

**BEFORE THE CANTERBURY REGIONAL COUNCIL
AND THE ASHBURTON DISTRICT COUNCIL**

IN THE MATTER OF: The Resource Management Act 1991

AND

IN THE MATTER OF: resource consent applications by
Rangitata Diversion Race Management
Limited to the Canterbury Regional
Council and Ashburton District Council
for resource consents for the
construction, operation and maintenance
of the Klondyke Water Storage Facility,
its associated water takes from and
discharges to the Rangitata River, and all
associated activities

EVIDENCE OF ROBERT JAMES GREENAWAY

Dated: 28 March 2018

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QUALIFICATIONS AND EXPERIENCE

- 1 My name is Robert James Greenaway.
- 2 I graduated from Lincoln University in 1987 with a three-year Diploma in Parks and Recreation Management with Distinction, and completed 18 months of postgraduate study in conservation management. I hold the status of an Accredited Recreation Professional with the NZ Recreation Association (NZRA), and until recently was the Chair of the NZRA Board of Accreditation for member accreditation to professional status, but remain a Board member. I am also a 'core group' member of the New Zealand Association for Impact Assessment. In 2011 I was appointed as an inaugural Board member of the Sir Edmund Hillary Outdoor Recreation Council, to assist Sport New Zealand with the implementation of the National Outdoor Recreation Strategy, amongst other things.
- 3 I was awarded the Ian Galloway Memorial Cup in 2004 by the NZRA (of which I am a past Executive member) to recognise 'excellence and outstanding personal contribution to the wider parks industry'. In 2013 I was awarded the status of Fellow with the NZRA.
- 4 Between 1990 and 1995 I worked with an international tourism and recreation development consultancy, Tourism Resource Consultants, on a range of large and small development and advisory projects. This work included ecotourism development planning in Samoa, for potential World Heritage Sites in the Solomon Islands for the Ministry of Foreign Affairs and Trade, event management (multisport and mountain biking), and domestic reserve, tourism and recreation management planning.
- 5 Between 1995 and 1997 I worked for Boffa Miskell Limited in Christchurch, focusing on recreation planning for local authorities and tourism development planning for private agencies.
- 6 Since 1997 I have worked independently. The majority of my work is for private companies, local and central government, and environmental and community agencies. Over the past ten years I have prepared assessments and evidence about recreation and tourism for (amongst other): the Porter Heights Ski Area, Contact Energy (Clutha River), Meridian Energy (Project Hayes wind farm, Manapouri hydro, Central Wind, Mokihinui hydro, North Bank Tunnel Concept hydro, Hunter Downs irrigation, Hurunui Wind, Waiau (Amuri) hydro), TrustPower (Wairau hydro, Arnold hydro, Patea hydro,

Matahina hydro, Lake Kaniere hydro, Lake Coleridge irrigation and hydro), Genesis Energy (Castle Hill wind), Mighty River Power (Puketoi wind), King Country Energy (Mokau hydro), Marlborough District Council (King Salmon), NZone Skydive (airfield reconsenting), the New Zealand Recreational Sport Fishing Council (Snapper 1 quota review), the New Zealand Fish and Game Council (Hurunui River) and MainPower (Mt Cass wind farm), Auckland Transport (Redoubt-Mill Road notice of requirement), NZ Transport Agency (several major roading projects). I have completed more than 350 consultancy projects nationally since 1997 and have presented evidence at more than 80 resource management hearings.

- 7 In preparing my evidence I have reviewed the code of conduct for expert witnesses contained in part 7 of the Environment Court Practice Note 2014. I have complied with it in preparing my evidence. I confirm that the issues addressed in this statement of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

EXECUTIVE SUMMARY

- 8 My evidence considers the effects on recreation amenity of the proposed Klondyke Water Storage Facility, or KSP, and the installation of a new mesh fish screen to replace the existing BAFF device. I also review a proposed white water course to be developed near the KSP in response to expectations of the Ashburton Zone Committee Regional Implementation Plan for the Canterbury Water Management Strategy for a new water-based recreation facility to be developed on irrigation infrastructure within 1.5 hours' drive of Ashburton.
- 9 I consider, primarily, in-river recreation and the effects of changes in water quantity, relying on the evidence of Mr Bas Veendrick to measure these changes. The flow changes proposed, as noted by the Canterbury Regional Council (**CRC**) s42a Officer's Report, comply with the Rangitata Water Conservation Order (RWCO).
- 10 The Rangitata River is well-recognised as an outstanding waterway for white water recreation and fishing, as illustrated by the RWCO. This status, for recreation values, is based on: salmon angling – which occurs mostly downstream of SH1, but also extends up to the Rangitata Gorge; rafting and kayaking in the Gorge, but also including – particularly for educational purposes – kayaking and rafting between the Gorge and the Arundel Bridge

(although most educational trips end upstream of Peel Forest)¹; jet boating above the Gorge, but which also occurs below SH1 (where it is mostly associated with salmon angling); and “wild, scenic and other natural characteristics” upstream of the RDR intake. The reach between the Gorge and SH1 is rarely run by jet boats due to the rocky nature of the riverbed and the infrequency of suitable flows and water clarity; the paucity of suitable flows (largely resulting from the long-term, but legally authorised abstractions – some of which have occurred following the gazettal of the Rangitata River Water Conservation Order). Peel Forest and Mount Peel are important terrestrial recreation settings nearby. There are formal public access opportunities to the River at Shepherds Bush Road, where the KSP is proposed to be constructed, and along the RDR canal near the new fish screen site.

- 11 With the proposed KSP a 10 m³/s flood flow harvest is sought. This will affect the availability of in-river flows above 98 m³/s between the RDR intake and the Arundel Bridge (that is, residual flows after the existing RDR take), and flows above 78 m³/s downstream of Arundel (and the existing 20 m³/s Rangitata Water Ltd abstraction there). This means that, during the main recreation season of 1 November to 30 April, the availability of moderate flows generally preferred for white water education (rafting and kayaking) and salmon angling are slightly enhanced while the high flows generally preferred by advanced rafters and kayakers are slightly reduced. There is no effect on the frequency of low flows which inhibit rafting or kayaking passage.
- 12 For example, while there is no change to the availability of the 40 to 80 m³/s band preferred by salmon anglers above the Arundel Bridge, downstream of the Bridge the number of days of flow availability changes from an existing seasonal average of 87.8 days to 93.2 days (+5.7). There are similar but smaller changes (increases) for kayaking and rafting flows preferred for educational purposes.
- 13 For the higher flow bands preferred by more advanced kayakers and rafters, above 98 m³/s, there are, for example, losses of up to 3.5 days per average annual recreation season (from 20.1 days existing) between the RDR intake

¹ I take this to be the “water-based recreation” which is described as significant in the RWCO between the bottom of the Gorge and the Arundel Bridge. There is no specific reference in the RWCO to rafting and kayaking in this river section in the RWCO but their educational values in this river section are referred to in the tribunal’s report.

and the Arundel Bridge for the 100 to 150 m³/s flow band upstream of the Arundel Bridge.

- 14 My assessment is that, while there is a small loss to the preferred flows for more advanced kayakers – although they will be difficult to perceive due to their scale and occurrence during periods of natural flow change – the increase of preferred flows for educational purposes – on a river reach renowned for this particular value – represents an acceptable balance. There is no new impediment to using the River for recreation.
- 15 The current fish pass takes and returns a maximum of 3m³/s of water between 10 September and 15 March to and from the River at Klondyke over a distance of just over 2380 m. The proposed new fish screen requires a bypass take and return of 3m³/s over a shortened distance of 1380 m for flows below 132.6 m³/s measured at Klondyke (before the RDR intake); up to 4 m³/s for flows between 132.6 and 142.6 m³/s; and up to 5 m³/s for flows above 142.6 m³/s. The new fish pass would operate all year, compared to the current screen which operates only between 10 September and 15 March. The 5 m³/s fish bypass flow will only operate when the full 10 m³/s flood flow take is abstracted through the RDR intake.
- 16 For the main recreation season, changes of an additional 2 m³/s will occur with the new fish screen in place only from 16 March to the end of April. The ability to discern these changes will therefore be very difficult, and at flows above 40 m³/s will have no effect on the ability to traverse the affected reach by raft or kayak. Although these changes are slight and will affect a short section of River (and a shorter section than currently), they include a particularly rocky shallow rapid. I have therefore made an effort to minimise the size of the bypass take – with a particular focus on avoiding any change to flows below 40 m³/s – which has required some additional design work on the screen structure to ensure its effective operation at low flows.
- 17 I have recommended conditions to ensure public access is maintained where new structures are built, and have consulted with Walking Access New Zealand to ensure their suitability.
- 18 I have relied on the evidence of Dr Greg Ryder and Dr Mark Sanders to review potential effects on in-river and terrestrial biota (salmonids and game birds) respectively, and Mr Stephen Brown to consider landscape effects. There are no apparent issues with hunting for small game or likely changes to recreation participation resulting from the visibility of new structures. I

understand that there are some differences in opinion relating to in-river ecology effects between Dr Ryder and the CRC s42a Officer's Report, but based on Dr Ryder's conclusions, there are no adverse effects on salmonids of relevance to recreation (and the new screen design will be a benefit).

