessment*; 11 September 2015



which we will come to later. He said this involves evaluation of the rate of release of the reservoir storage for hypothetical dam failure scenarios and estimating the resulting downstream flood hazard due to propagation of the dam-break flood wave. This is referred to as a dam-break assessment, which leads to an assessment of the consequences of dam failure.

[91] Mr Veale said that a review of the refined design incorporating the changes referred to by Mr Gillon showed that there is negligible difference in the effect of a dam-break between the design submitted with the application design and the refined design now proposed.

[92] The methodology used involves:

- evaluating the rate of release of the reservoir storage for hypothetical dam failure scenarios;
- estimating the resulting downstream flood hazard due to propagation of the dam-break flood wave; and
- using the results to assess the impact of hypothetical dam failure on downstream people, property, infrastructure and the environment.

[93] The approach used, in this case is consistent with the level of assessment set out in Module 2 of the NZSOLD Guidelines.

[94] The Damwatch 2015 Report provided flood inundation maps (In Annexure B) that showed the maximum flood depth and area that could potentially be flooded in the unlikely event of breach at any point on the pond embankments. Potential scenarios also covered include the possibility that the water way under the Deans and Bangor Road bridges across the Hawkins River are completely blocked by debris.

[95] The potential dam failure modes used to develop the flood maps provided in Annexure B of the Damwatch 2015 Report, relate to the situation where the Sheffield Pond is at maximum operating level and failure occurs due to internal erosion of the embankments, triggered by either extreme seismic ground shaking or geomembrane liner failure.

[96] Mr Veale said the total potential dam-break flood inundation area is approximately 24.6 km<sup>2</sup> or 2,460 hectares and potentially affects 259 individual land parcels. He told us that the area potentially affected by dam-break flood inundation is predominantly agricultural land under permanent crop or pasture on the Hawkins River and its floodplains, and that some 1,330 hectares of the land potentially affected belongs to CPW shareholders.

[97] A total of sixteen residential dwellings are identified in the dam-break flood inundation area. Three of these would, potentially, be inundated to a depth above natural ground level of between 0.5 to 1.0 m and are likely to receive moderate (reparable) to severe (irreparable) structural damage, and significant damage to building contents. The remaining houses are unlikely to receive structural damage although flood waters may affect building interiors and/or contents.

[98] Two commercial buildings are identified in the potential dam-break flood inundation area and these may sustain moderate (reparable) structural damage with potential for damage to farm equipment and loss of livestock. In addition to this, approximately 20 examples of farming related infrastructure were identified as likely to be at risk of inundation.

[99] We were told that the potential dam-break flood has the potential to impact the following infrastructure assets:

- State Highway 73 over a 1000 m length to a depth of approximately 2 m.
- The Annat electrical substation.
- A water storage pond just west of the McCurdys and Dalethorpe Roads intersection.

[100] Several road bridges were also identified although the impacts on these bridges is uncertain. Mr Veale also provided an estimate of the population at risk, which in effect relates to a potential number of fatalities. This varied from a maximum of 25 persons in the case of a daytime failure to 9 if the failure occurs at night-time. He noted that these figures contain significant uncertainty and actual loss of life can be conservatively estimated typically to be 5 percent of the total at risk.

[101] Mr Veale also compared the impacts of a potential dam break with the natural flooding expected during 1 in 25 years and 1 in 100 year floods in the Hawkins River. He said, as the dam-break flood wave travels downstream of the pond, the peak discharge attenuates as the flood wave volume is spread out and dispersed by the channel and floodplains of the Hawkins River. From the pond site to the Hawkins River, there is an area potentially affected by dam-break flood inundation, but not affected by natural flooding from the Hawkins River. Elsewhere, dam-break flood impacts are expected to be of a similar magnitude or less than a 1 in 100 AEP flood event on the Hawkins River. Downstream of the Aucheflower Road Ford (17 km downstream of the proposed pond) and the Selwyn River, the dam-break flood impacts are expected to be of a similar magnitude or less than a 1 in 25 AEP flood event on the Hawkins River.

[102] Mr Veale said mitigation of the potential consequences due to a breach of the proposed Pond embankment is primarily achieved through a Dam Safety Management System appropriate to a High PIC dam as described in Mr Gillon's evidence, and consists of routine monitoring and surveillance to identify any dam safety issues early so that they can be resolved without any incident that could lead to dam failure. This also includes an Emergency Action Plan in order to manage dam safety in the unlikely event that a dam safety emergency arises.

### ***Submitters***

[103] It is significant that, apart from the submission from the Ngāi Tahu Partners (evidence of Mr Eccleshall), who were concerned about the effects of a dam breach on the Hawkins River and the unnatural mixing of waters from different sources, just seven submissions<sup>6</sup> raised any concerns about the safety aspects of the proposal. None of these seven submitters appeared at the hearing and no expert evidence, other than that provided by CPW, was presented regarding the safety aspects of the proposal. Generally, those submitters who claimed that they would be vulnerable to flooding in the event of a dam breach stated that they felt comfortable with the mitigation put forward by the applicant, and they consider that the benefits of the dam outweigh the risks. Orion New Zealand considered their infrastructure, a power substation at Annat, to be at risk in the event of a dam breach as there is presently no bund or other structure in place to protect some equipment at the site necessary to maintaining power supply. In the event of a dam breach it is likely that SH73 and State Highway 77 (SH77) will be adversely affected as well as a bridge across SH77. NZTA therefore sought that the insurance policy proposed be updated to include infrastructure and assets owned by NZTA. We understand that both Orion and NZTA are satisfied that conditions have now been included that meet their concerns. Neither party appeared at the hearing.

### ***S.42A Report***

[104] It is noted that CRC commissioned Mr Titus Smith of Riley Consultants to review the dam breach analysis. A copy of Mr Smith's assessment was included in Appendix 2 of the S.42A Report.

[105] Mr Smith pointed out to us that the NZSOLD Guidelines (2015) includes the following statement regarding the level of technical information that should be supplied in support of a resource consent:

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<sup>6</sup> Stuart and Francine Murray; Orion New Zealand; S Stokes, W Rowlands, J Wilson, D and G Logan; Warwick and Michael Pullen; Philip Deans; NZ Transport Agency

*In the RMA consent process the applicant needs to demonstrate that the design, construction and operation practices for the dam will address hazards that have the potential to impact on the environment.*

[106] Mr Smith said that, since only limited information has been provided regarding the dam design, and construction, operation and safety planning documents are only in preliminary draft form, a comprehensive review of the design could not be undertaken at this stage. He said it is important that robust and comprehensive consent conditions are put in place to ensure appropriate plans are produced, maintained and enforced. RMA consent conditions particularly need to address the completion and maintenance of a Dam Safety Management System (DSMS) and an Emergency Action Plan (EAP), the content of which is set out in the NZSOLD Guidelines but may not otherwise be addressed by current Building Consent processes. The RMA consent conditions will be the sole means of ensuring ongoing sound dam safety management.

[107] Mr Smith referred to the adoption of a 1.5mm HDPE liner on the reservoir base and sides, underlain by a geotextile fabric on embankment slopes. He said similar liner systems have been used extensively in New Zealand and around the world and, given appropriate design detailing and installation quality controls and maintenance systems, it is considered to be an appropriate liner for a dam of this type.

[108] Mr Smith noted that a site specific seismic hazard assessment had been undertaken by Golder Associates and submitted along with the application. He said site-specific seismic hazard studies require specialised knowledge and the use of current fault databases and modelling approaches to complete and that detailed review of this procedure is outside the expertise of Riley Consultants. However, Mr Smith noted the proximity of the View Hill Fault and the uncertainty attached to its projected location, and said that further consideration of the potential for, and impact of, a fault rupture beneath or very near the proposed dam is considered to be appropriate at the resource consent stage, as this may impact on the ability to provide a dam design that meets appropriate safety standards at this site.

[109] Mr Smith noted the absence of any analysis or design information to show that the proposed dam design is able to withstand the seismic loadings indicated by the seismic hazard assessment although a finalised design will be required to be submitted for review in the course of a building consent application.

[110] Mr Smith then discussed the dam breach modelling noting that modelling of the dam breach inundation area, water depth and flow velocity was undertaken using the MIKE21 2-dimensional finite difference modelling software. The report documents a sensitivity analysis covering different breach development scenarios, floodplain hydraulic roughness parameters

(Manning's coefficient  $n$ ) and variations in the behaviour of the flow as it interacts with bridges on the Hawkins River. He said the output of the modelling needs to be interpreted with an appreciation of the imprecise nature of such models and a conservative approach should be adopted in identifying and notifying the population potentially impacted by breach flows.

[111] Mr Smith noted that the “Feasibility Level Risk Assessment” provided indicated an extremely low annual probability of failure for the works. He said that new dams that are designed and constructed in accordance with current guidelines and practices generally have a very low probability of failure.

[112] He said<sup>7</sup>:

- *A number of key potential failure mechanisms (PFMs) are dismissed from the assessment. Further justification for dismissal of PFMs associated with construction defects and seismic behaviour of interfaces with inlet and outlet structures and associated with seismically induced transverse cracking at embankment corners is considered warranted.*
- *The figures presented in the event tree calculations are not supported by anchoring statistics. It is acknowledged that relevant data is generally not available for geomembrane lined dams, as the majority of such data arises from conventional earth embankment case histories. However, given the absence of relevant supporting data, it seems likely that variation of an order of magnitude could apply to several of the assessed probabilities in the risk tree analysis, which could result in a corresponding variation in the assessed annualised failure probability.*

[113] Mr Smith added that the supplied risk assessment may be relied upon insofar as it concludes that “the total Annualised Life Loss estimate imposed by the proposed storage pond is extremely low, much lower than those normally accepted by the public on an annual basis as a result of regular activities.” However, caution is advised in the interpretation of the numerical risk figures presented.

[114] Mr Smith noted that the finalised dam design is likely to be subject to a Peer Review process in the course of obtaining a Building Consent. However, this review may only extend to the design and construction and initial commissioning of the dam. To ensure that post-construction and ongoing monitoring, surveillance and emergency action plans are prepared in accordance with NZSOLD guidance, it may be appropriate to include conditions in the resource consent requiring that these plans also be peer reviewed.

### ***Evidence in reply on behalf of CPW***

[115] As we have noted [64 et seq] Ms Limmer, in her closing submissions, addressed the viability of the proposed Pond site and design from a seismic perspective. In doing so, she

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<sup>7</sup> Titus Smith report for the S.42A Report, at Section 5.3

called further evidence from Mr Gillon and Mr McMorran of Golder Associates to answer questions raised by us and Mr Smith.

[116] Mr Gillon told us that the scope of the work provided by Damwatch to Golder Associates was, in his opinion, very normal and appropriate. He went on to say that Golder executed the brief satisfactorily and the work is soundly based on the known information in the area. Golder described the various alternative fault source models that may be applicable and how these have been incorporated into the National Seismic Hazard Model (NSHM) for determining the ground motions.

[117] Mr Gillon also said he was satisfied that the Safety Evaluation Earthquake (SEE) ground motions determined for the Sheffield Pond by Golder Associates are in accordance with the NZSOLD Guidelines, and have been carried out by persons competent to do so and in accordance with good industry practice.

[118] Mr Gillon said he was satisfied that the preliminary design of the Sheffield Pond is one that is able to resist the SEE ground motions and retain the pond contents in the event of such seismic activity. He said this will be subject to verification by independent peer review during the design process, by the certifiers of the design for building consent purposes and by independent peer review in the proposed resource consent conditions.

[119] In response to questions by us concerning the nearby FA2 Fault, Mr Gillon said that Mr McMorran refers to this in his evidence although this fault does not appear in the GNS Active Fault Database for New Zealand and is not, therefore, recognised by GNS as an active fault that has moved in the last 120,000 years. In light of this, he concludes that the NZSOLD Guidelines do not require potential ground deformation effects from Fault FA2 to be taken into account in the design of the Sheffield Pond.

[120] Mr Gillon noted that Mr Smith had suggested that a peer review of the seismic hazard assessment is appropriate. In Mr Gillon's opinion such a review is not needed because Golder and Damwatch are widely recognised and proven to have the expertise to produce a seismic hazard assessment that meets industry standards and satisfies the NZSOLD Guidelines.

[121] Mr Gillon also discussed the potential for piping failure of the pond embankments and said, as explained in his EIC<sup>8</sup>, he considered the likelihood of this happening is very low as evidenced by the risk assessment described in his earlier evidence. He said the gravels at the Sheffield Pond are sufficiently free-draining and the groundwater sufficiently low that the

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<sup>8</sup> Gillon EIC at Para 79 et seq

conditions to convey leakage water in large volumes to the face of the embankment are very unlikely to be present.

[122] It was apparent to us early on that a critical component in the design of the ponds is the seismic assessment, all the more so given the recent Canterbury earthquake sequence. This assessment was carried out for Damwatch by Golder Associates and, during the hearing, we expressed some surprise that the applicant had not provided evidence from Golder Associates. In the event, we were pleased that Ms Limmer called Mr McMorran of Golder Associates, during her closing submissions, to respond to questions raised by us and also comments from Mr Smith in the S.42A Report.

[123] Mr McMorran told us that Golder completed a seismic hazard assessment for the proposed impoundment for Damwatch Engineering. The assessment included a review of pertinent geological studies in the vicinity of the site, an assessment of the foundation fault rupture hazard and a probabilistic seismic hazard analysis to determine appropriate ground motions for dam design. This assessment was completed by Mr McMorran together with several colleagues. He said they found no evidence of fault activity within the impoundment footprint that would represent a significant foundation fault rupture hazard.

[124] Golder also developed design ground motion parameters using a probabilistic seismic hazard analysis. The results of the analysis indicated that 0.92 g is an appropriate peak ground acceleration for a return period of 10,000 years. He said the scope of the work carried out was typical for dam design or safety evaluation for dams in New Zealand and was also appropriate for developing design ground motions and assessing foundation fault hazard for the current project.

[125] Mr McMorran then explained the meaning of the Limitations referred to in the Golder Report. He said they are standard Golder limitation clauses typically used in all Golder reports and are, therefore, not specific or unique to this project. They are not intended to suggest there is further work Golder wanted to do but was constrained from doing.