- 19 The Ashburton District Council (**ADC**) s42a Officer's Report notes the recreation benefits afforded by the proposed white water course, and I have revised the Draft White Water Course Management Plan to reflect the ADC's disinterest in being involved in its operation. The revised management plan, which is attached to my evidence, places this onus fully on RDRML, and I recommend that it forms a trust to manage and operate it.

SCOPE OF EVIDENCE

- 20 My evidence addresses two proposals:

20.1 The potential effects of the Klondyke Water Storage Facility, or KSP, on recreation values within the Rangitata River due to flow modifications, and at and near the storage pond site, including the following developments:

- a) New control and intake structures on the Rangitata Diversion Race (RDR) to move water into and out of the KSP;
- b) Installation of a new mesh fish screen, 1.8 km downstream of the RDR intake and immediately downstream of the existing bio-acoustic fish fence (BAFF) and sand trap, and decommissioning of the BAFF;
- c) The storage pond and embankments;
- d) An emergency spillway that would allow water to be returned to the Rangitata River down a gully in the south-western corner of the site;
- e) Re-alignment of part of Shepherds Bush Road;
- f) Construction of a standing wave feature at the outlet of the KSP (a 'white water course'); and
- g) Creation of a 6 ha ecological refuge in the lower terrace area.

20.2 The effects of the modified fish pass and screen proposed to replace the existing BAFF device near the RDR intake on the Rangitata River.

METHOD

21 My assessment is based on:

- a) Site visits, including rafting the Rangitata River from immediately above the RDR intake at Klondyke to the rafting get-out used by the Peel Forest Outdoor Education Centre approximately 11 km below the intake.
- b) Literature review. I completed a preliminary literature review in May 2015 to advise project design which identified: public access issues, the desire stated in the Ashburton Zone Committee Regional Implementation Plan to create a regionally significant water-based recreation opportunity within 1.5 hours drive of Ashburton, and the need to assess flow changes in the Rangitata River throughout its range (although the proposed take complies with the Water Conservation (Rangitata River) Order 2006 (WCO) minimums). Further review was completed to support an analysis of the project as proposed. My references appear in Attachment 1.
- c) Participation in the community consultation programme carried out by Rangitata Diversion Race Management Ltd (RDRML), including direct communication with white water kayaking and jet boating representatives and the relevant Walking Access Commission field officer.
- d) Communication with other relevant technical experts contracted to advise the project, particularly those focusing on: in-river and terrestrial ecology, water quality, scheme design, landscape, hydrology and design of the white water course.
- e) Preparation of a peer-reviewed draft management plan for the proposed white water course.
- f) Input into the conditions of consent which are appended to the evidence of Mr David Greaves.
- g) Review of submissions and the CRC and ADC officers' reports.

ASSESSMENT OF EFFECTS - KSP

22 Recreational uses of the Rangitata River considered in this assessment are those which gain amenity from flows above the minimum level defined by the WCO; specifically jet boating, kayaking, trout and salmon fishing and rafting. All these activities on the River, apart from trout fishing, are

- considered to be 'outstanding' at the national level by the RWCO. I also consider effects on whitebaiting, hunting and swimming, along with public access to the River at the development site; and cumulative effects.
- 23 The proposal responds to the recommendations of the Ashburton Zone Committee Regional Implementation Plan for the Canterbury Water Management Strategy. This Strategy seeks a new regionally-significant water-based recreation opportunity developed within 1.5 hours drive of Ashburton; in this case a consent for an artificial standing wave feature on the Mayfield Hinds irrigation off-take near the development site. A new fish screen is also proposed.
 - 24 Figure 1 in Attachment 1 locates the five main recreation uses and their relative indicative levels of activity on the Rangitata River. This figure also shows the four river divisions referred to in the RWCO and the six divisions that I have used in my review (as they better reflect different recreation opportunities). The River below the SH1 Bridge is likely to have the greatest level of use due to its popularity for salmon fishing. The Gorge and section downriver to Peel Forest has the most diverse use, with all five activities represented, and notably those associated with education programmes. Low levels of use for all five activities will occur throughout the River, and the section from Arundel Bridge to SH1 is the least used. Other activities include whitebaiting at the mouth, and swimming (contact recreation) and wildfowl hunting throughout the River corridor.
 - 25 The RWCO defines the River as outstanding throughout for salmon fishing, outstanding above the Gorge (the 'Upper Rangitata') for jet boating, rafting and canoeing, and from the top of the Gorge to Arundel Bridge for rafting and kayaking. My Attachments 2 to 5 summarise the data that I have used to identify the preferred river flows for each of these activities.
 - 26 Flow regime effects of the KSP are considered for the two reaches: Rangitata Diversion Race (RDR) intake at Klondyke to Arundel Bridge; and from the Arundel Bridge to the sea (see my Figure 1 in Attachment 1).
 - 27 The KSP has different effects on flows above and below Arundel Bridge due to the 20 m³/s Rangitata Water Ltd abstraction at Arundel. The proposed KSP water take results in no change in flow availability suited to trout fishing or jet boating below SH1 (where the vast majority of jet boating occurs). There are increases in the availability of the preferred flow bands for all forms of kayaking (beginner, intermediate and advanced), for salmon fishing and

rafting, as shown in my Table 1. These data are based on analysis provided to me by Mr Veendrick, as described in his evidence, and refer to flows below the fish bypass return. Table 1 also includes flow bands (without bracketed text) identified through consultation as being of interest to White Water New Zealand (WWNZ).

Table 1: Existing and change in average days flow band² availability, 1 Nov – 30 April

Flow band (m ³ /s)	RDR to Arundel Bridge		Arundel Bridge to Sea	
	Existing	Change	Existing	Change
<60 (trout)	91.3	0.0	93.5	0.0
40-80 (salmon)	72.4	0.0	87.8	+5.4
40-70 (kayak)	55.6	0.0	55.5	0.0
45-125 (kayak)	91.3	+3.7	96.4	+2.6
55-250 (kayak)	93.1	+0.5	92	+0.5
50-120 (raft)	80.1	+3.8	85.2	+3.0
85+ (jet to SH1)	55.2	0.0	34.8	-4.9
77+ (jet below SH1)	n/a	n/a	39.2	0
60-80	33.6	0.0	48.9	+5.4
75-80	9.5	0.0	25.8	+5.4
80-100	17	+5.6	9.9	-1.7
95-100	3.4	+5.6	2.2	-0.4
100-125 ³	12.4	-1.9	12.1	-1.9
100-150	20.1	-3.5	13.7	-2.0
150+	19.3	-2.1	15.2	-1.7

- 28 There are no changes to residual flows below 98 m³/s between the RDR intake and the Arundel bridge, and no changes below 78 m³/s downstream of Arundel.
- 29 The key modification is the increase in the period flows are between 75 and 85 m³/s downstream of Arundel Bridge (+5.4 days) and between 95 and 100 m³/s between the RDR intake and Klondyke and Arundel Bridge (+5.6 days). As the flow ranges preferred for recreation are quite broad (and refer to preferred ranges rather than minimums), this increase in the occurrence of a specific flow is unlikely to be material, although there is some loss in the availability of:

² Flow bands are, for example, 0-59.999 and 60 – 84.999.

³ In my AEE report I entered the data incorrectly for the RDR to Arundel Reach for the 100-125 m³/s flow band. This is the corrected data. I discuss this further in response to submissions in my paragraph 49.