[126] Mr McMorran then turned to the nearby FA2 Fault, which had given rise to some comment and concern. The FA2 Fault is thought to represent part of a zone of deformation associated with the View Hill Fault, which has a surface expression north of the Waimakariri River, but not on its south side. He inferred that no surface rupture of Fault FA2 has occurred in the last 45,000 years. In fact he considered it very unlikely that Fault FA2 has ruptured during the last 120,000 years.

[127] Mr McMorran said he considered that the Golder assessment meets the requirements for evaluating design ground motions and foundation fault rupture hazard for the proposed project based on the NZSOLD guidelines. Furthermore, he considered additional investigations, such as further geophysical investigations, or more detailed subsurface investigations, would be unlikely to change the conclusions of the current assessment.

### **Our findings**

[128] Although not a significant issue for submitters, and there was no evidence on dam safety issues other than what we heard from the applicant, we, nevertheless, have sought to ensure that the seismic hazard has been properly assessed and that the final design, construction and operation of the pond would be undertaken to the standards necessary to ensure that the risk of failure is acceptably small.

[129] The consequences of embankment failure were well-described to us in the evidence of Mr Veale and we accept that the Dam Safety Management System (**DSMS**) will serve to mitigate the potential consequences of a dam break. We note that, the DSMS contains provision for an Emergency Action Plan (**EAP**) that describes planned actions to be taken by a dam owner or operator during a dam safety incident or emergency including corrective intervention to manage an incident, a reservoir dewatering plan and the notification of police and civil defence emergency management if corrective measures are unsuccessful.

[130] We also take some comfort from the fact, as described by Mr Veale<sup>9</sup> that flooding (from the Hawkins River) is not unusual and that, aside from the area between the pond site and the Hawkins River, the potential flooding impact from a dam break would be somewhat less than would be the case in a 1 in 100 AEP flood event on the Hawkins River.

[131] The design of the pond embankments and other relevant features rely significantly on the seismic hazard assessment. Because the assessment carried out by Golder was, to all intents and purposes, based on a desk study of available information and, therefore, inevitably contains some element of speculation, we consider a peer review of this work would add another layer of confidence. Whereas Mr Smith suggested a peer review of the seismic assessment was appropriate, Mr Gillon, in his supplementary evidence<sup>10</sup>, opined that such a review was not necessary because, he said, Golder and Damwatch are widely-recognised and proven to have the expertise to produce a seismic hazard assessment that meets industry standards and satisfies

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<sup>9</sup> W Veale; EIC Atv Para 47 et seq.

<sup>10</sup> M Gillon; Supplementary Evidence at Para 35



the NZSOLD Guidelines. That may well be so and we have no reason to disbelieve Mr Gillon but we prefer Mr Smith's view on this matter. We note that the proposed conditions do include<sup>11</sup> the requirement for Certification of the design and construction and we accept that this can be said to constitute a peer review, albeit not one that specifically includes the seismic assessment and determination of the design parameters.

[132] We note, though, that this view is implicit in the requirements of the NZSOLD Guidelines where they state:

*A formal peer review of the investigation, design and construction by an independent experienced engineer should be a mandatory requirement. The Reviewer(s) should have a sound background of experience in the type of dam being designed and constructed. There are some basic tenets which should be followed to achieve the most effective and co-operative peer review.*

[133] The Guidelines go on to indicate that it may be necessary to appoint a panel of peer reviewers where the dam includes a number of features that cannot be effectively addressed by a single peer reviewer (e.g. seismic assessment, dam embankment, spillway and low level outlet structures, gates and control systems).

[134] We would expect that a proper peer review process would, as a minimum, include evaluation by properly qualified independent experts, of the site investigations and geotechnical assessment, the choice of dam, the design parameters, the design of the embankments and pond infrastructure, the suitability of the liner, the commissioning process and operation of the ponds including maintenance and the means of monitoring leakage, and the Dam Safety Management System and proposals for emergency management. In the event that shortcomings or deficiencies are found in any of these matters, we expect that the outcome would include discussion and recommended actions concerning the measures required to ensure that the proposed storage pond is designed, constructed and operated to the required standards of safety.

[135] We also note that the S42A report stated<sup>12</sup> that during the building consent process there will be an additional level of engineering assessment, over and above the resource consent process, to reduce the risk of dam breach. We have no way of knowing if this would include sufficient depth and detail to include a seismic hazard assessment and other matters related to operation and maintenance of the pond and, thus, in the event that consent is granted, we propose to revisit the matter of a peer review as we are not convinced that the proposed conditions are sufficient in these respects.

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<sup>11</sup> Refer to CRC condition No 14

<sup>12</sup> S.42A Report at Para 149

[136] In light of the evidence we heard, and with the inclusion of conditions requiring provision for adequate peer review, we conclude that dam and safety issues can be resolved to the extent that these issues need not prevent the granting of consent.

### 6.3 Cultural Values

[137] *The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga* are recognized in the RMA as matters of national importance that we are required to recognize and provide for (s.6(e)) as is the *protection of recognised customary activities* (s.6(g)). Furthermore, *kaitiakitanga* (s.7(a)) and the ethic of stewardship (s.7(aa)) are matters to which we are required to have particular regard, and we are also required to take into account the principles of the Treaty of Waitangi, *Te Tiriti o Waitangi* (s.8).

[138] In 1998 the Ngai Tahu Claims Settlement Act was passed to achieve full and final settlement of historical Ngai Tahu claims (grievances) against the Crown. This Act records the apology given by the Crown to Ngai Tahu, for injustices suffered by the Crown's actions in purchasing Ngai Tahu land, and gives effect to the provisions of the Deed of Settlement 1997 entered into between Ngai Tahu and the Crown.

[139] While the Ngai Tahu Settlement is full and final, the concept of manawhenua secures an ongoing relationship between tangata whenua and local, regional and central government authorities in terms of natural resource management. (NT Claims Settlement Act 1998)

*The natural environment, waters, coasts, oceans, flora and fauna and how Ngai Tahu engage with them, is crucial to their identity, their sense of unique culture and ongoing ability to keep tikanga and mahinga kai practices alive. It includes commemoration of the places their tupuna moved through in Te Waipounamu and the particular mahinga kai resources and practices used to maintain their ahi kaa that anchors their whakapapa to the landscape.* (Excerpt from Ngai Tahu Vision 2015)

[140] A joint submission was received from Te Taumutu Rūnanga and Te Rūnanga o Ngai Tahu (TRoNT) and another from Te Ngai Tuahuriri Rūnanga. Because Te Taumutu Rūnanga, Te Ngai Tuahuriri Rūnanga and Te Rūnanga o Ngai Tahu, all lodged very similar submissions and because they are all linked by whakapapa, we refer to them in this decision collectively as 'Ngai Tahu' unless mentioning a specific submission point, where the relevant organisation will be included in the text or as a footnote. Respectfully, this is not intended to undermine the 'manawhenua' status of Papatipu Rūnanga.

### ***Applicant***

[141] Ms Susan Goodfellow, in her EIC at Para 30 referred to the consultation that had taken place through the Papatipu Rūnanga Advisory Group (**PRAG**) process. She said:

*Consultation with Rūnanga is a requirement of the consents held for the CPW scheme. To facilitate this, the Papatipu Rūnanga Advisory Group (PRAG) was formed by agreement between CPWL, Te Tuahiwi and Te Taumutu Rūnanga.*

[142] In our view the submission of Ms Susan Goodfellow in her Summary EIC at Paragraph 18, explains the issue well when trying to implement cultural values into development proposals.

*Throughout the engagement with Rūnanga we have learnt that while the consent tends to silo various requirements and obligations, the interconnectedness of Maori values relating to our natural resources, are often not able to be categorised in the same manner.*

[143] Ms Watson in paragraph 9 of her EIC states;

*The research identified that while Maori used this area, this use focussed on the rivers, which were used both as mahinga kai and as routes into the interior. The Waimakariri was the origin of several trails to the inland mahinga kai such as inland lakes and to Te Tai Poutini where pounamu was gathered.*

[144] And at Para 10 -12 she went on to say:

*The closest recorded Maori archaeological site is an oven site on the outskirts of Springfield over 2 km from the proposed area of works. There are other Maori archaeological sites approximately 4 km north of the Proposal clustered on the banks of the Waimakariri - a location consistent with histories of Maori use of the area and as such, has determined that it is unlikely that Maori archaeological sites would be found with the footprint of the Proposal.*

[145] In paragraph 35 of Ms Goodfellow's EIC she states,

*CPWL expected that as the scope of the assessment would cover Maori History and recorded/known archaeological sites of significance to Maori, it would meet the requirements of a cultural impact assessment.*

### ***Submitters***

[146] Mr Eccleshall and Mr Hullen on behalf of TRoNT, Te Taumutu Rūnanga and Te Ngai Tuahuriri Rūnanga presented their submissions to the hearing. The issues raised included:

- No cultural impact assessment has been included with the application as recommended by Nga Rūnanga representatives.
- Archaeological/wahi tapu values - earthworks being required to install the dam and the effects this may have on archaeological/waahi tapu values.
- Absence of an annual allocation limit for the water takes to storage, as per the LWRP

- Concerns about the Consent Duration
- In the event of a dam breach - concerns with the mixing of waters from different catchments (eg) mixing of glacial waters of the Waimakariri River with that of the Hawkins River - being spring fed and the Hawkins River being a 'wahi taonga' and important for mahinga kai values and the timing of such events.

**Submission point;** no CIA and Archaeological/wahi tapu values - earthworks being required to install the dam and the effects this may have on archaeological/waahi tapu values.

### ***S.42A Report***

#### ***Section 42A Report***

[147] Paragraph 202 of the S.42A Report alludes to the fact that because an archaeological assessment that includes Maori archaeological sites (waahi tapu), has been undertaken, that this could then also be regarded as a cultural assessment.

[148] At Para 286, the s.42A report discusses Plan Change 1 to the Land and Water Regional Plan (**LWRP**). It considered that the most relevant policy is Policy 11.4.33, which, seeks to enable water storage for irrigation schemes. According to the S.42A Report:

*The policy specifies certain matters that must be accounted for when considering such proposals. As previously outlined, these include:*

- a) A Ngai Tahu CIA has been carried out;*
- b) Adverse effects on identified cultural values are avoided, remedied or mitigated;*
- c) Adverse effects on surface water drainage are avoided or mitigated;*
- d) Inundation of existing wetlands is avoided or mitigated;*
- e) Adverse effects on fish passage are avoided;*
- f) No net loss of biodiversity;*
- g) Significant inundation of salmon and trout spawning grounds is avoided;*
- h) Infrastructure is designed to accommodate the impacts of climate change.*

[149] At Para 290, the S.42A Report states that:

*It is considered that point (a) has not been met and it is recommended that this is rectified.*

### ***Discussion***

[150] Ms Watson being an archaeologist is well-qualified to prepare an archaeological assessment. However, when questioned at the hearing, Ms Watson agreed that she did not have the expertise to undertake a cultural assessment (ie) a CIA.

[151] Recommended criteria from HNZPT (Heritage NZ) to assess the values of an archaeological site for this proposal is outlined in the assessment<sup>13</sup> of Tristan Wadsworth (Underground Overground Archaeology on behalf of CPWL) on Pages 8, 9, and 10 of his report.

[152] Regarding this, it is noted that neither Ngai Tahu nor the respective rūnanga, participated in the HNZ Archaeological Authority process as noted at Number 4 of the HNZ Authority of 12 January 2016 - attached to Ms Watson's evidence:

*As no protocols between the authority holder and Te Ngai Tuahuriri Runanga and Te Taumutu Runanga were provided with the authority application, the following should apply...*

[153] It was suggested by the commissioners, that the HNZ Authority Application process, being another regulatory process and one that focusses specifically on earthworks where potential archaeological and waahi tapu issues may arise, in that regard, is perhaps the primary and the first place where these waahi tapu values can be appropriately managed and therefore would provide more certainty for sites to be protected.

[154] Takerei Norton representing Te Rūnanga o Ngai Tahu, delivered a presentation to the hearing. The presentation was most informative as it outlined some of the Ngai Tahu history and showed some of the traditional names associated with cultural features and sites within the general area of the proposal site.

[155] Mr Joseph Hullen on behalf of Ngai Tahu, in his paragraphs 3.3 of his EIC states

*... In the 19th century there were 2 known pa sites in the area; Whakaepa near Coalgate and a pa at Kowai Bush. Whakaepa was a Ngai Tuahuriri pa which was sacked as part of the 'kai huanga' feud in 1815. The pa at Kowai Bush was still occupied when Torlesse and other early explorers made their final journeys into the upper Waimakariri Basin in 1848.*

[156] Mr Hullen then asserts in his paragraph 3.4

*...It would be normal and expected that the travel route between 2 pa would contain numerous sites of occupation, mahinga kai and other tribal significance...*

[157] Pertinently, in his paragraph of 3.7 the last sentence he states ...

*The point is the existence of ancestral names is an indicator of the occupation and use of the areas.*

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<sup>13</sup> Archaeology Assessment (Appendix D) pages 8, 9, 10 attached to Ms Watson's evidence.

[158] The Commissioners were mindful of the Historic Places Act 1993<sup>14</sup> provision that also protects 'suspected' archaeological sites outlined in Mr Wadsworth's (Underground Overground Archaeology) background evidence.

### ***Our findings***

[159] A Cultural Impact Assessment (CIA) is a professionally prepared assessment of the impacts of a given activity on tāngata whenua values and interests. These assessments identify tāngata whenua values associated with a particular site or area and the actual or potential effects of a proposed activity on these, and provide recommendations for measures to avoid, remedy or mitigate adverse effects. While most often used to provide information for RMA processes (i.e. CIA reports are often part of a resource consent application's Assessment of Environmental Effects). CIA's are also used to provide information for applications under the HSNO Act. CIA reports may be requested by tāngata whenua, councils or applicants<sup>15</sup>.

[160] We can understand the applicant's confusion regarding a CIA, because there are many different types of CIAs - for instance, CIAs can be prepared specifically for Archaeological Authority applications: they can be written for a specific activity or for a number of activities; and they can also inform other legislative requirements such as the Local Government Act by expressing community values regarding long term community planning but, in the main at least, in the Ngai Tahu takiwā, they have been prepared to inform the RMA processes. Whether one is needed or not, depends on the nature, extent and location of the activity being proposed, the risk from impacts on cultural values as a result of the proposed activity, and the relationship between the applicant and Ngai Tahu.