- 29.1 Flows above 85 m³/s between the Arundel Bridge and SH1 which suit adventure jet boaters. There will be a shift from an availability of 34.8 days per summer season (1 Nov to 30 April) existing to 29.9 days under the proposal – a loss of 4.9 days or 14%. This section of River is used by approximately 20 jet boaters per year. High flows – in the 100+ m³/s range – are often associated with high turbidity and low amenity for jet boating, particularly in adventure boating settings. This leaves a narrow pre-existing band of availability in the 80 to 100 m³/s band, and little change in this.
- 29.2 Flows above 100 m³/s for advanced kayakers between the RDR intake and the Arundel Bridge. There will be a shift from 38.1 days per summer season (1 Nov to 30 April) existing to 32.5 days under the proposal – a loss of 5.6 days or 14.7%. There are no use data for kayakers.
- 29.3 Flows in the preferred flow bands for salmon angling, all other kayaking, and rafting above the Arundel Bridge, specifically: 5.4 more days (from an existing base on 87.8 days) in the 40-80 m³/s flow band below the Arundel Bridge preferred by salmon anglers, and 3.8 more days (from an existing base on 80.1 days) in the 50-120 m³/s flow band in the Arundel Reach preferred by rafters, and increases in availability for all flow bands for beginner, intermediate and experienced kayakers in the Arundel Reach, with no changes to flows for jet boating below SH1.
- 30 It is important to note that the changes in availability of flow bands for recreation are unlikely to occur in contiguous periods. For example, the availability of the 100-125 m³/s band (identified through consultation as of interest to kayakers below the RDR intake) is currently available on 8.4 days per summer season (4.6% of the time) between the RDR and Arundel, with a loss of 1.1 days. This may be represented by many periods of hours or minutes, and includes night-time flows. The coincidence of a recreational user and the availability of such narrow and occasional flow bands is quite low. If a kayaking opportunity is within a period of 10 hours of good light over 24 hours, the average availability of a flow of 100-125 m³/s drops to 3.5 non-contiguous days per season and the loss to 10.8 hours. If this flow band occurs on a rising flood, which river users should avoid, the flow availability further decreases.

- 31 Reviews of freshwater and terrestrial ecology and birds indicate very little potential for adverse effects on fishing and hunting opportunities. Dr Greg Ryder considers the abstraction to be unlikely to result in ecologically meaningful effects on downstream aquatic biota, and Dr Mark Sanders finds that the proposal should result in a net benefit to birds. The landscape assessment by Mr Stephen Brown indicates potential for low to moderate effects on visual amenity from the visibility of the outfall structure from elevated positions in Peel Forest, and for moderate effects during the construction period. These are unlikely to depress recreational use of Peel Forest.
- 32 At the development site, the proposed storage pond will overlie an existing legal road (Shepherds Bush Road). The formation of this road matches its legal alignment until the top of the Rangitata River terrace. At this point, the legal alignment begins to deviate from a formed farm road and does not provide practical vehicle or walking access below the terrace, and does not connect with the riverbed for approximately 6 km until it meets Baxters Road to the east. Although much public information suggests that there is legal access to the River immediately off Shepherds Bush Road, this is incorrect and pedestrian access only is permitted by the grace of the landowner, as indicated by on-site signs.
- 33 The proposal includes reinstating Shepherds Bush Road to the top of the River terrace, formalising public access to the River via an easement in favour of the public for foot access only, and providing car parking at the road end.
- 34 A standing wave feature is included in the consent application which would provide a reliable standing wave. This 'white water course' would provide a family-focused recreation setting within a 40-minute drive from Ashburton. It would suit kayak training and more challenging surfing, boarding and surf-kayaking options. The proposal by RDRML at this stage is to gain consent for the construction and operation and operation of the course. Operational issues, such as water quality monitoring, surveillance and safety, and hours of operation are developed in the peer-reviewed draft management plan for the proposal (Attachment 6 to my evidence). It is intended that there would be no charge for access to the wave, although should an event be organised, a fee may be required by the organisers to cover supervision and perhaps fund-raising.

- 35 The white water course proposal responds to a recommendation from the Ashburton Zone Committee Regional Implementation Plan which included (its Annex p6):

In determining the overall viability of any new distributive infrastructure consideration shall be given to delivering at least 1 new regionally significant water based recreation opportunity within 1.5 hours drive of Ashburton, but that there is not a requirement to deliver such a facility where it is found to compromise the viability of any new distributive infrastructure.

- 36 I prepared a draft management plan in late 2016 for the proposed course based on the NZ Recreation Association's 2015 *Aquatic Facility Guidelines*. This draft was peer reviewed by a panel appointed by the NZ Recreation Association, which included two lecturers in outdoor instruction, an aquatics facility specialist and the Chief Executive of WaterSafe Auckland. The peer review concluded that when the course is a 'place of work' – when employed staff are on-site or when users are charged a fee – the course will require a lifeguard. At other times, the course could operate as a free recreation opportunity. In the latter situation, fewer safety measures than I originally proposed were considered necessary and I deleted several items from my first draft (such as remote surveillance of the site via webcam). A revised draft was reviewed by the ADC in early 2018 and their response indicated little interest in contributing to the management of the proposed facility; meaning that the Trust responsible for managing and operating the facility would most likely need to employ staff directly for issuing keys, conducting inductions and monitoring use, and the draft White Water Course Management Plan in my Attachment 6 has been amended accordingly. Responses from White Water NZ and the Peel Forest Outdoor Centre indicate low levels of interest for the facility from a white water kayaking perspective, which is not a key intent of providing the facility. I discuss the value of the course further in my response to the ADC s42a Officer's Report.
- 37 Conditions relating to the white water course are defined in section 22 of the ADC Proposed Consent Conditions. The applicant proposed in its conditions the development and implementation of a Water Quality Management Plan which would require monitoring of *E.coli* and phytoplankton, amongst other things, in the KSP, which is important for contact recreation in the white water course. These have not been included in the conditions proposed by the CRC and I have recommended that they be added back in. Mr Greaves has done this, and the conditions are now included in CRC's resource consent CRC170657 (43A).

- 38 Operational discharges due to rain or over-filling of the KSP may occur at lower base flows in the River than currently permitted for sluicing of the RDR, but will be naturally attenuated by the capacity of the pond and be of far lower scale than existing permitted discharges, as described in the evidence or Mr Steven Woods. The current RDR sand-trap is consented to discharge up to 90 m³/s when flows in the River are at or above 140 m³/s with no ramping rate control. I am not aware of any recreation issues associated with this. The Rangitata River is naturally subject to rapid changes in flow resulting from rainfall in the upper catchment when conditions may be dry on the Plains. For example, when I rafted the River on 16 March 2018, the River rose, as measured at Klondyke, from 72 m³/s at midday to 122 m³/s by 3 pm, with only light drizzle around Peel Forest; the result of rain in the upper catchment approximately 12 hours previously.
- 39 In terms of cumulative effects, I note that any modification to a previously natural waterway represents an adverse effect on recreation amenity, and the effect is likely to be significant if the river is outstanding for recreation in its natural state. Historic water takes on the Rangitata River below the Gorge have reduced the amenity for water-based recreation, particularly for adventure jet boating between the RDR take and Arundel Bridge, where the coincidence of adequate water clarity and high flows is insufficient to – in my opinion (and based on conversations with Rob Gerard of Jet Boating NZ) – describe this section of the River as ‘outstanding’ for jet boating. It is now infrequently boated due to the existing RDR and other water takes. However, the RDR is an historic take, and was reconsented after the RWCO was implemented; and I understand from my discussions with Ms Hamm and the planning team advising RDRML that an assessment of cumulative effects of the current proposal should look at effects which will occur over and above the currently consented environment. Currently the RDR to Arundel section remains popular for rafting and kayaking; and, with the application in mind, the published flow ranges (in both Rankin *et al* (2014) and in the submission of White Water NZ) required for these activities will remain with only minor changes as required by the RWCO and without any significant differences to now. In my opinion, the application does not represent a tipping point where amenity for rafting and kayaking is lost or modified in a meaningful way. That is due to the broad bands of flow availability for these relevant activities and the minor scale of change to each (especially considering the natural variability in flow and the very small potential for a kayaker or rafter to be aware of the change in flow availability), and the preservation of (in fact, an

increase) of flows suited to educational white water activities, for which the RDR to Arundel reach is especially recognised. I would be particularly concerned if the proposal changed the availability of flows below 40 m³/s in such a manner that any existing educational opportunities were lost. I am, however, comforted in the knowledge, based on the evidence of Mr Veendrick, that it does not.

- 40 In summary, the proposal seeks a balanced approach to maintaining and improving recreation values in and around the Rangitata River. The adverse issue of interest to recreation is the change to adventure jet boating flows above 85 m³/s in the Rangitata River between the Arundel Bridge and SH1 (a loss of 4.9 days (from 34.8 to 29.9 days) for 12 km of a 39 km run), assuming good clarity at all flows, but more likely in my opinion in the area of 2 days considering common high turbidity in high flow periods. This may have an effect on amenity enjoyed by approximately 20 boaters per year, and based on my conversations with Jet Boating NZ, this is a minor adverse effect. Otherwise, the broad flow bands desired by all key river users show increases in their availability, or no change, as a result of the 10 m³/s flood flow take.
- 41 The proposal secures public river access at Shepherds Bush Road, a consent for an artificial standing wave feature (to be built and ultimately managed by RDRML via, potentially, a trust) and improved fish screening. This approach is, in my opinion, in-line with the expectations of the Canterbury Water Management Strategy. When the adverse and positive effects to recreation are considered (and noting that the white water course is not proposed as a mitigation for any adverse in-river effects) I conclude that the proposal presents a balanced approach and therefore will not result in unacceptable outcomes for recreation.
- 42 I understand that the applicant is considering the possibility of staging the construction of the Pond, and smaller Pond may be built initially. I expect that a smaller pond, with a faster filling rate, will have a smaller effect on recreation than a larger one. Both options will be sufficient to supply water to the proposed white water course, with irrigation water demand will dictating its operation.

SUBMISSIONS - KSP

- 43 I respond to the following submissions by topic:

- 31166 Mike Pemberton

- 31193 Kenneth Paul Cooper
- 31195 Save the Rivers
- 31196 David Larner
- 31210 WWNZ
- 31222 Rex H Hobbs
- 31234 New Zealand Walking Access Commission
- 31236 Central South Island Fish & Game Council
- 31242 Peel Forest Advocates Group

- 44 Submissions relating to in-river ecology, while often relevant to the recreation values of salmonid fishing and, for periphyton and turbidity, for all recreational users, are addressed in the evidence of Dr Greg Ryder.
- 45 I note that the submission by Rangitata Rafts Ltd, which uses the Gorge for commercial rafting, supports the application, and notes that the proposed take will otherwise not affect rafting and kayaking in the River. No submission was received by Jet Boating New Zealand (JBNZ), which was aware of the application; and I take it from my consultation exercises that the scale of change – in an already modified setting for jet boating – is such that the proposal does not warrant additional review by JBNZ.

Flow reductions

- 46 The following submissions highlight concern about flow reductions affecting rafting and kayaking (or in-river recreation generally):
- 31242 Peel Forest Advocates Group
 - 31166 Mike Pemberton
 - 31193 Kenneth Paul Cooper
 - 31196 David Larner
 - 31210 WWNZ
- 47 The submission by WWNZ and its associates is the most comprehensive and specific, and by addressing this document I cover the issues raised by the other relevant submitters.

- 48 Consultation with WWNZ is summarised in the evidence of Mr Ben Curry (his Annexure J). I attended the meeting with WWNZ via telephone on the 8th of June 2016.
- 49 WWNZ's submission identifies alternative preferred flow bands for kayaking and rafting to those which I used in my analysis which advised the AEE (which were sourced from data previously presented by the author of the WWNZ submission, as reviewed in my Attachment 2). This is due to a reported change in the character of the riverbed. I have no reason to disagree with those alternative flow bands but note that they make little difference to the availability of those bands for kayakers and rafters, in that they are all increases. Table 2 below compares the WWNZ submission (p30) with my original assessment for the RDR to Arundel Bridge river section, showing one correction to my data and one to those presented by WWNZ (as identified by hydrologist Mr Bas Veendrick).

Table 2: Existing and change in <i>average days</i> flow band ⁴ availability, 1 Nov – 30 April				
Flow band (m ³ /s)	My analysis		WWNZ analysis	
	Existing	Change	Existing	Change
<60 (trout)	91.3	0.0	Same	
40-80 (salmon)	72.4	0.0	Same	
40-70 (beginner kayak)	55.6	0.0	Same	
45-125 (intermediate kayak)	91.3	+3.7	n/a	
45-170 (intermediate kayak)			103.4	+1.6
55-250 (advanced/expert kayak)	93.1	+0.5	Same	
80-170 ('big' water kayaking)			41.2	+1.6
50-120 (rafting)	80.1	+3.8	n/a	
80-170 (rafting)			41.2	+1.6
85+ (jet to SH1)	55.2	0.0	Same	
60-80	33.6	0.0	Same	
75-80	9.5	0.0	Same	
80-100	17	+5.6	17	0.0
Corrected			17	+5.6
95-100	3.4	+5.6	Same	
100-125	8.4	-1.1	12.1	-1.9
Corrected	12.4	-1.9		
100-150	20.1	-3.5	Same	
150+	19.3	-2.1	Same	

⁴ Flow bands are, for example, 0-59.999 and 60 – 84.999.

50 My error for the 100-125 stems from transcribing data for the Arundel to the sea reach to the RDR to Arundel Reach. I suspect the WWNZ error is merely a typo.

51 The core of the WWNZ identification of adverse effects appears to be based on the following analysis, which uses different flow bands to those described above (pp 21-22):

The impacts of the proposed take on the number of days flows are suitable for kayakers and rafters are now as follows

1. A reduction in valued flows above 100 cumecs for intermediate and advanced/expert kayakers, and rafters (and 'big' water flows for kayakers). There will be shifts on average per kayaking season in the number of existing flow days available as a result of the proposed 10 cumec offtake of:

o 24.1 days existing to 20.1 days – a loss of 4.0 days or 16.6% – for the 100-170 cumec flow range for intermediate kayakers

o 32.5 days existing to 27.4 days – a loss of 5.1 days or 15.7% – for the 100-250 cumec flow range for advanced/expert kayakers

o 24.1 days existing to 20.1 days – a loss of 4.0 days or 16.6% – for the 100-170 cumec flow range for rafters (and 'big' water flows for kayakers).

52 The WWNZ submission states that (p23): "Such percentage decreases and overall decrease in resource availability are significant."

53 The cut-off flow for the WWNZ analysis above is 100m³/s. The same analysis using 98 m³/s would result in the following:

- 27.5 days existing to 29.1 days – a gain of 1.6 days (5.8%) for the 98-170 m³/s flow range for intermediate kayakers.
- 36.0 days existing to 36.4 days – a gain of 0.4 days (1.1%) for the 98-120 m³/s flow range for advanced/expert kayakers.
- 27.5 days existing to 29.1 days – a gain of 1.6 days (5.8%) for the 98-170 m³/s flow range for rafters/'big' water flows for kayakers.

54 I do not agree that the substantial difference between these analyses (gains of 5.8% compared with losses of 16.6% for example) – based on a 2 m³/s difference in base flow – can be considered 'significant', or indeed relevant, when, as the WWNZ submission points out, the lowest preferred flows for rafting and kayaking range from 40 to 80 m³/s. I contributed to the research method design for Pflüger *et al* (2010) in which 450 respondents from relevant stakeholder groups were asked to estimate flow rates in a variety

of rivers, and were given photos and a stated reference flow to compare their assessment against. Across the five river reaches tested, median estimates of flow level ranged from 54% to 178% of the actual flows. Estimates of low flow were generally more accurate than high flow estimates, and estimates for small rivers were more accurate than for large rivers. The differences in flow caused by the Proposal fall into such a small scale that the ability to discern them will be very difficult. However, by focusing on the flow ranges that I refer to in my Tables 1 and 2 (based on the data in my Attachment 2), and recognising that the ability to raft and kayak the River are not diminished (and educational flow bands are increased in availability), I am confident that the changes to recreation amenity will be minor or less.

55 Page 34 of the WWNZ submission states:

Omission of other impacts, such as the loss of flows >100 cumecs for adventure jet boating in the Klondyke to Arundel Bridge reach, makes matters worse.

56 In my report I state (p38):

Between Arundel Bridge and SH1 flows above 85 m³/s which suit adventure jet boaters (assuming good water clarity) shift in an availability from 34.8 days per summer season (1 Nov to 30 April) to 29.9 days under the proposal – a loss of 4.9 days or 14%, affecting 12 km of the River. The section of River between the RDR intake and SH1 (39 km) is used by approximately 20 jet boaters per year. High flows – in the 100+ m³/s range – are often associated with high turbidity and low amenity for jet boating, particularly in adventure boating settings. This leaves a narrow pre-existing band of availability in the 80 to 100 m³/s band. There is little change in this band as a consequence of the proposal.

57 My statement was sourced from interviews with Mr Rob Gerard of Jet Boating NZ (JBNZ).

58 The majority of the WWNZ submission compares the proposed take with natural flows, and I agree that recreation amenity values of the River have been diminished by the consented takes. For example, jet boating between the RDR intake and the Arundel Bridge is now rarely undertaken because of the need to have high (>100 m³/s) and reasonably clear flows. Rob Gerard of JBNZ (pers comm) advised me that the consented takes have reduced this opportunity to the state where there is little jet boating value in this reach, and hence no interest from JBNZ in making a submission on the application.

However, the key jet boating settings – in and above the Gorge and below Arundel Bridge – remain available.