[161] Because a CIA includes an expression of cultural values, understandably Ngai Tahu have to be comfortable and confident that the writer is conversant and receptive to Ngai Tahu values. Alternatively, because the applicant is likely to be providing the resourcing to develop a CIA because its their activity being proposed - they too have to be comfortable with whomever writes the CIA, which is why the relationship between Ngai Tahu and the applicant is key.

[162] In this instant, discussing and scoping the parameters of a CIA between the applicant and Ngai Tahu, would have identified first, whether a CIA was needed or not and secondly, if

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<sup>14</sup> The Heritage NZ Pouhere Taonga Act 2014 supersedes the earlier Historic Places Act (HPT) 1993 for the rest of NZ due to Canterbury remaining under the Canterbury Earthquake Recovery Act 2011 and the Canterbury Earthquake (Historic Places Act) Order 2011. The AA application for this proposal was lodged before 18 April 2016, applications made prior to this date will remain under the HPT Act 1993

<sup>15</sup> Mahaanui Iwi Management Plan

one was needed, the scoping exercise would have then naturally revealed the parameters for the CIA.

[163] However, irrespective of the fact that the framework for a CIA was understood or not, or even whether one was warranted or not, regarding the earthworks aspect - given the offer by the applicant to enable a cultural monitor to be on site for the duration of the earthworks, has now effectively resolved this issue. Therefore we are comfortable with the condition offered by the applicant at the Hearing and as agreed to by Ngai Tahu for a cultural monitoring condition to be included in our decision.

**Submission point;** The absence of an annual allocation limit for the water takes to storage, relating to Policy 4.53 of the LWRP.

[164] The Ngai Tahu concerns about the lack of an annual allocation limit is supported by Policy 4.53 of the LWRP as outlined in Paragraph 25 of Mr Eccleshall's EIC.

[165] In Paragraph 26 he then states the reasons why the applicant relied on the decision makers of PC1, when they arrived at their decision for Policy 4.53:

*In the event that CPW decides to later add off farm storage to its scheme, that would result in additional water use effects, because storage would allow more water to be applied as irrigation with consequential increases in contamination and mounding.*

***Applicant response***

[166] In Mr McIndoe's EIC paragraphs 63 - 70 he states there are 2 main purposes why allocation rates for water takes are applied;

[167] a) to drive efficient use of water and

[168] b) to allocate water resources that are volumetric in nature (eg) groundwater and lakes - which are not relevant to the Sheffield Scheme.

[169] In our view the pertinent paragraphs that address the Ngai Tahu concerns is Mr McIndoes Paragraph 68 (EIC) and Ms Limmer's below –

*Because water used for irrigation passes through the Pond and because the use of the water has an annual volume limit, there is no benefit to imposing a second annual volume limit on the taking of water.*

[170] Legal Counsel for the applicant Ms Limmer explains in her opening legal submission paragraphs 26 - 31 about why this application doesn't need another allocation limit, particularly in Paragraph 29 where she told us:

*In addition, the witnesses for CPW explain how limits on the use and discharge consents act as effective limits on the take consent. CPW will not be taking any more water than it uses and it will not be using more water than is authorised. In combination, these consents ensure efficient use of water. They avoid any realistic prospect of water being taken 'ceaselessly' or the Pond being refilled continuously....*

[171] Ms Limmer also noted in her Paragraph 29, that the decision quoted by Mr Eccleshall in his Paragraph 26 of his EIC, noted above

*...is not the decision on the Kowai abstraction consent.*

#### **Section 42A report**

[172] In Paragraphs 168 to 181, the report explains the reasons why the decision (CRC 165680) was made. The report notes<sup>16</sup> that in Part 7 of that decision, particularly at Paragraph 1.18, the commissioners stated:

*...We have assessed the effects of water use in the run-of-river scheme and included consent conditions reflecting that situation. In the event that CPW decides to later add off farm storage to its scheme, that would result in additional water effects, because storage would allow more water to be applied as irrigation with consequential increases in contamination and mounding.*

[173] In paragraph 177 the S.42A report refers to the Commissioners' conclusion (in CRC 165680), that

*Should the scheme go through an upgrade to include a storage component, that it shall be up to CRC to undertake a review or require additional water use consents to cover the change in potential effects resulting from increased water used due to increased reliability of water supply.*

[174] The applicant is presently subject to consent conditions found in their water use consent CRC 165680, that require the implementation of a comprehensive ground and surface water monitoring regime being the primary purpose for Schedule 2 of the applicant's consent. Should adverse effects arise within the catchment, and should these effects be attributable to the Scheme, the applicant is required to implement mitigation or remedial actions as recommended by the Ground and Surface Water Expert Panel Review (GSWERP). The GSWERP is a panel of representatives nominated by different stakeholder groups including SDC, CRC and Tangata Whenua whose purpose is to manage effects of water as a result of the scheme and to provide recommendations to remediate such effects<sup>17</sup>.

[175] In Paragraphs 184 to 186, the S42A report further explains why another allocation limit is unnecessary and including because water takes under the WRRP already supports the

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<sup>16</sup> S42A Report at Para 176

<sup>17</sup> Paragraph 180 S42A Report



inclusion of annual volumes on consents to take and use surface water from within the WRRP boundaries.

### ***Our Findings***

[176] The taking and use of water has already been consented and therefore the concerns about water quality and quantity have also been addressed at that time.

[177] For the reasons above, we agree that a second allocation limit need not be imposed with the storage water for this proposal.

### ***Submission point - Consent Duration***

[178] The joint submission of Te Rūnanga o Ngai Tahu/Taumutu Rūnanga and the Te Ngai Tuahuriri Rūnanga submission raised concerns about the duration of these consents, being that of 35 years.

[179] In the TRoNT/Taumutu submission<sup>18</sup>, they state their reasons for opposing the 35 year consent duration as requested by the applicant - *...the duration requested is opposed as it effectively nullifies the intergenerational connectivity in relation to the kaitiaki role. This opposition is articulated in the Mahaanui Iwi Management Plan 2013.*

[180] In the Te Ngai Tu Ahuriri submission<sup>19</sup> it states -

*Te Ngai Tuahuriri Rūnanga opposes resource consent applications for significant activities involving freshwater that span more than one generation for two reasons; on principal as it effectively compromises the kaitiaki role of the next generation; and because it limits the ability of the consent authority and the community to re-evaluate the activity and its effects for a considerable time. Given that the status of this catchment is over allocated for both water quality and quantity, we suggest a long consent duration is inappropriate....*

[181] No other submissions raised concerns about the duration of these consents.

### ***Applicant***

[182] In Mr Murray's Summary EIC<sup>20</sup>, he responds to concerns of Mr Eccleshall regarding the consent duration ...CPWL's evidence has noted that the Proposal represents a significant capital investment, the costs and benefits of which, will not be realised over a 10 -15 year period. Several provisions in the RPS and the LWRP recognise the importance of

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<sup>18</sup> Section 3.3 paragraph 23 TRoNT/Te Taumutu

<sup>19</sup> Paragraph 5 (vi) Te Ngai Tuahuriri

<sup>20</sup> Paragraph 12 Murray EIC

infrastructure for achieving social and economic benefits. It is my view that a 35 year term is appropriate.

[183] The evidence of Mr Murtagh a Design Engineer and Project Manager for CPW, outlines the physical works needed to install the dam.

[184] The evidence of Mr McFarlane outlines the economic benefits gained from one large storage pond to service a number of irrigators as opposed to each farmer installing their own individual ponds. He discussed the need for the irrigators to have confidence in the scheme first, before they commit to investing in it.

### ***Section 42A Report***

[185] In Paragraphs 338 and 339, the report gives its reason as to why a shorter consent duration (ie) 15 years is not appropriate. Paragraph 339 states that Policy 4.74 of the LWRP is relevant to the duration of consents as it seeks to limit durations to periods not exceeding 15 years except in the case for regionally significant infrastructure and it considers that a consent duration of 35 years is more appropriate.

### ***Our Findings***

[186] While we agree we have to be very careful with the activities and decisions we make today, so as to not compromise the kaitiaki role of future generations, we also can't and shouldn't stop everything from occurring today, for fear that it might compromise that 'future' kaitiaki role .

[187] Having given thought to that future kaitiaki role, ... *on principal as it effectively compromises the kaitiaki role of the next generation*; we suggest the council and Iwi identify a more realistic situation, location and time for when this particular 'value' might be given effect to. I am sure the submitters and council will appreciate that for this value to be given effect to, more specific information is needed than has been presented to us at this Hearing.

[188] Regarding the second part of this statement (ie) .... and because it limits the ability of the consent authority and the community to re-evaluate the activity and its effects for a considerable time.... Given the monitoring and mitigations measures being proposed by the applicant, reassurance has been given that the re-evaluation of the activity will occur throughout the life of the scheme.

[189] Given the extensive costs involved in establishing and setting up the scheme;

- a) the footprint proposal covers 34 hectares of land;<sup>21</sup>
- b) the volume of water stored is a maximum of 2.15 million cubic metres<sup>22</sup>;
- c) the area of irrigation it is to cover 3,500 hectares<sup>23</sup>;
- d) economic gains as a result of this proposal will accrue in the order of \$3 million per year compared to the status quo<sup>24</sup>;
- e) additional management, advice and guidance will be given to the irrigators by the scheme regarding the application and management of their farm plans for nutrient and water quantity management<sup>25</sup>;
- f) and the fact that this scheme is a subset of the greater CPW scheme;

[190] We find that this proposal can be deemed as regionally significant infrastructure and, therefore, if we are minded to grant consent, we consider a 35-year term is appropriate.

***Submission point; Mixing of waters***

[191] In the joint submission of Te Taumutu Rūnanga and Te Rūnanga o Ngai Tahu<sup>26</sup> and from the submission of Te Ngai Tuahuriri<sup>27</sup> - it states, very generally, why the mixing of glacial waters from the Waimakariri River with that of spring-fed water of the Hawkins River is culturally inappropriate, when these waters might mix in the event of a dam breach. Both the submission give the same reasons.

***Applicant***

[192] At paragraphs 74 - 75 of Mr Murray's EIC explains the potential risks to ecology in the event of a dam-break. Particularly 74.2 ... *the effects of a dam-break flood is comparable to a natural flood event, which occur at a greater frequency. In other words, for much of the dam-break path, any adverse effects on ecological values already have the potential to occur on a more frequent basis than a hypothetical dam-break event.*

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<sup>21</sup> AEE Executive Summary

<sup>22</sup> AEE Executive Summary

<sup>23</sup> AEE Executive Summary

<sup>24</sup> Paragraph 53 Ms Limmer's legal submission

<sup>25</sup> Condition of consent for the greater CPW scheme

<sup>26</sup> Paragraph 14 of TRoNT/Taumutu EIC

<sup>27</sup> Paragraph 5 (v) Te Ngai Tuhuriri EIC

[193] In Mr McIndoe's EIC paragraphs 71 - 82 addresses the issue around water quality of stored water. In his Paragraph 72 he stated that algae requires specific conditions to grow - nutrients, light, turbidity, temperature and stability. He then gives a more detailed account as to why each of the conditions needed for algae growth has been considered and addressed in their mitigation measures.

### ***Section 42A Report***

[194] In Paragraph 162, the S.42A Report states:

*The storage of water has the potential to chemically alter water quality due to the growth of algae and nutrient accumulation from aquatic species such as geese and ducks that may utilise the pond. Critical to the maintenance of water quality is mixing and movement, preventing water from becoming stagnant.*

[195] In Paragraph 209 the report states:

*Secondly, with regard to the potential mixing of waters and effects on the Hawkins River, the applicant has not applied for a resource consent to discharge water to these rivers. Further, the only instance in which the above will occur is in the event of a dam breach. The applicant has proposed every reasonable form of mitigation to prevent a dam breach. Whilst the unnatural mixing of waters is contrary to policy, this is not an effect that is intended or that can be mitigated further except to leave the dam empty or relocate. As the applicant considers the proposed dam site is the most suitable and safest with regard to seismic activity, relocation of the dam may be inappropriate.*

### ***Our findings***

[196] A question from the commissioners was put forward at the Hearing to both the applicant and to Ngai Tahu - (ie) has an assessment been completed that responds to the mixing of waters from different water bodies (eg) glacial waters mixing with spring fed waters and how this will affect the ecology of the riverine ecosystem - the answer from both parties was no.

[197] The unnatural mixing of waters has been occurring throughout New Zealand for some time and while this might be accepted by some as the 'norm' and therefore it could be regarded as having the precedent already set, realistically though, the Iwi have only had an influential voice in the last 15 - 20 years where their views can be taken seriously and given appropriate weight.

[198] There may be several more reasons why the Iwi are opposed to the unnatural mixing of waters from different water bodies (eg) glacial to spring fed, but because that information hasn't been put before us, it is difficult for us to consider anything else let alone, apply sufficient weight to what their concerns might be.

[199] In weighing up the issues and the facts put before us regarding the effects of unnatural mixing of waters in the unlikely event of a dam breach, against the potential seismic concerns of other locations coupled with the proposed mitigation measures offered by the applicant, we find that the unnatural mixing of waters is only likely to occur in the very rare event of a dam breach and, thus, the effects are not significant.

#### 6.4 Amenity Values

[200] There are a range of other potential adverse effects that were covered in the officers' S.42A Report, but were generally not the subject of any submissions. These include traffic, noise, and dust effects any of which can affect peoples' enjoyment of an area and their way of life. As such these matters can be considered as impacting on amenity values.

[201] We accept that there will only be limited **traffic effects**, mainly associated with movement of staff and construction vehicles to and from the site. Surplus material that is excavated and not required for the construction of the dam embankment will (as advised at the hearing) be formed into a waste bund sloping beyond the embankments. In general the vehicle movements to and from the site will comply with Selwyn District Plan permitted activity standard (Rule 9.13), and there is no need for any specific conditions to deal with traffic effects. We note that the applicant has volunteered a Construction Management Plan.