- 59 The introduction of an original control or major abstraction on a previously natural river almost always creates an adverse effect on recreation amenity of some magnitude; and that effect is likely to be significant if the river is outstanding for recreation values in its natural state.
- 60 The question here is, in my opinion; does the Proposal create a tipping point where the scale of effect is such that existing recreation amenity – accepting that it has already been adversely affected – is diminished an unacceptable way. As discussed in my paragraph 39, passing a tipping point would, I expect, require the loss of kayaking and rafting opportunity in some meaningful way, where a participant could discern a change in amenity and be displaced by that change. Such an effect would occur if, for example, there was an increase in the days where the residual flow was near 20 m³/s, when rafting becomes very difficult. My analysis, as discussed above, indicates that the changes in the flows required for the current recreation uses of the River are within the published preferred bands (including those in the WWNZ submission) and are in accord with the flow requirements as set down in the RWCO specifically to protect 'water-based recreation'⁵. Changes to flows above 100 m³/s have the greatest potential to adversely affect adventure jet boaters, where, as discussed, existing use is rare due to the need to have high and clear flows coinciding and the proposal is very unlikely to alter the level of use of the River for jet boating. Changes in flows for advanced kayaking at flows above 100 m³/s will be very difficult to discern.
- 61 WWNZ also dismiss the proposed white water feature. This asset needs to be assessed on its merits for other user groups, such as local and regional families. Not having the feature available outside the irrigation season is not, in my opinion, a robust rationale for not providing it. I note support for the white water feature from seven submitters⁶, including Mr Peter Shutt (31250) who opposes the proposed water take.
- 62 I note that WWNZ is correct in its submission that I have misreported the data from Daly (2004) in the body of my original report. As I state in my report these data provide limited guidance and are not material to my

⁵ Schedule 2, item 4

⁶ 31219, 31209, 31212, 31226, 31246, 31250, 31209

conclusions. The Appendix 1 in the report is correct and should be referred to for the Daly (2004) data.

Effects on terrestrial Peel Forest recreation

63 The following submissions were concerned about effects of construction on recreation at Peel Forest:

- 31242 Peel Forest Advocates Group (PFAG)

64 The PFAG is not specific as to what aspects of construction would have an adverse effect on patronage at the Peel Forest camping ground, as there will be very limited, if any, opportunity to see the development from the camping area (see the Beca Indicative Visual Simulations Photo Point 3 - Rangitata Gorge Road in Mr Steven Brown's Annexure to his AEE report). Noise, and dust and smoke, could be issues, and these are considered by Mr Nevil Hegley and Ms Prue Harwood respectively. None of these potential effects are identified as relevant to Peel Forest.

65 Mr Brown identifies a moderate effect on landscape values from views of the storage pond from the summit of Little Mount Peel. He states at paragraph 68 of his evidence: "the process of site clearance and construction would be clearly visible from this viewpoint, and the effects of this process, together with installation of the outflow to the Rangitata River, would have a detrimental impact on perception of the wider visible landscape for up to 5 years." This would be likely to have a consequent effect on recreation amenity for uses of the track, and other tracks nearby, but in my opinion would not be sufficient to deter campers from visiting the Mount Peel campsite, and would also be a temporary issue.

Recreation access to the River

66 The following submissions were interested in the development of pedestrian access easements to the river's edge:

- 31234 New Zealand Walking Access Commission
- 31236 Central South Island Fish & Game Council
- 31222 Rex H Hobbs

67 Mr Hobbs and the NZ Walking Access Commission seek to have access to the River retained during the construction period. Due to the use of heavy machinery throughout the site, and the construction of the discharge channel

where access is currently provided, it seems quite logical to take a precautionary approach to sustaining access when risks are apparent. Alternative angler access is available on the riverbank directly opposite the site, 6.5km further upstream at Klondyke and 9km downstream off Baxters Road. While walking from these accesses to the site of the Shepherds Bush Road access (which remains over private land), is impractical, the net loss of angling opportunity is not significant. I have, however, recommended an addition to condition ADC 10.2 (g) to include "Minimise the periods when public access to the south end of Shepherds Bush Road will be restricted or prevented"

- 68 The NZ Walking Access Commission identifies a recent (post-application) development to formalise access to the River from Shepherds Bush Road and to form a carpark near the nearby gravel reserve (see my Attachment 2). The previous easement proposal identified in my AEE report (provided to me in 2015 by the NZ Walking Access Commission) is included in this latest proposal. The proposed easement and carpark are entirely compatible with my expectations for access provisions post-construction.
- 69 The Walking Access Commission submissions suggests a lack of consultation with them over the proposal. I first contacted the Commission's field officer Mr Geoff Holgate in December 2015 to enquire about his understanding of the legal access near the site, after an earlier email conversation with My Jay Graybill of Fish & Game. My communication included reference to the proposal. At the time, several agencies – including Fish & Game and Environment Canterbury – provided public information about access to the River from the end of Shepherds Bush Road that was inaccurate according to my review of the land titles at the time. Mr Holgate provided historical information regarding a 2009 Environment Court hearing into a local road stopping which resulted in the requirement to develop a local access easement which had not been enacted, including a relevant Digital Survey Office Plan. We had at least one telephone conversation and an email exchange in 2015 about the state of access and the effects of the proposal and ongoing conversations via email up to February 2018 to confirm the suitability of the revised conditions for public access, better enabling equestrian and cycle access and agreeing to conditions ensuring easement registration (see conditions ADC 21).

Birds

- 70 Fish & Game in their submissions notes at their paragraph 13 that bird scarers may not be 'entirely effective' during the hunting season to prevent birds congregating on the pond, and that physical disturbance may be required. CRC170657 50 in the proposed conditions suggest a range of methods of scaring birds may be applied.

ASSESSMENT OF EFFECTS – FISH SCREEN

- 71 Rangitata Diversion Race Management Ltd (RDRML) is proposing to install a modified fish pass to exclude fish (including very small fish) from the RDR intake. The current fish pass takes and returns a maximum of 3 m³/s of water between 10 September and 15 March to and from the Rangitata River at Klondyke over a distance of just over 2380 m. The new screen will require a take and return flow of up to: 3 m³/s over a shortened distance of 1380 m (the 'affected reach') for flows below 132.6 m³/s measured at Klondyke (before the RDR intake); up to 4 m³/s for flows between 132.6 and 142.6 m³/s; and up to 5 m³/s for flows above 142.6 m³/s. The new fish pass would operate all year, compared to the current screen which operates only between 10 September and 15 March. The 5 m³/s fish bypass flow will only operate when the full 10 m³/s flood flow take is abstracted through the RDR intake.
- 72 In my AEE report submitted with the application, I considered two states for the 'existing environment' based on the consented condition which, at the time, included an expired water take-and-return volume to operate the existing fish screen. This has since been changed via an application to modify the condition, and so in this evidence I compare the effects of the proposal with only one pre-existing setting (a 3 m³/s bypass from 10 September to 15 March). The data for this comparison has also been updated to reflect the operation of the screen and therefore differs slightly from my AEE, although it does not affect my conclusions.
- 73 The recreation activity data that I have provided in relation to the KSP above also applies to my assessment of the proposed modified fish screen. However, it is important to note that the section affected by the bypass take for the fish screen features a short rocky section which could provide a hurdle for kayakers and rafters if flows are inadequate. That is, although the proposed bypass take affects a shorter section of the River than currently, it still includes a section which needs some consideration.

- 74 Table 3 shows the changes in flow availability for the 1380m of affected reach of the River. This shows quite minor changes in the availability of each flow band, with more improvements than losses. Notably, these changes are shown in average days per recreation season (1 November to 30 April), but in reality will feature as short changes in flow band availability as the River rises and falls, day and night, and will only deviate from the existing bypass take outside the period 10 September to 15 March (that is, for the main recreation season, changes of an additional 2 m³/s will occur with the new fish screen in place only from 16 March to the end of April). The ability to discern these changes will therefore be very difficult, and at flows above 40 m³/s will have no effect on the ability to traverse the affected reach by raft or kayak.
- 75 In the 1000m of River no longer affected by the bypass take, the flow regime will be as shown in my Table 2 at my paragraph 49.

Table 3: Existing and change in <i>average days</i> flow band ⁷ availability, 1 Nov – 30 April, affected reach		
Flow band (m ³ /s)	Existing	Change
<60 (trout)	94.5	+0.8
40-80 (salmon)	67.9	-0.8
40-70 (beginner kayak)	55.3	-0.5
45-125 (intermediate kayak)	89.6	+3.2
45-170 (intermediate kayak)	101.3	+1.1
55-250 (advanced/expert kayak)	89.5	-0.3
80-170 ('big' water kayaking)	43.0	+1.7
50-120 (rafting)	78.2	+2.9
80-170 (rafting)	43.0	+1.7
60-80	29.1	-0.3
75-80	5.5	+0.0
80-100	19.5	+5.9
95-100	5.4	-0.8
100-125	11.8	-2.1
100-150	19.5	-3.9
150+	18.5	-2.5

- 76 There is little effect on recreation access from operation of the new fish pass and discharge channel to the River. The area affected features a public easement allowing angler, walking and cycle access to the lower Rangitata

⁷ Flow bands are, for example, 0-59.999 and 60 – 84.999.

Gorge on the true left. This will be retained, requiring some resurveying for a short section. There are no relevant effects – at a River-level – on preferred salmon and trout angling flows (a small increase in flow suitability for trout and a small decrease for salmon angling over 1380m of river in a relatively low-use setting for both scenarios).

- 77 Construction will occur on private land and on public easement. Temporary interruptions to angler and other recreation access along the RDR race are possible but can be minimised as the new fish screen will be constructed 'off-line' (that is, the existing RDR canal will remain operational during screen construction). Additional conditions are required to address this and I propose these in my paragraph 90.

SUBMISSIONS FISH SCREEN

- 78 Only the submission of the Central South Island Fish & Game Council (CSIFGC) is relevant to my assessment. The CSIFGC seeks to ensure that the fish pass will operate as efficiently as possible, and considers that a minimum bypass take of 5 m³/s will help achieve this. My assessment, and conversations with RDRML, about the bypass flow have focussed on avoiding in-river effects of the bypass take on, especially, kayaking and rafting, and particularly the flows suited to beginner kayakers, considering the educational value of the affected reach. I note, however, that the scale of potential effect from both a 3 m³/s and a 5 m³/s on kayaking and rafting amenity are slight, although a 5 m³/s bypass flow has greater effects than 3 m³/s and will result in an additional 2 m³/s bypass take in the affected reach during the summer season, which does not currently occur.
- 79 The CSIFGC proposal would potentially serve to benefit salmon and trout anglers, which are the largest recreational user group of the Rangitata River, if it resulted in significant additional salmonid recruitment. Any such benefit would be achieved at a minor or less loss of amenity for kayakers and rafters. This exchange in amenity values could represent a 'net recreation gain' for the River, if all recreation values were considered *en masse*. However, it includes a transfer of benefit from one recreation group to another.

OFFICER'S REPORT

Canterbury Regional Council

- 80 The CRC Officer's Report is effectively silent on the effects of the flow changes on recreation amenity. At paragraph 158 the Report refers to the

CRC spatial environmental tool, GISMo, to define the scale of significance of the River for recreation, but does not subdivide the River into the appropriate sections. I would also challenge the description of the River as of 'high' value for only jet boating, as it is also quite clearly of high value for kayaking, rafting and salmon fishing. These high values extend below the Gorge for salmon fishing and educational kayaking and rafting, and below SH1 for jet boating (mostly associated with salmon angling).

- 81 The Report finds issues with potential effects on in-river water quality and ecology, but not water quantity, which is concluded to comply with requirements of the RWCO, which is explicit about maintaining recreation values. There are therefore no directly stated issues with recreation amenity.
- 82 As discussed in my paragraph 37, the CRC proposed conditions do not include a Water Quality Management Plan which would require monitoring of water quality in the KSP for contact recreation, amongst other things. I have recommended that the requirement for this plan be retained.

Ashburton District Council

- 83 Of relevance to recreation, the ADC Officer's Report refers to the proposed white water course, reviews public access provisions near the KSP, the potential effects on the amenity of neighbouring properties as a result of traffic associated with the white water course, and public access to the surface of the KSP.
- 84 Paragraph 217 of the Report concludes that the white water course is a "positive benefit of the proposal" and the review in Appendix 8 of the Report (ADC Bert Hofman's memo) describes it as a "significant recreation opportunity". I have been previously advised by the ADC that it does not wish to be involved in its management or operation, and so the same finding in the Report is no surprise. While, in my opinion, Council's engagement would provide many efficiencies, relying on independent management and operation options through RDRML will not impede the development of the course. The management plan has been updated to reflect this approach and is attached as Attachment 6 to this statement.
- 85 Paragraphs 292 to 299 of the Report considers provisions for public access at Shepherds Bush and agrees that the conditions as proposed meet the needs for access and effectively responds to the submission of the New Zealand Walking Access Commission.

- 86 At paragraph 193 the Report considers the potential noise effects on local residents of vehicle movements generated by users of the white water course. Should movements of up to 40 vehicles per hour on local roads result from visitors to the course, I would consider it to be a significant success and likely to be heavily over-used, and requiring a means of limiting access. However, as noted in Appendix 2 to the Report (Marshall Day Acoustics review) "Should movements on this scale occur, there would be a notable short-term effect on residents due to the additional traffic noise. However, this is balanced by the fact that this would presumably only happen occasionally and not all vehicles would be likely to access the course via the same route." I agree. Use of the course will be limited to daylight hours, operation of the irrigation canal (the irrigation season) and, I expect, good weather.
- 87 The ADC Report recommends via new conditions 21.6 and 21.7 (incorrectly typed as 22.6 in the ADC revised conditions) that public access to the KSP be prevented. These repeat in more detail the condition 21.0 originally proposed and retained. The ADC additional conditions are more explicit, however, and the proposed condition 21.0 could be deleted.
- 88 I note that at its paragraph 69 the Report relies on the same description of recreation values for the Rangitata River as does the CRC Report, as discussed in my 80 immediately above. My observations in my paragraph 80 are similarly relevant.

CONDITIONS

- 89 I have contributed to the development of the proposed consent conditions in several areas, and specifically:
- 89.1 Bird scarers (CRC170657 50)
 - 89.2 Construction Traffic Management Plan (ADC 10.2 (g)) for public access and to minimise access closure periods
 - 89.3 Public access (ADC 21)
 - 89.4 White water course and management plan (ADC 22), noting I support the recommended addition within the AC Officer's Report to ensure the parking surfaces comply with NZS4121:2001.
- 90 I recommend an additional condition within section ADC 21 to require realignment of the existing public easement affected by the proposed fish

pass and its registration on the relevant land title, as discussed in my paragraphs 76 and 77. These are:

21.7 During construction of the fish screen, disruption to public access on the existing public easement beside the RDR canal shall, as far as practicable, be minimised and practical access maintained at all times during weekend periods.

21.8 Upon completion of construction of the fish screen (being the completion of physical works but prior to the issue of the Code Compliance Certificate under the Building Act 2004), the existing public access easement will be transferred to the new alignment beside the RDR canal and registered on the certificate of title.

- 91 I support these conditions with the two additions I have referred to in this evidence and which appear in the conditions as now proposed.

CONCLUSION

- 92 The effects of the proposal can be assessed against the CWMS priorities, as stated in the *Canterbury Water Management Strategy Final Regional Implementation Programme* (ECan 2012b), which also includes the priorities of the CWMS Ashburton Regional Committee:

- Modification of the Rangitata River is acceptable only if suitability of river conditions for jet boating and white water sports are maintained.
- Modification of the Rangitata River is acceptable only if modification protects or enhances the overall salmonid fishery of the river system.
- In determining the overall viability of any new distributive infrastructure consideration shall be given to delivering at least one new regionally significant water based recreation opportunity within 1.5 hours drive of Ashburton, but that there is not a requirement to deliver such a facility where it is found to compromise the viability of any new distributive infrastructure.
- Whitebait populations on the Rangitata River are maintained by improving water quality and enhancing habitats.

- 93 My assessment identifies that (ordered to respond to each point above):

93.1 The availability of most of the flow bands desired for rafting and kayaking are increased, although there is a small loss of days in the higher flows ($>85\text{m}^3/\text{s}$) which provide amenity to adventure jet boaters between the Arundel Bridge and SH1 (approximately 20 boats

per year), and rafters and kayakers. Suitable flows remain available for all activities, but with a loss of 14% (4.9 days) available for adventure jet boaters, assuming good clarity at all flows, but more likely in the area of 2 days considering common high turbidity in high flow periods. All these effects are, in my opinion and based especially on my conversations with Jet Boating NZ (Rob Gerard) minor or less.

- 93.2 The days in which the river flows in the preferred range for salmon fishing are increased below the Arundel Bridge, while there is no change in the rest of the River. Dr Ryder indicates little potential for adverse effects on salmon ecology, and Dr Sanders indicates no effect on small game (bird) hunting on public land.
- 93.3 The proposal provides the opportunity to develop a regionally significant artificial standing wave feature within 45 minutes of Ashburton.
- 94 In addition, proposals to formalise pedestrian access to the River are sustained; and a short walk to the 6 ha ecological restoration site on the lower terrace will provide additional local recreation amenity.
- 95 The potential for the storage pond to become a duck refuge during the hunting can be effectively managed by the proposed consent conditions by the CRC (at CRC170657 50).
- 96 Amenity effects from the visibility of the storage facility during the construction period from Little Mount Peel and elevated sites in the Peel Forest Park, and from the final outfall structure, are assessed as being low to moderate by Mr Steven Brown. This is unlikely to depress use of the Mount Peel setting for recreation. Changes to river levels will have negligible effects on visual amenity.
- 97 The proposal results in a balanced approach to sustaining and supporting recreation amenity on the Rangitata River considering the effects of the take. With the mitigations proposed within this and other relevant technical evidence, the net scale of adverse effect on recreation on and around the Rangitata River are confined to:
- 97.1 A minor loss of opportunity for those seeking high-flow kayaking and rafting opportunities – a maximum of two days in the 100 to 150 m³/s flow band.