[202] **Noise effects** are only likely during the construction period. Construction noise is exempt from District Plan rules, but can be subject to the requirements of NZS6803:1999 Acoustics - Construction Noise (this has been included as a condition). The closest dwelling to the site is that owned by the Hawkins family who own the land where the pond would be constructed, and who have already given their approval and, on whom, effects do not need to be considered. There are five other dwellings located at distances of 600 to 900m from the site, and the advice of the reporting officers is that any noise effects would be less than minor. We have included conditions that limit the construction to between the hours of 6.30am and 8.00pm, as proposed by the applicant

[203] With respect to potential **dust effects**, two separate resource consent applications have been lodged with the Regional Council (CRC164542 for the construction phase and CRC164543 for the operational phase). The Regional Council has accepted that the effects of dust can be managed so that they are less than minor, and that this application can be processed later without notification. That applicant has volunteered conditions that include the preparation of a dust management plan, including providing access to water for dust suppression.

Dust is also a matter for the Selwyn District Council application. We accept the advice that dust can be managed such that the effects will be less than minor, and note Conditions 12 and 13, which require that any discharge of dust does not create any dust hazard or nuisance, also requires the preparation of a Dust Control Management Plan

#### **6.4 Water quality**

[204] A number of the submissions raised the issue of water quality, recognising the link between water use, nutrient loss, and subsequent water quality in surface water bodies and groundwater. Most of the submissions cited that there would be positive effects on water quality as a result of the CPW's Scheme comprehensive nutrient management strategy, and existing consent conditions. One submission (Mr P Deans), considered that there may be negative effects on water quality as a result of nutrient loss from on-farm nutrients.

[205] These water quality effects are matters that have been considered and addressed in the applicant's water use and discharge consents, CRC165680 and CRC165686. In that sense, they are not relevant to this consent application for the establishment of a water storage pond, as they have been dealt with through the existing consents.

[206] The proposed water storage pond will have an impermeable liner, and so it is highly unlikely that there will be any leaching from the water held in the storage pond. Even if the anecdotal evidence that there was an offal pit on the site proved to be the case, the excavation work, and conditions relating to the disposing of that material, would result in any contaminated material being removed from the site.

[207] We accept the advice in the S.42A Report that any adverse effects on water quality as a result of the storage pond will not be significant.

#### **6.5 Ecology**

[208] The Canterbury Regional Policy Statement contains a number of policies relating to ecological values that focus on retaining and enhancing existing habitat, and providing mechanisms for protecting these resources from future development.

[209] A number of the submissions received raised concerns on the matter of ecological values. These included concerns about the use of water for irrigation resulting in increased nutrient loss that may alter water quality within the Hawkins River (we note that the issue of nutrient loss is already covered in the nutrient discharge consent that the applicant already holds). Concerns were raised about naturalised ecological values in the Selwyn stockwater

races (eg the Canterbury Mudfish), and whether some of the existing races would become redundant and be retired. We accept the advice in the S.42A Report that this is a matter to be resolved between the Selwyn District Council and the applicant. A number of submitters have cited the positive effects that the proposed water storage pond will have on the abstractions from the Kōwai and Waimakariri Rivers.

[210] The evidence before us is that the land on and about which the water storage pond is proposed is currently used for agricultural activities, and is highly modified from its natural state. There are no significant ecological values associated with the site.

[211] It is possible that, as a result of a dam breach, there could be adverse effects on the ecological values of the Hawkins River, mainly in respect of the impact on fish species in the river. These effects could be similar to a natural flood in the order of 1 in 100 years flood flow. However, given the very low likelihood of a dam breach, we have not given any significant weight to such a scenario.

## **6.6 Natural character and landscape**

[212] Mr Kim Goodfellow a landscape and planning consultant and a director of the Goodfellow Group Ltd prepared the landscape assessment on behalf of the applicant. SDC then had this assessment peer reviewed by Mr Andrew Craig of Andrew Craig Landscape Architects. As there were no submissions concerned about the effects on landscape and natural character, Mr Goodfellow was given leave not to appear at the hearing.

[213] In preparing for his assessment Mr Goodfellow visited the proposed site 3 times and his assessment was supported by desktop studies, a technical review of reference information and team meetings<sup>28</sup>. He also provided a helpful photo montage from different viewpoints of what the landscape looks like before the dam is built and then what it would look like after the dam is built.

[214] With respect to the regional landscape context, the Canterbury Regional Landscape Study 2010 identifies the landscape typology of the Proposal site to be on the fringes of Upper Plains and Front Ranges Landscape Study types. Views of Castle Hill in the Torlesse Range are immediately visible from SH73<sup>29</sup>.

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<sup>28</sup> Paragraph 13 Kim Goodfellow EIC

<sup>29</sup> Paragraph 23 Kim Goodfellow EIC 13 June 016

[215] The Proposal site is not recognised as an Outstanding Natural Feature or Landscape within the 2010 study, or in the Canterbury Regional Policy Statement<sup>30</sup>.

[216] Site inspections included a photographic record which reflected the character of the immediate site, the surrounding farmland, and viewpoints from available and accessible viewpoints of key visual receivers within the nominated visual catchment extending 500 meters from the outer edges of the proposed Pond location<sup>31</sup>.

[217] The storage pond is to be located 4 kms south of the Springfield township alongside the foothills of the Torlesse and Big Ben mountain ranges of the Southern Alps and other topographical features which fringe the site, Geomorphological processes that have shaped the physical landscape in this area, include mountain building and incised rivers. Examples of these are the Russell Range, Hill Saddle, Abners Head and the Hawkins, Kowai and the Waimakariri rivers. and associated contours and depressions of the developing river terraces<sup>32</sup>

[218] Temporary landscape and visual effects will result from construction of the Proposal which is anticipated to last approximately 8 months. The contractor's site installation area (including office buildings, changing rooms and lunch facilities) will be located in the western corner of the designated construction area (ie away from SH73) and will be fully fenced to help minimize landscape or visual effects. Site access is via Coxs Road, therefore significantly reducing any landscape and visual effects on the SH73 corridor. Retention of the existing gorse hedge along the site boundary edge of Coxs Road will help to screen lower level views of the works from this direction.

### ***Our Findings***

[219] For the most part, visibility of the proposed construction works will be limited by distance to the site and the localized screening effects provided by shelterbelts, hedges and taller vegetation. This type and level of construction is generally consistent with, and is an expected part of, the installation of rural infrastructure in the receiving environment<sup>33</sup>.

[220] A key theme of the Selwyn District Plan objectives and policies is recognition of activities and infrastructure that are consistent with primary production, which is the Pond. It

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<sup>30</sup> Paragraph 24 Kim Goodfellow EIC

<sup>31</sup> Paragraph 13 Kim Goodfellow EIC

<sup>32</sup> Paragraph 25 Kim Goodfellow EIC

<sup>33</sup> Paragraph 88 Kim Goodfellow EIC



also contemplates a certain level of change in the rural zone, and therefore identifies the rural zone as a working landscape and subject to change<sup>34</sup>.

[221] We note that Mr Craig, for the S.42A Report, considered that the proposed pond will not be visually offensive and that the form of the storage pond is consistent with the large scale and form of naturally occurring undulations in the vicinity of the proposal. On that basis he considered no specific conditions were required to mitigate visual effects. We agree with Mr Craig's assessment.

## **6.8 Climate change**

[222] The need to have particular regard to *the effects of climate change* was introduced (s.7(i)) into the RMA in the March 2004 energy and climate change amendments. We note that the courts<sup>35</sup> have since established that s.7(i) is principally aimed at considering the effects of climate change on the proposal rather than the reverse.

[223] The matter of the effects of climate change was not addressed in the evidence of the applicant and neither was it raised by submitters. We accept that any future climate change effects are speculative and uncertain and more likely to be related to changes in rainfall patterns over time, and it seems reasonable to presume that the CPW scheme will be able to adapt to such changes and there was no evidence to suggest this is an issue about which we need to be concerned.

## **6.9 Positive effects and the economy**

[224] Evidence on the effects of the proposal on the economy, on behalf of the applicant, was provided by Mr MacFarlane. In his evidence he focussed on the likely changes in land use patterns that could be expected if the irrigation to be provided by the proposed pond becomes established, and the economic benefits, both on-farm and off-farm, that would be associated with these changes.

[225] Mr MacFarlane told us that the area to be serviced by the proposal includes some of the better (in terms of combination of friability and soil moisture holding capacity) soils in Canterbury, but also includes a major block of soils that is consistently drought stressed. He said the land use is now economically challenged. Moisture has become the limiting factor, now that yield parameters and reliability have lifted as a result of new technology in plant

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<sup>34</sup> Paragraphs 94, 95 Kim Goodfellow EIC

genetics, fungicides, and growth regulators. In recent decades the lack of predictability and consistency of the rainfall has magnified in impact. He said, based on Mr McIndoe's evidence the proposed scheme would improve moisture reliability from 85% to 94.3% and he listed several areas where improvements in land use could be expected. 85% reliability, we were told, is unacceptable economically, as all irrigated overheads apply but without yield reliability. That factor is particularly important in the arable sector, where crop yield potential is determined by the most significant moisture stress day in the lifespan of the crop.

[226] Mr MacFarlane went on to list a range of off-farm beneficiaries from the proposal including equipment suppliers, contractors, professional advisors, workers, builders and service suppliers. It was interesting to note that, since the expansion of irrigation in mid-Canterbury since 2001, economic growth in Ashburton since then has been 4.5% compared with 2.4% for New Zealand as a whole, and that population in Ashburton increased from 27,000 in 2005 to 33,000 in 2015.

[227] Mr MacFarlane said he had every reason to believe a similar economic outcome and consequential benefit would arise as a result of CPW associated investment generally, including in the Sheffield area.

### ***Section 42A Report***

[228] We note that, at Para 75, the s.42A report stated:

*Central to these objectives is an understanding of the relationship between water quality, water quantity and economic development. The Selwyn Waihora zone is considered to be in a state of water over-allocation and presently is not meeting water quality objectives. As a result, lowland streams are suffering poor flows, Lake Ellesmere/Te Waihora is of lower water quality than desired, and there are subsequent adverse effects on ecological health and mauri for these and other water bodies.*

[229] The s.42A Report then went on to note that development of the CPW scheme would help to achieve a number of the outcomes set for the Selwyn Waihora zone, particularly those related to improving water flows, water quality and increasing agricultural production. In these respects we note what Ms Goodfellow had to say<sup>36</sup> insofar as that the proposal would enable groundwater irrigators to convert to Scheme water and turn off their bores. Consequently the groundwater aquifers would replenish, with a resultant positive effect on increasing the lowland stream flows that enter Te Waihora/Lake Ellesmere. Furthermore, she went on to say that the dilution factor of introduced alpine water would reduce existing nitrate contamination of groundwater before it enters Te Waihora/Lake Ellesmere, thereby further diluting the concentrations of nitrogen in the Lake.

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<sup>36</sup> Ms S Goodfellow EIC at Para 15 et seq.

### ***Our findings***

[230] Mr MacFarlane has made it clear to us that the provision of a storage pond, as proposed, would improve irrigation and water use efficiency in the Sheffield area and that the economic benefits would be significant. There was no evidence to suggest that this would not be the case and we accept Mr MacFarlane's views that the proposal would bring significant economic benefit. Other than economic benefits, we also think the potential for a reduction in groundwater use will bring significant environmental benefits.

## **7 MAIN FINDINGS OF FACT**

[231] Throughout the preceding Chapter 6 we have examined the effects of the proposal on a range of matters that were brought before us in evidence and submissions. In the table that follows we have, for convenience, summarized our findings with respect to each of these issues.

### **Summary of our main findings**

<b>Effects of proposal on</b>	<b>Our findings</b>	<b>RMA</b>
<b>Dam Failure Risk and Inundation</b>	Although the potential consequences of a dam failure are significant, it is accepted that, with design, construction and maintenance of the pond to accepted present-day standards, the risk of failure is very small.	
<b>Cultural Values</b>	Conditions can be imposed to ensure that Maori culture and traditions will not be adversely affected.	s.6(e), s.6(g), s.7(a), s.7(aa) s.8
<b>Amentiy Values</b>	Amenity values will not be adversely affected by the proposal to any significant extent.	s.7(c)
<b>Water quality</b>	Water quality will not be adversely affected.	s.15,
<b>Ecology</b>	Unlikely to be affected except, potentially, in the very rare event of a dam breach	s.6(d), s.7(d), s.7(h), s.15
<b>Natural character and landscape</b>	The proposed pond and its embankments are not out of character in the existing rural landscape	s.6(a), s.6(b), s.7(c)
<b>Climate change</b>	No adverse effects of climate change were identified.	s.7(i)
<b>Positive effects and the economy</b>	We accept the applicant's view that provision of an irrigation storage facility as proposed will have significant economic benefits as well as other positive effects.	s.5(2)

## 8 STATUTORY PROVISIONS

### 8.1 Section 104 [RMA]

[232] As this application is a discretionary activity under both the Regional and Selwyn Plans, the applications falls to be considered under Section 104 of the Resource Management Act.

[233] s.104(1) states:

*When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to —*

- (a) *any actual and potential effects on the environment of allowing the activity; and*
- (b) *any relevant provisions of –*
  - (i) *a national environmental standard;*
  - (ii) *other regulations;*
  - (iii) *a national policy statement;*
  - (iv) *a New Zealand coastal policy statement;*
  - (v) *a regional policy statement or proposed regional policy statement;*
  - (vi) *a plan or proposed plan; and*
- (c) *any other matter the consent authority considers relevant and reasonably necessary to determine the application.*

[234] In addition, s.104B allows us, after considering an application for a discretionary activity or a non-complying activity, to grant or refuse consent and, if granted, to impose conditions under s.108.

[235] s.104(1)(a): *any actual and potential effects on the environment of allowing the activity*; The key issues concerning the actual and potential effects on the environment that would result from granting the application have been identified and examined in Chapter 6 of this decision. A summary of our findings is provided in Chapter 7. In particular we have considered the possible effects of or on cultural values, water quality, ecology, natural character and landscape, amenity values, dam failure risk and consequent inundation, climate change, and the economy. We have concluded that any adverse effects would be minor or not significant, and able to be mitigated by the set of conditions offered and agreed at the hearing between the applicant and the Council officers.

[236] s.104(1)(b)(i): *any relevant provisions of a national environmental standard*: This application requires consideration under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. It requires assessing because the earthworks (construction of the dam) will result in a change of use, will involve more than 25m<sup>3</sup> per 500m<sup>2</sup> of area, soil may be taken away during the construction, the duration of the

activity will be more than 2 months, and a detailed site investigation has not been carried out. We are satisfied that any possible effects associated with finding any contaminants during the construction will be mitigated by the conditions imposed on these consents.