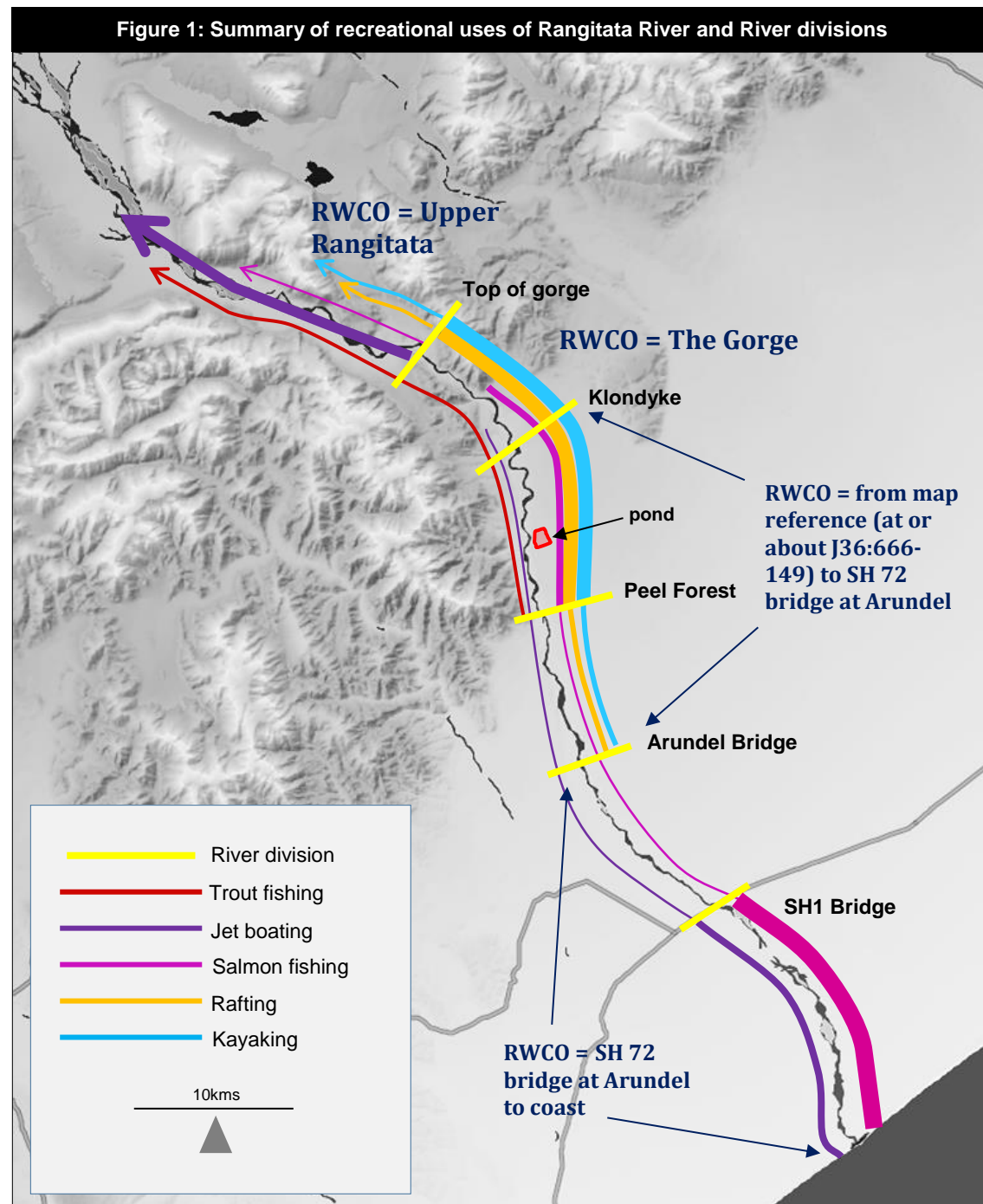
- 97.2 Adventure jet boaters between Arundel Bridge and SH1 (a loss of 4.9 days (from 34.8 to 29.9 days) above 85 m³/s for 12 km of a 39 km run, assuming good water clarity, but more likely to be a change of availability of less than 2 days considering that much of the proposed take will occur in periods where water clarity would normally be too low for boating).
- 97.3 Effects on visual amenity from elevated views from Peel Forest of the outfall structure.
- 97.4 Very minor changes in flow band availability for 1380 m of River in the reach affected by the fish screen bypass flow.
- 98 This represents a small change to recreation amenity on the River – an effect which is minor in my opinion – primarily via the small changes to adventure jet boating. The proposed standing wave feature (although not a mitigation for any adverse effect), increased availability of flow bands for salmon fishing, the new fish screen, and formal public access to the River and ecological refuge area, offer benefits to recreation. When the adverse and positive effects to recreation are considered I conclude that the proposal presents a balanced approach and therefore will not result in unacceptable outcomes for recreation. The key residual adverse effect is a loss of, over the extended summer season, almost five days of adventure boating opportunity on the lower 12 km of a 39 km jet boat run used by approximately 20 boaters per year, assuming all flows have good clarity, but more likely a loss of less than 2 days considering takes during periods of relatively high turbidity – a minor effect in my opinion, as the scale of use of the River by jet boaters is unlikely to change. Almost 30 days of opportunity remain in the summer season (assuming good clarity).
- 99 For the purposes of the planning assessment that has been completed by Mr Greaves, I am of the opinion that any adverse recreation and tourism effects will be minor or less and there is unlikely to be any change in participation in on-river recreation on the River.

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Attachment 1: Summary of recreational use



Attachment 2: Summary of kayak flow preferences

Rankin *et al* (2014) describe the kayaking values of the Rangitata River from Whiterock to Klondyke (the Gorge) and from Klondyke to Peel Forest as “outstanding and exceptional value in the authors’ view and deserving of recognition by a Water Conservation Order” (pi and p28). The Klondyke to Peel Forest reach is described as Class 2 to 2+ and (pii and p28):

Outstanding beginner and intermediate white water; Good gradient and good wave trains at right flows; Popular for instruction and runnable over a wide range of flows; ‘Big’ water flood run; Intermediate to expert downriver racing run – key nursery river; Kayaking values recognised in WCO.

Rankin *et al* note (p22):

Groups from within and outside the region travel to visit Canterbury Rivers. For example, kayakers and school groups from South Canterbury travel north to visit the Hurunui and Waimakariri Rivers and kayakers from the Otago University Kayak Club regularly visit the Rangitata River. There was also a large influx of both national and international paddlers to the Rangitata River in late summer/early autumn 2012, because of the drought in Otago, Buller and the West Coast, as this was some of the only dependable (glacier fed) water in the South Island.

No significance ranking is given to the Rangitata River below Peel Forest in Rankin *et al*, but the River is described in a summary of river use for kayaking (p63). Descriptions include:

Klondyke to Peel Forest: Often paddled; User ability: novice, beginner, intermediate and advanced; Always available for paddling.

Peel Forest to Arundel Bridge: Occasionally paddled; User ability: novice, beginner; Always available for paddling.

Arundel Bridge to SH1: Very occasionally paddled; User ability: novice, beginner; Always available for paddling.

SH1 to sea: Very occasionally paddled; User ability: novice, beginner; Always available for paddling.

Rankin *et al* (2014) state (p74):

The three main runs used on the river by kayakers are:

- *A Class I-II run above the Rangitata Gorge near Mesopotamia*
- *The Rangitata Gorge, which is a Class IV-V run depending on flow, and*
- *The run from Klondyke down to Peel Forest or the Cracroft Intake, which is a Class II-III run...*

The lower Rangitata from Klondyke down to Peel Forest is a classic roller coaster Class II-III white water run depending on flows and is suitable for beginners to experts alike. The bed has a relatively steep gradient through the first section and so produces many large standing wave trains in higher flows. It is a good river to introduce novice kayakers to bigger water as the run outs from the rapids have few consequences. However, it is less suited to catching eddies and training novice paddlers in this art, as most of the rapids are typically straight runs down single channel ramps and into standing waves at the bottom. The river has been used for slaloms including the Invitation Slalom held with the 1974 Commonwealth Games. There are a number of get in and get out points down the run on the South bank that are frequently used to tailor the run to the abilities

of the group or time constraints. The get ins include the end of the road on Waikari Hills Station opposite the Klondyke Intake for the RDR, Raules Creek, take out/put ins at Mt Peel Station woolshed where powerlines cross the river or Lynn Stream, and lower take outs are at Clarke Flat by the Peel Forest Camp Ground or off the end of Dennistoun Road in Peel Forest. A further run down to the Arundel Bridge is also occasionally used by downriver racing kayakers.