[237] s.104(1)(b)(ii): *any relevant provisions of other regulations*: No other relevant provisions of other regulations were brought to our attention.

[238] s.104(1)(b)(iii): *any relevant provisions of a national policy statement*: The only relevant national policy statements brought to our attention were the NPS for Freshwater Management, and the NPS on Electricity Transmission. We accept the planning advice that the damming of water in itself will have no effects on managing fresh water, and that any effects have been considered in the consents already obtained to abstract water. The NPS on Electricity Transmission requires us to avoid adverse sensitivity effects on the electricity network. The submission from Orion expressed concerns about the effects on the Annat substation in the event of a dam failure. Orion was satisfied with the information provided by the applicant, and the conditions recommended, and did not need to attend the hearing.

[239] s.104(1)(b)(iv): *any relevant provisions of a New Zealand Coastal Policy Statement*: The NZ Coastal Policy Statement is not relevant to these applications

[240] s104(1)(b)(v): *any relevant provisions of a regional policy statement or proposed regional policy statement*: Policy 7.3.10 of the Canterbury Regional Policy Statement seeks to improve the reliability of water supply for irrigation, increase the efficiency of water use, increased the irrigated land area, provide resilience to the impacts of climate change, and reduce pressures on surface water bodies during periods of low flow. We accept the advice of the reporting officers that the proposal is consistent with this policy, as the shift from a run-of-river scheme to in part a take to storage scheme will increase the efficiency of the water take, and subsequently increase water use, reduce nutrient loss and enable a range of other positive effects associated with improved productivity.

[241] Chapter 11 of the Canterbury Regional Policy Statement addresses the issue of natural hazards. While it does not specifically refer to man-made hazards, it could be argued that the application could result in a hazard if a dam breach was to occur. Objective 11.2.1 outlines the need for new development to avoid increased risks associated with natural hazards. Objective 11.2.4 outlines the need to establish effective integration between authorities to manage and prepare for natural hazards. Policy 11.3.1 outlines the need to avoid inappropriate development in high hazard areas. We accept that the applicant has undertaken sufficient and reasonable precautionary measures in the design of the dam to reduce the likelihood of a dam breach under any circumstances. We also accept that the preparation of an Emergency Response Plan will be

a constructive step in case the very unlikely dam break scenarios occur. We have covered the issue of dam break and consequent effects more fully in Section 6.2 of this decision.

[242] S104(1)(b)(vi) *any relevant provisions of a plan or proposed plan*: The provisions of both the relevant Regional Plans, and the Selwyn District Plan, are relevant to this application.

[243] The application to the Regional Council is because the application proposes to use land to store water (including the damming of water) which exceeds the maximum depth and volume of water specified in Condition 1 of Rule 5.154 of the Land and Water Regional Plan.

[244] The reporting officers, and the applicant's planner, provided an assessment of the application having regard to the objectives and policies of the Land and Water Regional Plan. They concluded that the application would support a regionally significant infrastructure (Policy 3.3), provide a storage facility that would improve water use efficiency (Policy 3.4), operate with good environmental practice or better to optimise efficient resource use (Policy 3.5), and does not frustrate (indeed supports) the overall regional ambitions for water harvest, storage, and distribution (Policy 4.8). We accept those conclusions.

[245] Change 1 to the Land and Water Regional Plan gives effect to the Selwyn Waihora Zone Implementation Plan. We accept that adding the Sheffield Storage facility to the Central Plains Water Scheme will help to achieve a number of the outcomes set for the Selwyn Waihora Zone, including enabling the conversion of dryland pasture to irrigation, improving the reliability of the water supply to the target 95%, improvement to flows in lowland streams, and improvements to water quality.

[246] Change 1 to the Land and Water Regional Plan includes Policy 11.4.33, which seeks to enable water storage for irrigation schemes. The policy includes a list of matters that need to be accounted for when considering water storage proposals. Relevant to this application they include a Ngai Tahu Cultural Impact Assessment being carried out, adverse effects on identified cultural values are avoided, remedied or mitigated, adverse effects on surface water drainage are avoided or mitigated, and infrastructure is designed to accommodate the impacts of climate change. Matters relating to Cultural impacts and values, and on surface water drainage have been discussed earlier in this decision. We accept that the impacts of climate change have been considered in the design of the facility.

[247] The application to the Selwyn District Council is because the earthworks involved to construct the dam exceed 5000m<sup>2</sup>, the earthworks will not be rehabilitated and replanted to the same state as the existing land, and because the volume of hazardous substances (diesel) will be greater than specified in the Plan.

[248] The reporting officers provided an assessment taking into account the objectives and policies of the Selwyn District Plan.

[249] We agree that with the conditions imposed, including a Remediation Action Plan, that the application will not be inconsistent with the objective B1.1.2 which seek that people or their property are not affected by contaminated soil (possibly an old offal pit which may be found on the property).

[250] We agree that the presence of a storage pond will not adversely detract from the open rural character of the area, or impact on the amenity values in the vicinity of the site (Objective B1.3.4). We agree that the application is consistent with Policy B1.3.1 which seeks to pursue integrated, catchment based approaches to the management of the District's water resources, and with Policy B1.3.8, which seeks to ensure that large scale earthworks are set back from rivers and lakes. Earlier in this decision we have discussed the special interest of Tangata whenua in resource management issues related to water (Policy B1.3.2).

[251] We agree that the construction and operation of the storage facility will not compromise the safe and efficient operation of the District's roads, pathways, railway lines, and airfields. We have considered the potential effects on roads and railways from a breach of the dam, which although they would be significant, are at such a low probability of occurring that they can be discounted (we have discussed this issue earlier in this decision).

[252] We agree that the application is consistent with the objectives and policies relating to utilities, which seek to recognise utilities as essential tools for people's economic and social well-being, to mitigate effects on the environment, and to manage effects on people's health, safety and well-being.

[253] Objective B3.1.1 seeks that activities do not cause or exacerbate natural hazards. We have fully discussed this issue earlier in this decision.

[254] Objective and Policies listed under B3.3 relate to cultural and heritage values. They seek to recognise and protect cultural and heritage sites. We have discussed the issues of importance to Ngai Tahu earlier in this decision.

[255] Objectives and Policies listed under B3.4 relate to the quality of the environment, particularly regarding visual amenity and rural character. As discussed earlier in this decision, we are satisfied that the proposed storage pond will maintain the rural character of the area.

[256] We have also considered the Mahaanui Iwi Management Plan, which provides a statement of Ngai Tahu objectives, issues and policies for natural resource and environmental



management in most of the Canterbury Region. With the discussion on Ngai Tahu issues earlier in this decision, and with the conditions included in these consents, we are satisfied that this decision does not challenge the resource management outcomes sought by the Mahaanui Iwi Management Plan.

## 8.2 Part 2 [RMA]

[257] Our consideration under Section 104 is subject to Part 2 of the Resource Management Act 1991.

[258] S.5 (Part 2) of the RMA states:

- (1) *The purpose of the Act is to promote the sustainable management of natural and physical resources.*
- (2) *In this Act "sustainable management" means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while -*
  - (a) *Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
  - (b) *Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
  - (c) *Avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

[259] S.5(1) contains the very essence of the RMA. In arriving at a decision we are bound to determine whether or not the proposal, overall, is consistent with this single purpose of the RMA. In doing so, we are able to make an overall judgement in weighing up both the positive and negative aspects of the proposal. Before we are able to do so, however, the sustainable management aspects of the proposal must be considered in light of s.5(2) in conjunction with a range of other matters in Part 2 to which we now refer.

[260] S.6 of the RMA is concerned with matters of national importance that this decision is required to recognize and provide for in relation to managing the use, development and protection of natural and physical resources. The only matter of national importance that is relevant to this application is *(e) the relationship of Maori and their culture and traditions with their ancestral lands water, site, waahi tapu, and other taonga*. We have discussed these matters earlier in this decision, and in doing so have recognised and provided for this matter of national significance.

[261] Other matters that this decision is required to have particular regard to are provided in s.7 of the Act. We are satisfied that we have had regard to Kaitiakitanga, and the ethic of stewardship in our discussion on cultural issues. Likewise we have had regard to the efficient



use and development of natural and physical resources, the maintenance and enhancement of amenity values, the maintenance and enhancement of the quality of the environment, any finite characteristics of natural and physical resources, and the effects of climate change.

[262] Section 8 requires us to take into account the Principles of the Treaty of Waitangi (Te Tiriti o Waitangi): The effects of the proposal on *cultural values* has been examined in Section 6.3. We have concluded that Treaty of Waitangi principles will not be compromised by this proposal.

[263] Taking all those matters into account we are satisfied that the granting of these consents, subject to the proposed conditions, are consistent with the purpose of the Resource Management Act set out in Section 5 of the Act.

## 9 DETERMINATION

### 9.1 Decision

[264] Having carefully considered all the relevant reports and documentation supplied with the application, submissions, the S.42A Report, as well the submissions and evidence presented to us during the course of the hearing, we have determined that Central Plains Water Limited has made its case to dam up to 2.08 million cubic metres of water (**M m<sup>3</sup>**) on land parcel RS 19009, located at the corner of Coxs Road and State Highway 73 (**SH73**), near Springfield.

[265] In terms of s.113(1)(a) of the RMA we are required to give reasons for our decision. Throughout Chapter 6 of this decision we have examined the evidence before us in some detail and have canvassed all the environmental effects that were brought to our attention. We have drawn our own conclusions as to how each of these issues impacts on our decision and our reasons are discussed further below.

[266] For the reasons given, therefore, in exercising the powers delegated to us by Canterbury Regional Council, we have resolved to grant resource consent application CRC164541, as set out in the application documents, for a term of 35 years as sought by Central Plains Water Limited, pursuant to s.104 of the Resource Management Act 1991.

[267] Also for the reasons given, in exercising the powers delegated to us by Selwyn District Council, we have resolved to grant land use consent application RC155704 as sought by Central Plains Water Limited, and as set out in the application documents, pursuant to s.104 of the Resource Management Act 1991.

[268] In accordance with s.108 of the Resource Management Act 1991, conditions are attached to this consent. In doing so, we have largely accepted the draft conditions that were provided to us on the final day of the hearing on 5<sup>th</sup> July 2016. We note that we have made some minor amendments to these conditions in response to matters raised during the hearing and we have taken this into account in arriving at the final conditions.

### 9.2 Reasons

[269] In exercising our discretion, we are bound to keep in mind Part 2 of the RMA and, particularly, the single broad purpose as set out in s.5. It is in terms of this section that we are required to make an overall judgement and determine whether or not the proposal promotes the sustainable management of natural and physical resources. It is now well-established that the subsequent sections in Part 2 (s.6, s.7 and s.8) provide a range of factors to be considered in

making this judgement but, on their own, they must not be allowed to obscure the fundamental purpose of sustainable management.

[270] In deciding whether or not to grant consent, we believe we have been properly guided by the requirements of Part 2 of the RMA and s.5, in particular. In Chapter 6 of this decision we have canvassed in detail all the effects of the proposal that were brought to our attention, and in Chapter 8 we have presented our analysis of the ways in which the statutory provisions have been applied. We have found, in our examination of the statutory matters in Chapter 8, that the proposal is, overall, consistent with Part 2 of the RMA and the provisions that we are required to consider under s.104.

[271] By the time we had heard all the evidence, the S.42A Report and the submissions, and the hearing had been completed, we were left in little doubt about the merits of the proposal and the benefits it would bring to the region in terms of, not only economic benefits but also the environmental advantages that would accrue through the more efficient use of water.

[272] Our role is to weigh up these positive effects against potential adverse effects that could arise in the event of a dam failure or the inconvenience that people living and working in the vicinity of the dam site would experience during the construction phase of the project, or the prospect that construction of the pond and its embankments might disturb relics of cultural importance to tangata whenua.

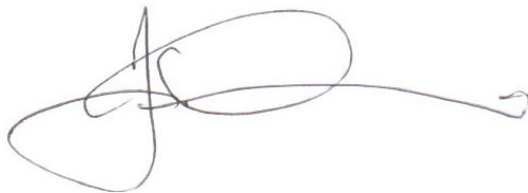
[273] It was not without some significance to us that of the 42 submissions the application attracted, just over 80% (34) supported the proposal. Typically in projects such as this where very large volumes of water are going to be stored, the risk a dam break would impose on those living in the floodpath can be expected to be a matter of considerable concern among those potentially affected. Here, the evidence showed us that of the 2460 hectares potentially at risk of flooding in the event of a dam breach, some 1330 hectares were owned by CPW shareholders. These people generally accepted that the risk of dam failure was very small and that the benefits the ponds would bring outweighed those risks.

[274] We were assured that the risk of dam failure can be reduced to an acceptable level by ensuring that the dam is designed, constructed, operated and maintained to the highest possible standards and that this can be achieved by following the Guidelines developed by the NZ Society on Large Dams and that conditions can be imposed to ensure that this is the case.

[275] Furthermore, we are satisfied that conditions have been included that will mean that there will be no other adverse effects of any significance arising out of the proposal. As we

have already noted, we are satisfied that the proposal is consistent with the primary purpose of the Resource Management Act 1991 as described in s.5(1).

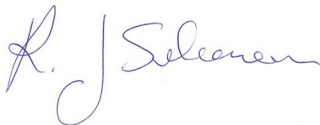
Dated at Christchurch this 27<sup>th</sup> Day of July 2016.

A handwritten signature in blue ink, appearing to be 'J. Lumsden', with a long horizontal stroke extending to the right.

John Lumsden (Chair)

A handwritten signature in black ink, appearing to be 'Ken Lawn', with a stylized, cursive script.

Ken Lawn

A handwritten signature in blue ink, appearing to be 'R. J. Solomon', with a stylized, cursive script.

Raewyn Solomon

## **10     CONSENTS AND CONDITIONS**

## 10.1 Decision No 1:

### **CRC1654541: Canterbury Regional Council: Water Permit To dam water and Land use Consent to store water**

1. **Name:** Central Plains Water Limited
2. **Address:** Level 2, 2 Hazeldean Road, Addington, Christchurch 8024
3. **Date of commencement:** As provided in s.116 of the Resource Management Act 1991.
4. **Term of consents:** Thirty-five (35) years.
5. **Date of lapsing of consent (if not given effect to):** The consent lapsing period for this consents shall be ten (10) years from the commencement of the consent as provided in s.125 of the Resource Management Act 1991.
6. **Purpose of consent:** To construct, operate and maintain a large-scale water storage dam capable of impounding up to 2.15 million cubic metres (**Mm<sup>3</sup>**) of water on the corner of Coxs Road and SH73, Sheffield. and in general accordance with the relevant conditions set out below.
7. **Location:** Land Parcel RS19009, at the corner of Coxs Road and SH73, near Sheffield

## **Conditions of Consent**

### **Limits**

- 1 Water shall only be dammed and stored on land parcel RS 19009 at or about map reference NZ Topo50 BW21:1523-9918, located on the corner of State Highway 73 and Coxs Road, Springfield, and as shown on **Plan CRC164541**, which forms part of this consent.
- 2 Prior to first filling of the dam, the Consent Holder shall advise Canterbury Regional Council, RMA Monitoring and Compliance Manager, of the resource consents which shall be used to supply water for the dam. Should these consents be used to provide water for the dam change, the Consent Holder shall so advise Canterbury Regional Council, RMA

Monitoring and Compliance Manager, prior to the change being made.

- 3 Except as required by the subsequent conditions, the dam shall be constructed and maintained in accordance with the design plans as authorised by the approved Building Consent for the dam.

### Maximum volume and water depth

- 4 The maximum volume of water dammed at full supply level shall not exceed 2.1 million cubic metres.
- 5 For the purposes of controlling the maximum depth of water, the construction of the dam shall be limited to the following parameters:
  - (a) The maximum dam embankment height, as measured from the dam crest to the lowest elevation at the outside limit of the dam (excluding the excess material bund), shall not exceed 11.5 metres and the dam crest level shall not exceed 359.0 m RL;
  - (b) The minimum freeboard shall be 1.4 metres; and
  - (c) The maximum depth of excavation shall be at least one metre above the seasonal high water table level.

### Certification

- 6 Where Conditions (12), (14) and (21) refer to 'certification by an independent certifier', this shall mean the following:
  - (a) the certifier shall be a professional engineer, suitably qualified and experienced in the design, construction and documentation required for large dams in accordance with the NZSOLD New Zealand Dam Safety Guidelines 2015, and shall be independent of the Consent Holder, dam designers and construction contractors;
  - (b) the certifier shall be authorised by Canterbury Regional Council, RMA Monitoring and Compliance Manager, as meeting Condition (6)(a);
  - (c) the Consent Holder is responsible for appointing the certifier and all costs of certification;
  - (d) the Consent Holder shall implement any documentation changes

and remedial actions recommended by the certifier; and

- (e) the Consent Holder shall provide to the Canterbury Regional Council, RMA Monitoring and Compliance Manager, written certification from the certifier that the documentation, design, system or processes subject of the respective consent condition(s) are in accordance with good engineering practice and are consistent with the New Zealand Society on Large Dams (NZSOLD) New Zealand Dam Safety Guidelines 2015 and any updates, including any amendment or update current at the time of certification.

### Building Consent plans

- 7 At least one month prior to the commencement of construction of the dam, the Consent Holder shall provide to the Canterbury Regional Council, RMA Monitoring and Compliance Manager the approved Building Consent Plans.
- 8 Within 12 months of the date of first filling of the dam, "as built" detailed engineering plans shall be provided to Canterbury Regional Council, RMA Monitoring and Compliance Manager.
- 9 All activities authorised under this consent shall be undertaken in accordance with the approved Building Consent plans.

### Water Storage Commissioning Plan

- 10 The Consent Holder shall prepare a Water Storage Commissioning Plan for the dam. The objectives of the Water Storage Commissioning Plan shall be to minimise risks from the initial filling of the dam, in accordance with NZSOLD (2015) New Zealand Dam Safety Guidelines.
- 11 The Water Storage Commissioning Plan shall include:
  - (a) the commissioning and testing of control structures and systems, pumps, and monitoring systems; and
  - (b) methods outlining surveillance of the dam during commissioning and reporting requirements.
- 12 The Water Storage Commissioning Plan shall be certified by an independent certifier. Such certification shall be provided to the Canterbury Regional Council, RMA Monitoring and Compliance Manager at least three months prior to the first filling or partial filling of the dam.



- 13 The initial filling of the dam shall be undertaken in accordance with the certified Water Storage Commissioning Plan.

### **Certification procurement**

- 14 Prior to first filling of the dam, the Consent Holder shall obtain certification from a suitably qualified and experienced dam construction expert, in accordance with Condition 6(a), that the design of the dam and its construction are in accordance with good engineering practice, including being consistent with the NZSOLD New Zealand Dam Safety Guidelines 2015, including any amendment or update current at the time of certification, and the requirements of the Building Act 2004. Certification of the design of the dam is to certify that the seismic assessment and the design parameters are appropriate and consistent with the NZSOLD New Zealand Dam Safety Guidelines 2015. This certificate shall be submitted to the Canterbury Regional Council, RMA Monitoring and Compliance Manager at least two months prior to first filling of the dam.
- 15 In the event that the Consent Holder cannot obtain certification in accordance with Condition (14), the Consent Holder shall implement all necessary alterations to obtain certification prior to first filling.

### **Certified management plans to be held on site**

- 16 The Consent Holder shall ensure that copies of the certified Water Storage Commissioning Plan and certified Emergency Action Plan, as required by Conditions (10) and (24), are available on site at all times, and that all key personnel are made aware of the contents of each plan prior to first filling of the dam.

### **Public Liability Insurance**

- 17 The Consent Holder shall, at all times after construction has commenced, have in place public liability insurance on terms suitable in all respects to the Councils. The insurance shall be obtained on the following conditions:
  - (a) The Councils shall be additional insured parties of the insurance policy with respect to liability arising out of the actions of the Consent Holder and able to enforce its terms.
  - (b) The Consent Holder shall ensure that the Canterbury Regional Council, RMA Monitoring and Compliance Manager, has at all times after construction commences, written confirmation that the insurance required by this condition is in place.

- (c) The Consent Holder shall ensure that the insurer is required to provide confirmation of receipt of the premiums due to the Councils.
  - (d) The policy shall reserve the right to the Council to rectify any non-payment prior to the cancellation period of notice expiring.
- 18 The limits of indemnity and coverage and terms of the policy are to be reviewed by the Consent Holder at least every three years, and if that review results in amendment or alteration to the insurance cover, then agreement of the Canterbury Regional Council, RMA Monitoring and Compliance Manager, to any such amendments or alterations will be required. Such agreement not to be unreasonably withheld.

### **Dam safety management system**

- 19 The Consent Holder shall engage a suitably experienced and qualified professional engineer to prepare a Dam Safety Management System, in accordance with the NZSOLD New Zealand Dam Safety Guidelines 2015 or any subsequent revisions to this guideline. The Objectives of the Dam Safety Management System shall be to minimise risks from the ongoing operation of the dam.
- 20 The documented Dam Safety Management System shall include but not be limited to the following components, in accordance with the NZSOLD New Zealand Dam Safety Guidelines 2015 or any subsequent revisions to this guideline:
- (a) governance and people;
  - (b) dam and reservoir operation and maintenance; including monitoring of the performance of the HDPE liner;
  - (c) surveillance;
  - (d) appurtenant Structures and Gate and Valve Systems;
  - (e) intermediate dam safety reviews;
  - (f) comprehensive dam safety reviews;
  - (g) special inspections and dam safety reviews;
  - (h) emergency preparedness;

- (i) identifying and managing dam safety issues, including providing for the immediate inspection of the dam and its associated components and accessory structures as soon as practicable after any earthquake with an intensity of VII (Very Strong) on the Modified Mercalli Scale occurs at the dam;
  - (j) information management, including the reporting to the Canterbury Regional Council, RMA Monitoring and Compliance Manager, of the results of any safety reviews; and
  - (k) audits and reviews.
- 21 The Dam Safety Management System shall be certified by an independent certifier. Such certification shall be provided to the Canterbury Regional Council, RMA Monitoring and Compliance Manager, prior to first filling of the dam.
- 22 The operation of the dam and associated activities shall be undertaken in accordance with the certified Dam Safety Management System.
- 23 The Dam Safety Management System shall be reviewed as follows:
- (a) The reviews shall be undertaken every twelve months, for the first two years of operation following the initial filling of the dam, and thereafter every five years coinciding with Comprehensive Safety Reviews and also whenever a trigger event occurs, as identified in the Dam Safety Management System.
  - (b) The reviews shall evaluate the Dam Safety Management System, the results of any inspections and any monitoring data and communications to or from the Selwyn District Council and the Canterbury Regional Council.
  - (c) The results of the review shall be recorded in writing and sent to the Canterbury Regional Council, RMA Monitoring and Compliance Manager within one month of the review occurring.
  - (d) The Dam Safety Management System shall be re-certified by an independent certifier after any change that is more than a minor or inconsequential change, and not less than once every five years. Such re-certifications shall be provided to the Canterbury Regional Council, RMA Monitoring and Compliance Manager within fifteen working days of re-certification.

## Emergency Action Plan

- 24 Prior to first filling of the dam, an Emergency Action Plan (EAP) shall be

submitted to the Canterbury Regional Council, RMA Monitoring and Compliance Manager.

- 25 The EAP shall be prepared in consultation with the Civil Defence Emergency Management Group, including the Selwyn District Council and the Canterbury Regional Council, and shall, as far as practicable, be consistent the NZSOLD New Zealand Dam Safety Guidelines 2015, and with any Civil Defence Emergency Management Group Plan governing the Regional and District Councils pursuant to the Civil Defence Emergency Management Act 2002.
- 26 The EAP shall contain as a minimum:
  - (a) Maps of land areas modelled as being subject to inundation in the event of abnormal or excess flow release and contact details for people resident within those areas, and strategic infrastructure providers with infrastructure in those areas, where they can be ascertained;
  - (b) Contingency plans for alerting people and strategic infrastructure providers with infrastructure within the identified areas of inundation and relevant Civil Defence authorities of the risk of such events;
  - (c) A procedure for the identification and implementation of alternative access routes for vehicles in the event of inundation or damage to a State highway or local road, including procedures to close roads and divert vehicles away from the potential dam-break flood inundation zone in a dam safety emergency.
- 27 Four weeks prior to first filling of the dam, a copy of the EAP shall be provided to the Canterbury Regional Council, RMA Monitoring and Compliance Manager, the Selwyn District Council, the Christchurch City Council, the Canterbury District Health Board, the NZ Police, the NZ Fire Service, and the NZ Transport Agency for their information. Any input to the EAP those organisations provide will be taken into account within the EAP by the Consent Holder.
- 28 The Consent Holder shall review the EAP at least annually, timed to coincide with a review of the Civil Defence Emergency Management Group Plan specified in Condition (25).
- 29 Any emergencies associated with the activities authorised by this consent shall be undertaken in accordance with the EAP.

## Water quality

- 30 The pond shall be visually inspected for nuisance algae growths at least once every three months. Appropriate action shall be undertaken to manage the effects of the nuisance growths if they are encountered.

## Review

24. Pursuant to Section 128(1) of the Resource Management Act 1991, the Consent Authority may serve notice of its intention to review the conditions of this consent within a period of three months commencing on each anniversary of the date of issue of the consent for any of the following purposes:
- i. To deal with any adverse effects on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
  - ii. To require the Consent Holder to adopt the best practicable option to mitigate any adverse effect upon the environment; or
  - iii. To deal with any other adverse effect on the environment on which the exercise of the consent may have any influence;

## Administrative charges

- 31 The Consent Holder shall pay to the Canterbury Regional Council any administrative charges fixed in accordance with section 36 of the Resource Management Act 1991. The administrative charges shall be paid to the Canterbury Regional Council for the carrying out of its functions in relation to the administration, monitoring and supervision of this consent and for carrying out its functions under section 35 of the Resource Management Act 1991.

## Other charges or costs

- 32 The Consent Holder shall pay all costs relating to certification or engagement of others to undertake any actions or services required in terms of these conditions.

## 10.2 Decision No 2:

### **RC155704: Selwyn District Council: Land use Consent to construct and maintain a water storage pond near Sheffield**

1. **Name:** Central Plains Water Limited
2. **Address:** Level 2, 2 Hazeldean Road, Addington, Christchurch 8024
3. **Date of commencement:** As provided in s.116 of the Resource Management Act 1991.
4. **Term of consent:** Unlimited.
5. **Date of lapsing of consent (if not given effect to):** The consent lapsing period for this consents shall be ten (10) years from the commencement of the consent as provided in s.125 of the Resource Management Act 1991.
6. **Purpose of consent:** To construct, and maintain a large-scale water storage dam capable of impounding up to 2.15 million cubic metres (**Mm<sup>3</sup>**) of water on the corner of Coxs Road and SH73, Sheffield. and in general accordance with the relevant conditions set out below.
7. **Location:** Land Parcel RS19009, at the corner of Coxs Road and SH73, near Sheffield

## **Conditions of Consent**

### **General**

### **Scope of Works**

1. The CPW Sheffield Storage Pond and all incidental work shall be constructed, operated and maintained generally in accordance with the details contained in the application for resource consent dated 7 December 2015 and supporting material, except where modified by specific conditions set out below or the plans authorised by the Building Consent for the dam.

## Other Approvals

2. Details of all necessary permissions required and or obtained under other legislation (e.g., Archaeological Authority) shall be supplied to the Selwyn District Council at least one month prior to the commencement of works.

## Construction Plans

3. At least one month prior to the date upon which the Consent Holder intends to commence activities, the Consent Holder shall provide to the Selwyn District Council Planning Manager the approved Building Consent Plans.
4. All activities authorised under this consent shall be undertaken in accordance with the Building Consent plans.

## As Built Plans

5. Within twelve months of the date of first filling the storage pond, the Consent Holder shall provide a complete set of “as built” detailed engineering plans confirming the location of works to the Selwyn District Council, Planning Manager.

## Construction

### Complaints Register

6. The Consent Holder shall maintain a complaint register for all construction operations. It shall include the date, time and type of complaint, possible cause of the complaint, and the corrective action taken by the Consent Holder to avoid, remedy or mitigate the effects identified by the complainant, including the time of that corrective action.

### Hours of Work

7. Construction of the storage pond shall be undertaken in accordance with the following restrictions:
  - (a) Work shall be limited to between 0630 - 2000 hours.
  - (b) There shall be no construction activity on Sundays or any public holidays.

### Construction Noise Limits

8. All construction activity shall be conducted so that noise emissions do not exceed the noise limits contained in the following table. Sound levels shall be measured and assessed in accordance with the provisions of NZS 6803:1999 “Acoustics – Construction Noise”. These limits shall apply at all occupied residential units that have not provided written approval.

Time of week	Time period	Duration of work					
		Typical duration (dBA)		Short-term duration (dBA)		Long-term duration (dBA)	
		L <sub>eq</sub>	L <sub>max</sub>	L <sub>eq</sub>	L <sub>max</sub>	L <sub>eq</sub>	L <sub>max</sub>
Weekdays	0630-0730	60	75	65	75	55	75
	0730-1800	75	90	80	95	70	85

	1800-2000	70	85	75	90	65	80
	2000-0630	45	75	45	75	45	75
Saturdays	0630-0730	45	75	45	75	45	75
	0730-1800	75	90	80	95	70	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75
Sundays and public holidays	0630-0730	45	75	45	75	45	75
	0730-1800	55	85	55	85	55	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75

## Construction Management Plan

9. The Consent Holder shall prepare a Construction Management Plan for the Sheffield Storage Pond that seeks to minimise adverse effects during construction, sets out the timing, duration and monitoring of works and mitigation measures. The Construction Management Plan shall include the matters set out in the conditions below, and shall be submitted to the Selwyn District Council Planning Manager for certification at least one month prior to any activity authorised by this consent occurring on the site.
10. The Construction Management Plan shall include the following matters:
  - (a) The work programme, staging, timing and duration of the works;
  - (b) the name and 24 hr contact details of the administrator of a complaints register; and
  - (c) the name and 24 hr contact details of the person nominated by the Consent Holder to supervise the implementation of, and adherence to, the Construction Management Plan.
  - (d) Earthworks management:
    - (i) Construction works shall be in general accordance with Environment Canterbury's Erosion and Sediment Control Guidelines (2007);
    - (ii) Measures necessary to provide for stormwater disposal and sediment removal;
    - (iii) Inclusion or maintenance of a vegetated strip between earthworks and water races;
    - (iv) Siting of stockpiles to avoid sediment-entrained runoff entering races or going off-site and to reduce the risk of fugitive dust emissions;
    - (v) Avoidance of entrainment of oil, fuels or any other hazardous substances in stormwater, with particular emphasis on re-fuelling areas and repair areas; and
    - (vi) Stabilisation and maintenance of site entrances from public roads;
11. Construction work and associated activities shall not occur until the Construction Management Plan has been certified by the Selwyn District Council Planning Manager.



## Dust

12. The Consent Holder must ensure that the discharge of dust created by earthworks, transportation and construction activities does not create any dust hazard or nuisance.
13. Prior to the commencement of any construction, the Consent Holder must submit a "Dust Control Management Plan" for the activity to the Planning Manager, Selwyn District Council. In particular, the Dust Management Control Plan shall specify the potential dust sources and the mitigation measures to be undertaken to minimise dust.

## Affected Properties

## Restoration Work – Water Race Schemes

14. The Consent Holder is to identify and outline procedures to manage any disruption to Water Race Schemes during the construction of the storage pond, intake and associated structures. As a minimum this is to achieve a continuity of supply in accordance with the Selwyn District Council 'levels of service' in place at the time of construction. This may involve the provision of an alternative supply at the cost of the Consent Holder if required.

## Community Liaison

15. The Consent Holder shall appoint and make available at the site entrance contact details for a Community Liaison Officer, who shall be the known point of contact for public to raise any matters that may arise during construction of the Sheffield Storage Pond.

## Land Contamination

## Remediation Action Plan

16. A Remediation Action Plan for contaminated areas will be prepared, certified and lodged with the Selwyn District Council prior to any construction activity and adhered to where the construction of any works subject to the resource consent requires the disturbance on removal of any:
  - (a) Landfill;
  - (b) Farm dump;
  - (c) Offal pit;
  - (d) Septic tank; and
  - (e) Silage pits.
17. The Remediation Action Plan above shall address the matters set out in (a) - (f) below, with a level of detail appropriate to the degree of risk presented by the disturbance, removal or inundation of each specific contaminated area:
  - (a) The earthworks and transport controls to minimise the off-site mitigation of contamination (via air or water during the remedial works).
  - (b) Appropriate measures for the control of dust or odour;
  - (c) The diversion of stormwater away from the remedial works;

- (d) The treatment of contaminated stormwater or groundwater in the remediation area;
- (e) Sampling and reporting;
- (f) The health and safety requirements for remediation workers.

## **Cultural and Heritage Impacts**

### **Heritage Authority**

- 18. Prior to commencing any construction, the Consent Holder shall obtain the appropriate Authority to destroy, damage or modify an archaeological site from Heritage New Zealand.

### **Cultural Monitoring**

- 19. The Consent Holder shall engage a Cultural Monitor to observe earthworks and removal of soil down to a level considered by an archaeologist to be below the ground-level present during pre-European occupation.
- 20. The Cultural Monitor shall be a member of Te Ngāi Tūāhuriri Rūnanga or Te Taumutu Rūnanga and trained in the recognition of archaeological deposits.
- 21. Cultural monitoring shall be undertaken in general accordance with the Cultural Monitoring Program in Schedule 1 attached to and forming part of this consent.

### **Site Works**

- 22. All crews working on the project shall be briefed on the possibility of encountering archaeological material during the course of earthworks and what to do if this happens.
- 25. All archaeological works that will affect an archaeological site will be undertaken by or under the supervision of an archaeologist. As the location of the archaeological deposits are not known, works will follow an on-call procedure. If archaeological material is encountered, works will cease within 20 metres of the discovery, and an archaeologist contacted immediately.
- 26. Where practicable, all sites should be avoided, but where such sites cannot be avoided, full and appropriate recording and documentation of such sites should be undertaken before they are destroyed. Any mitigation of damage, modification or destruction of the sites shall be undertaken according to the appropriate Authority(ies) obtained from Heritage New Zealand.
- 27. Any artefacts, taonga and other cultural material associated with Māori archaeology shall be repatriated to Te Ngāi Tūāhuriri Rūnanga and Te Taumutu Rūnanga and the final storage or display of these items be determined by Te Ngāi Tūāhuriri Rūnanga and Te Taumutu Rūnanga.
- 28. All research and analysis of any cultural heritage located within the project site shall be completed in a timely fashion and that copies of all reports be provided to Te Ngāi Tūāhuriri Rūnanga and Te Taumutu Rūnanga.

### **Accidental Discovery Protocol**

- 29. In the event of any disturbance of Koiwi Tangata (human bones) taonga (treasured artefacts), or other Māori archaeological sites, the Consent Holder shall immediately:

- (a) Advise the Te Rūnanga o Ngāi Tahu, Te Ngāi Tūāhuriri Rūnanga, Te Taumutu Rūnanga, or their representative, and the Selwyn District Council of the disturbance;
  - (b) Cease earthmoving operations in the affected area until the area containing the Koiwi Tangata or taonga has been clearly demarcated, and Kaumatua and archaeologists have certified that it is appropriate for earthmoving to recommence.
30. In the event of accidental discovery of archaeological remains, the following steps shall be taken:
- (a) All activity affecting the immediate area shall cease and the Regional Archaeologist of Heritage New Zealand shall be contacted;
  - (b) The site shall be secured to ensure that the remains are not further disturbed;
  - (c) Further works affecting the remains will not commence until either:
    - i. The Regional Archaeologist of Heritage New Zealand has confirmed in writing that the archaeological provisions of the Heritage New Zealand Pouhere Taonga Act 2014 do not apply; or
    - ii. The requirements of the archaeological provisions of Heritage New Zealand Pouhere Taonga Act 2014 have been met, and if required, and archaeological authority has been granted by Heritage New Zealand.
    - iii. If human remains / koiwi tangata are located, in addition to the above steps, the Runanga representative for the area and the New Zealand Police must be contacted.
31. The protocol in condition 29(c) shall only be amended in consultation with Heritage New Zealand, Te Rūnanga o Ngāi Tahu, Te Ngāi Tūāhuriri Rūnanga and Te Taumutu Rūnanga. Once finalised copies shall be lodged with those parties and the Selwyn District Council prior to any construction commencing.

## **Operation**

### **Public Access**

32. Public access to the embankments and storage pond, and farm animals and unauthorised persons shall be prevented from accessing the pond and embankments through provision of secure barriers such as fencing and locked gates and/or other such combination of measures that inhibits or prevents access.

## **Insurance**

### **Public Liability Insurance**

33. The Consent Holder shall, all at times after construction has commenced, have in place public liability insurance on terms suitable in all respects to the Selwyn District Council. The insurance shall be obtained on the following conditions:
- (a) The Selwyn District Council shall be the additional insured party of the insurance policy with respect to liability arising out of the actions of the Consent Holder and shall be able to enforce its terms;

- (b) The Consent Holder shall ensure that the Selwyn District Council has, at all times after construction commences, written confirmation that the insurance required by this condition is in place.
  - (c) The Consent Holder shall ensure that the insurer is required to provide confirmation of receipt of the premiums due to the Council.
  - (d) The policy shall reserve the right to Council to rectify any non-payment prior to the cancellation period of notice expiring.
34. The insurance provided under this condition must be sufficient to cover all reasonable insurable contingent risks associated with the operation of the Sheffield Storage Pond, including offsite impacts to third party property associated with any reasonable foreseeable failure of any part of the proposed pond, together with a reasonable provision for reconstruction and reinstatement; and with the exception of insured defence costs the proceeds of the insurance policy shall be applied for those purposes only.
  35. The Consent Holder will, at its cost, prior to arranging the insurance policy, obtain advice from a person qualified and experienced within the insurance industry to determine the limit of indemnity and coverage provided for by this insurance policy. In providing that advice, that person is to ensure the purpose of the policy is met, which is to provide coverage and protection in sufficient quantum to compensate for third party losses in the instance of a failure of the works authorised under this consent.
  36. A copy of the advice obtained for the purposes of condition 34 above will be provided to the Selwyn District Council Planning Manager for review and comment, and any comments and suggestions that are provided to the Consent Holder will be considered and, if agreed, provided for within the insurance policy.
  37. If the parties cannot agree on the terms of insurance cover, the coverage, or indemnity value, the dispute shall be referred to arbitration.
  38. The limits of indemnity and coverage and terms of the policy are to be reviewed by the Consent Holder at least every three years, and if that review results in amendment or alteration to the insurance cover, then agreement of the Selwyn District Council to any such amendments or alterations will be required. Such agreement not to be unreasonably withheld.

#### **Dam Safety Management System**

39. The Consent Holder shall engage a suitably experienced and qualified engineer to prepare a Dam Safety Management System, in accordance with the NZSOLD New Zealand Dam Safety Guidelines 2015 or any subsequent revisions to this guideline. The Objectives of the Dam Safety Management System shall be to minimise risks from the ongoing operation of the dam.
40. The documented Dam Safety Management System shall include, but not be limited to the following components, in accordance with the NZSOLD New Zealand Dam Safety Guidelines 2015 or any subsequent revisions to this guideline:
  - (a) Governance and people;
  - (b) Dam and reservoir operation and maintenance; including monitoring of the performance of the HDPE liner;
  - (c) Surveillance;
  - (d) Appurtenant Structures and Gate and Valve Systems;

- (e) Intermediate dam safety reviews;
  - (f) comprehensive dam safety reviews;
  - (g) special inspections and dam safety reviews;
  - (h) emergency preparedness;
  - (i) identifying and managing dam safety issues, including providing for the immediate inspection of the dam and its associated components and accessory structures as soon as practicable after any earthquake with an intensity of VII (Very Strong) on the Modified Mercalli Scale occurs at the dam;
  - (j) information management, including the reporting to the Selwyn District Council, Planning Manager, of the results of any safety reviews;
  - (k) audits and reviews.
41. The Dam Safety Management System shall be certified by an independent certifier. Such certification shall be provided to the Selwyn District Council, Planning Manager, prior to first filling of the dam.
  42. The operation of the dam and associated activities shall be undertaken in accordance with the certified Dam Safety Management System.
  43. The Dam Safety Management System shall be reviewed as follows:
    - (a) The reviews shall be undertaken every twelve months, for the first two years of operation following the initial filling of the dam, and thereafter every five years coinciding with Comprehensive Safety Reviews and also whenever a trigger event occurs, as identified in the Dam Safety Management System.
    - (b) The reviews shall evaluate the Dam Safety Management System, the results of any inspections and any monitoring data and communications to or from the Selwyn District Council and the Canterbury Regional Council.
    - (c) The results of the review shall be recorded in writing and sent to the Selwyn District Council, Planning Manager within one month of the review occurring.
    - (d) The Dam Safety Management System shall be re-certified by an independent certifier after any change that is more than a minor or inconsequential change, and not less than once every five years. Such re-certifications shall be provided to the Selwyn District Council, Planning Manager within fifteen working days of re-certification.

### Emergency Action Plan

44. Prior to first filling of the dam, an Emergency Action Plan (EAP) shall be submitted to the Selwyn District Council, Planning Manager.
45. The EAP shall be prepared in consultation with the Civil Defence Emergency Management Group, including the Selwyn District Council and the Canterbury Regional Council, and shall, as far as practicable, be consistent with any Civil Defence Emergency Management Group Plan governing the Regional and District Councils pursuant to the Civil Defence Emergency Management Act 2002.

46. The EAP shall contain as a minimum:
- (a) Maps of land areas modelled as being subject to inundation in the event of abnormal or excess flow release and contact details for people resident within those areas, and strategic infrastructure providers with infrastructure in those areas, where they can be ascertained;
  - (b) Contingency plans for alerting people and strategic infrastructure providers with infrastructure within the identified areas of inundation and relevant Civil Defence authorities of the risk of such events;
  - (c) A procedure for the identification and implementation of alternative access routes for vehicles in the event of inundation or damage to a State highway or local road, including procedures to close roads and divert vehicles away from the potential dam-break flood inundation zone in a dam safety emergency.
47. Four weeks prior to first filling of the dam, a copy of the EAP shall be provided to the Canterbury Regional Council, RMA Monitoring and Compliance Manager, the Selwyn District Council, the Christchurch City Council, the Canterbury District Health Board, the NZ Police, the NZ Fire Service, and the NZ Transport Agency for their information. Any input to the EAP those organisations provide will be taken into account within the EAP by the Consent Holder.
48. The Consent Holder shall review the EAP at least annually, timed to coincide with a review of the Civil Defence Emergency Management Group Plan specified above.
49. Any emergencies associated with the activities authorised by this consent shall be undertaken in accordance with the EAP.
50. The Consent Holder shall ensure that final version of the Emergency Action Plan is available on site at all times, and that all key personnel are made aware of the contents of each plan prior to first filling of the dam.

### **Review of Conditions**

51. Pursuant to section 128(1) of the Act, the Consent Authority may review any of the conditions by serving notice either:
- (a) Within a period of two months of the date of commencement of the consent; or
  - (b) Within a period of three months commencing on each anniversary of the date of issue of the consent for any of the following purposes:
    - iv. To deal with any adverse effects on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
    - v. To require the Consent Holder to adopt the best practicable option to mitigate any adverse effect upon the environment; or
    - vi. To deal with any other adverse effect on the environment on which the exercise of the consent may have any influence;
    - vii. To deal with inaccuracies contained in the consent application that materially influenced the decision made on the application and is such that it is necessary to apply more appropriate conditions.

**ADVICE NOTES:**

1. This resource consent does not authorise access to land. The Consent Holder will need to obtain agreement from every landowner whose land is affected by the application or ancillary activity.
2. This resource consent only provides approval under the Resource Management Act 1991. Should the storage pond require authorisation under other legislation the Consent Holder will need to obtain the relevant approval prior to works commencing.
3. The Council will require payment of its administrative charges in relation to monitoring, as authorised by the provisions of section 36 of the Resource Management Act 1991.



## Schedule 1: Cultural Monitoring Program

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### Introduction

This Cultural Monitoring Program (CMP) describes the following in relation to engagement of a Cultural Monitor (CM) during the construction of the Sheffield Pond:

- Operational matters
- The observation methodology and procedures
- The discovery, protection and reporting protocols
- Record keeping requirements and methods.
- Compliance with other relevant documents and plans
- Contact details.

This CMP is based on the CMP developed during Stage 1 of the Central Plains Water Enhancement Scheme by Central Plains Water Limited (CPWL), Fulton Hogan John Holland Joint Venture (the Contractor), the Project Archaeologist, and the Stage 1 CM.

### Operational Matters

Health and Safety is the highest priority for CPWL and the Contractor who will develop and implement a Health and Safety Management Plan for the Sheffield Pond. The CM shall complete a Job Safety Assessment (JSA) in consultation with CPWL and the Contractor. These documents must be read and understood by the CM, and adhered to at all times.

The JSA will be updated weekly as agreed by the CM and CPWL Construction Manager.

Upon arrival and prior to commencing any other activities, the CM must report to the Site Office. This is the location where daily site hazard information is recorded and made available, along with all relevant Management Plans, information on work schedules for the day, and any other information that may be relevant to the CM.

The CM will sign in and out upon arrival and departure at the Site Office, and whilst the CM is not engaged in monitoring activities on site the vehicle provided will be secured at the Site Office.

On arriving at a working area to carry out monitoring activities, the CM must sign in at the pre-start for that working area, and alert the working party that the CM is working in their area.

### Observation Methodology

The resource consent conditions require cultural monitoring for the excavation of material down to a depth below the ground level present during pre-European occupation. This depth is to be determined by the archaeologist approved by Heritage New Zealand in the relevant Authority(ies) granted.

These excavations are referred to as the topsoil strip. The methodology for observing the topsoil strip is as follows:



- For moving excavation plant (scraper/dozer/), the CM follows behind the excavating plant on foot to monitor the exposed area.
- For stationary excavating plant (digger) the CM stands in a position where the excavation can be monitored.
- Under either scenario, the minimum safe clearance distance is maintained relevant to the type of plant.
- The CM monitors an exposed area between each cut (typically 200-300mm), and continues to monitor each cut until clean gravels are intercepted.
- The area monitored and any observations are recorded by the CM.

Topsoil stripping is carried out by a variety of heavy plant which poses a significant risk to the CM. This and other potential hazards the CM may encounter shall be identified in the JSA. A copy of this document shall be kept available at the Site Office.

The CM will use their discretion to organise the location, duration and frequency of cultural monitoring with the agreed expectation that cultural monitoring outcomes are achieved whilst ensuring that topsoil stripping is not impeded (in the absence of any discovery which requires a cessation of activity).

In the event that the CM is unavailable, the CM is responsible for arranging a replacement CM if deemed necessary by the CM. Absence of a CM does not require earthworks activities to cease.

For the avoidance of doubt, the CMP does not impose any obligations on CPWL except to engage a CM and allow them to inspect exposed areas after each cut of approximately 200-300mm deep.

### Discovery, Protection and Reporting

The CM has the discretion to decide whether or not any object uncovered during the topsoil strip is of potential cultural and/or archaeological interest. The CM may record (by photo and/or written record) that an object has been uncovered, but is not required to follow the protocol outlined below unless the object may be of cultural and/or archaeological interest.

If an object of cultural and/or archaeological interest is identified, the relevant procedure described in the Heritage Management Plan and the conditions of resource consent will be followed.

### Record Keeping

The CM will progressively record areas where cultural monitoring has been carried out and completed. A record sheet for this information shall be developed and be kept in the Site Office.

In the event that the CM identifies an object which may be of cultural and/or archaeological interest, a copy of any photographic or written records of the object taken by the CM will be provided to CPWL.

The CM will record the hours of Cultural Monitoring and report these to the CPWL Manager weekly.

## Other documents and plans

Supplementary to the CMP, the CM is required to act in accordance with a number of supplementary documents, prepared in accordance with the resource consents and permits held by CPWL:

- Resource consents granted under the Resource Management Act 1991
- Authority(ies) granted by Heritage New Zealand
- Health and Safety Management Plan.

The CM will read and understand these documents and act in accordance with them at all times. Any conflicts or questions should be communicated to the CPWL Construction Manager at the earliest opportunity.

## Contact Details

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## 11 APPENDICES

### 11.1 List of submitters

Submitter	Summary of issues raised	Consents
<b>The Benny Taiaroa Trust</b>	Economic productivity and security for now and future generations. Improved irrigation and nutrient management.  Community benefits.	CRC164541 Support RC155704 Support
<b>Rodney Jarman May</b>	Stored water required to future proof farming. Benefits to community and economy.	CRC164541 Support RC155704 Support
<b>Pete Morrison</b>	Environmental sustainability, economic productivity and community development. Economic viability and employment opportunities. Make the Sheffield scheme more financially viable.	CRC164541 Support RC155704 Support
<b>Philip Russell Deans</b>	Concerned of effects on the Waimakariri River and ecosystems. Health of the Hawkins from increased nutrient loss.  Effect of potential breach on building permits and land development for land downstream. Effect on stockwater races	CRC164541 Neither RC155704 Neither
<b>Andrew J Gillanders</b>	Shareholders. Border Hawkins experience flooding. Not afraid of risk dam poses.  Economic security. Water reliability. Firefighting potential. Improved water and nutrient management.	CRC164541 Support RC155704 Support
<b>Mr &amp; Mrs P K &amp; A E Jarman</b>	Improved water reliability, security of investment, economic and social benefits, reduced risk with one large dam versus 100 small ones. Fire risk reduced.  Improved water and nutrient management.	CRC164541 Support RC155704 Support
<b>Mr B F &amp; Mrs S M Hawkins</b>	Comfortable with risk of breach. Water reliability, water management, reduced pressure on groundwater supplies, community and economic benefits.	CRC164541 Support RC155704 Support
<b>S Stokes, W Rowlands, W &amp; J Wilson, D &amp; G Logan,</b>	Decreased land values to perception of risk of dam breach. Wish CPW to purchase land at current value to compensate for lost value following dam construction.	CRC164541 Neither RC155704 Neither
<b>Chamberlain Agriculture limited</b>	Employment opportunities and job security.	CRC164541 Support RC155704 Support
<b>Nesslea Hugh Wright &amp; Val Mackenzie</b>	Water reliability securing investment. Social and economic benefits from the scheme. Options for growth and development.	CRC164541 Support RC155704 Support

Submitter	Summary of issues raised	Consents	
<b>Nigel &amp; Frances Winter</b>	Improved water management. Economic and community benefits through increased production, employment opportunities, community growth. Reduced pressure on groundwater resources. Water available for firefighting.	CRC164541	Support
		RC155704	Support
<b>John Drenth</b>	Economic security and revenue development and job security	CRC164541	Support
		RC155704	Support
<b>Warwick &amp; Michael Pullen</b>	Concerns over loss of water race. Concern on restrictions of development and effects on water quality in Hawkins River from intensive farming. Restrictions on land development opportunities due to risk of dam breach. Water available for firefighting.	CRC164541	Neither
		RC155704	Neither
<b>Paulien Van der Eijk</b>	Improved employment opportunities and improved water management.	CRC164541	Support
		RC155704	Support
<b>Yarrabee Park Limited</b>	Long term economic growth and profit. Reliability of water supply and security of economic investment. Improve nutrient management.	CRC164541	Support
		RC155704	Support
<b>Te Ngai Tuahuriri Runanga Inc</b>	-No AV -Cumulative effects on surface and groundwater levels. - archaeological material uncovered during excavation -LWRP requires CIA when water storage is proposed for water from Waimakariri or Rakaia Rivers -unnatural mixing of water in event of breach -effects on Hawkins River in event of a dam breach -Duration	CRC164541	Oppose
		RC155704	Oppose
<b>Southern Pastures Limited</b>	Reduced reliability on ground and run-of- river takes so improved water levels in the catchment. Improved economic revenue both for individuals and the wider community.	CRC164541	Support
		RC155704	Support
<b>John Harrison Gray</b>	Requirement for development and further economic productivity. Employment opportunities. Improved nutrient and water management throughout the area	CRC164541	Support
		RC155704	Support
<b>Emilio Festa</b>	Important step for CPW scheme	CRC164541	Support
		RC155704	Support
<b>Adriana Gritti</b>	Employment opportunities	CRC164541	Support
		RC155704	Support
<b>Sandbrook Farm Limited</b>	Economic and social benefits	CRC164541	Support
		RC155704	Support

Submitter	Summary of issues raised	Consents	
<b>Damon L Summerfield</b>	Director and shareholder of CPW. Economic benefits of irrigation, improved water reliability, better than individual on- farm storage options and safer. Ok with safety risks.	CRC164541	Support
		RC155704	Support
<b>Colin Molloy</b>	Global food security. Reliability of water supply. Improved productivity leads to economic and community benefits.	CRC164541	Support
		RC155704	Support
<b>Allan Stuart Wright</b>	Shareholders. Improved reliability of supply and security of investment. Would like to see ongoing dam maintenance occurs. But is comfortable with safety.	CRC164541	Support
		RC155704	Support
<b>Mr P and Mrs T Abrahamson</b>	Shareholders. Improved productivity leads to improved economic benefits and communities. Also improves aesthetic values and therefore tourism appeal.	CRC164541	Support
		RC155704	Support
<b>Annemieke and Warren Thomas</b>	Shareholders. Improved reliability and economic productivity. No concerns with safety and risk of proposal.	CRC164541	Support
		RC155704	Support
<b>Antony W R Trollove</b>	Shareholders. Economic productivity	CRC164541	Support
		RC155704	Support
<b>Wright Co limited</b>	Shareholders	CRC164541	Support
		RC155704	Support
<b>Gareth Reed</b>	Non-scheme shareholder but supportive of wider economic benefits to community of improved irrigation. Considers there to be environmental benefits, particularly stage 2.	CRC164541	Support
		RC155704	Support
<b>Peter &amp; Susan Garry Lalich</b>	Economic viability, improved productivity and security of revenue and investment.	CRC164541	Support
		RC155704	Support
<b>Greendale Golf Club Inc</b>	Benefits to community. (assuming irrigation but not specifically stated)	CRC164541	Support
		RC155704	Support
<b>Stuart &amp; Francine Murray</b>	Seismic activity in the area	CRC164541	Oppose
		RC155704	Oppose
<b>Alison Jill Trollove</b>	Essential for efficient water use in area. Reduce pressure on rivers in low flow periods. Critical for climate change.	CRC164541	Support
		RC155704	Support
<b>Orion New Zealand Limited</b>	See for decline as insufficient mitigation proposed that will reduce effects of a dam breach on Orion power station. Will not oppose of a bund is built around the power station of 0.45+ m	CRC164541	Oppose
		RC155704	Oppose
<b>Jack and JoAnn van der Salm</b>	Economic benefits to the community and comfort with the safety procedures in place. Community enhancement.	CRC164541	Support

Submitter	Summary of issues raised	Consents	
<b>New Zealand Transport Agency</b>	<p>Seek conditions that: address insurance damages for third parties recognising the SH, bridges and roads.</p> <p>Emergency action plan include provision for suitable alternative routes in the event of dam breach.</p> <p>-the informal farm access located on the eastern corner is permanently and physically closed.</p> <p>-any other conditions as appropriate to mitigate effects on the state highway are proposed.</p>	CRC164541	Neither
		RC155704	Neither
<b>Cameron Edgar Adams</b>	Shareholders	CRC164541	Support
		RC155704	Support
<b>Te Taumutu Runanga &amp; Te Runanga</b>	<p>-no assessment of cultural values for water to be stored.</p> <p>-Oppose duration.</p> <p>No CIA to assess effects as recommended</p> <p>-doesn't assess effects of scheme as a whole should it include water storage.</p>	CRC164541	Oppose
		RC155704	Oppose
<b>Roecombe Hill Limited</b>	<p>-comfortable with safety and mitigation measures proposed.</p> <p>-improved economic productivity</p> <p>-shareholders</p>	CRC164541	Support
		RC155704	Support
<b>Cheryl Ridgen</b>	Futureproof farming. Improved water use and nutrient management. Satisfied with structural plans for proposal	CRC164541	Support
		RC155704	Support
<b>Kerry &amp; Elizabeth Pauling</b>	<p>Community benefits. Improved water quality and nutrient management.</p> <p>Improved water efficiency. Benefits to groundwater. Sees closure of stock water races as a benefit as they have poor water quality and are inefficient.</p>	CRC164541	Support
		RC155704	Support