Flow preferences in m³/s are (p33):

	Beginner	Intermediate	Advanced	Expert
Klondyke to Peel Forest	40-70	45-125	55-250	-
- multisport	-	50-100	50-150	50-250

The 'multisport' reference is taken to refer to the activity occurring in the Klondyke to Mount Peel section of the River. Rankin et al (2014) states (p31) that for the flow preferences given for kayaking, "The flows are also prior to the taking of any flows for irrigation purposes, most notably for the Rangitata River below Klondyke where the Rangitata Diversion Race abstracts up to 30 cumecs." However, the minimum recorded flow at Klondyke since 1979 is 35.4 m³/s, and so this statement cannot apply to the data provided (ie, no one has experienced flows as low as 10 (40 less 30), 15 (45 less 30) or 20 (50 less 30) m³/s in the River), and they are therefore taken as referring to flows below the RDR intake; which is in accord with other data provided elsewhere in Rankin *et al* based on hydrographs for the Rangitata River (eg, p37).

Consultation indicated an interest in the 100-125 m³/s flow band for kayak training below the RDR intake.

Rankin *et al* (2014) also provides an analysis of effects of the RDR abstraction using different flow preferences based on an earlier analysis (p52). For the purposes of this report, the more recent assessment shown immediately above is relied on.

Rankin *et al* (2014) replaces a number of historic national and regional river-recreation research reports which are referred to in the WCO tribunal report and are also summarised in Rankin et al. These older studies are therefore not referenced in this report.

Charles (2013) offers a comprehensive guide to kayaking the Gorge (from 30 m³/s to 'as much as you can handle') with the get out on private land at the bottom of the gorge, relying on an access agreement established by Rangitata Rafts. Below this point Charles states:

The Rangitata below the Gorge has been used for years by beginners and intermediates. There is a range of put in and take out options depending on how you want to go. Most are on the south bank. Put ins include; Waikari Station opposite the RDR Klondyke Intake (the get out for the Gorge run) or about 5km downstream at Raules Creek. Get outs can be at the Mt Peel Station woolshed where powerlines cross the river or at Lynn Stream, or of course further down river at Peel Forest, where there are two exit points if you want to do a long trip. Another short trip called Mandellas is from either Mt Peel Station woolshed where powerlines cross the river or at Lynn Stream down to Clarke flat by the Peel Forest Camp Ground or down to a point off the end of Dennistoun Road at Peel Forest. Plenty of options depending on peoples abilities, craft and time.

The Peel Forest Outdoor Pursuits Centre is the closest provider of educational and beginner kayak instruction.

Attachment 3: Summary of fishing flow preferences

Kent (2009) describes the trout fishery in the Rangitata River:

The river is best fished when the flow rate is less than 90 cumecs. Like its northern neighbour the Rakaia, the Rangitata River is a highly regarded salmon fishery. Very few anglers fish exclusively for trout, except upstream above Peel Forest. Some good sea-run browns are taken at the mouth, usually by salmon anglers on spinning gear. The river is very large, flood-prone and braided once it leaves the gorge, and trout habitat is limited in this unstable environment. Snow-melt and glacial flour often colour the river until after Christmas. However, when the river is low and clear there are some very good brown trout caught in the upper reaches. Fish over 4 kg are not unusual, and the occasional rainbow adds to the excitement. Most trout are taken on spinners as the opportunities for fly fishing are limited in this large river. The river is best fished before the salmon anglers and jetboats arrive in February and again in March when the salmon season is closed.

Millichamp (1997) describes the Rangitata salmon fishery as a 'little river' using the definition:

Little rivers such as the Rangitata and Waimakariri drop to low levels over summer months, so the salmon tend to run in spits and spurts. Several days of spectacular fishing can be followed by weeks of nothing. Little rivers tend to have good surf fishing as the number of fish builds up waiting for better flows before running the river....

Although the Rangitata is a little river, it has one of the best salmon runs in the country. In recent years the runs have approached those in the Rakaia, although the Rangitata is less consistent, with the fishing red hot one day and completely dead the next. As with most little rivers, much of the fishing pressure is centred on the river mouth and lagoon area where the fish build up between freshes....

The Rangitata provides good upriver fishing when there are good river flows but it quickly goes off once levels drop. Small spinners and light tackle work well once the flow starts to fall. The lower reaches between the mouth and the SH1 bridge are good when flows are suitable, particularly early in the season. In this area the river tends to be concentrated into a single braid, so is relatively accessible to the foot angler.

Much of the water between SH1 and Peel Forest is steep and good holding water is rare. Low flows, steep river gradients and big boulders all mean that jet boats are seldom used for upriver fishing in the Rangitata. Probably the best upriver fishing is around Peel Forest, where the river gradient allows the formation of good fishing water. The best fishing there is generally from Christmas onwards, when good numbers of fish arrive from the lower reaches.

The Special Tribunal's report for the WCO hearing noted that 75% of fishing effort on the River occurred between the mouth and SH1, with 13% between SH1 and the Gorge (123 – 124). More than 97% fished for salmon (117) and fewer than 20% of visits to the River were made by anglers after trout (127). In terms of flows, the Tribunal reported (139 – 141):

High flows are not suitable for angling, but many anglers, as well as experts recognised the importance of frequent higher flows to induce runs of fish (not only salmon) into the mouth. At flows of over 120 m³/s at Klondyke the river is agreed to be too turbid for fishing, and below 40 m³/s the river becomes too clear to fish well.

Webb said that for fishing preferred flows below the gorge are those corresponding to a flow at Klondyke of 70 – 110 m³/s (i.e. 40 – 80 m³/s in lower river). He reported that

about 70% of angler activity and nearly 80% of the total salmon catch occurred when the river is in this range (from 3 seasons of record).

Webb stated that the window of preferred summer angling flows that provide desirable flows and turbidity is 45 – 80 m³/s in the lower river (about 87 – 110 at Klondyke under present abstraction). He noted that 44% of days in summer the water is too clear for good salmon angling.

Attachment 4: Summary of rafting flow preferences

Commercial rafting on the Rangitata River occurs almost entirely in the Gorge – mostly for standard commercial trips offered by Rangitata Rafts – and/or in the Klondyke to Peel Forest section mostly for education purposes. The latter is offered by a number of regional education providers, including the Ara Institute, Geraldine High School, the locally-based Peel Forest Outdoor Education Centre and Rangitata Rafts.

The Special Tribunal's report for the WCO hearing noted (51):

Gualter (manager of Rangitata Rafts [up until December 2012]) noted that the best flows for rafting are in the range 80 - 180 m³/s, but that the natural fluctuations are important. He noted that the gorge never becomes too low to navigate and only occasionally becomes too high. Rankin noted that the gorge can be kayaked in flows from 40 – 350 m³/s, but that 80 – 120 m³/s offer the easiest kayaking. From Klondyke to Peel Forest the preferred flows are in the range 80 – 150 m³/s.

Rankin et al (2014) states (p48):

Flow requirements of river buggers to retain the valued white water features in Canterbury Rivers are the same as those of kayakers, although river buggers can also at times use lower flows than kayakers might prefer. Rafters on the other hand, would normally prefer flows slightly on the higher side, such as those preferred by advanced or expert kayakers, to produce the most valued white water features for their purposes.

I rafted the River with members of the Peel Forest Outdoor Centre (PFOC) on 16 March 2018 from the RDR intake to the get-out used by PFOC some 11 km downstream. The River flow measured at Klondyke was between 80 and 90 m³/s (the River was rising) and the RDR was operating at full flow, leaving between 50 and 60 m³/s in the section we experienced. PFOC staff reported that a residual flow of 20 m³/s was the bare minimum for rafting and at that level users had to often exit the raft and push it, and rafts were subject to more wear and tear as they rubbed along the bottom. At the residual flow between 50 and 60 m³/s, the River section was easily raftable, quite benign and very suitable for learners.

Attachment 5: Summary of jet boating flow preferences

Rob Gerard in his 2013 Statement of Evidence on behalf of Jet Boating New Zealand and White Water New Zealand, in the matter of the Proposed Canterbury Land and Water Regional Plan, offered the following summary for jet boating on the Rangitata River:

River/reach	Jet boater values	Flow requirements
Rangitata River – Upper River above Gorge and White Rock	Family boating	All flows up to flood (natural)
Rangitata Gorge	Extreme adventure boating; very big rapids	130 - 80 m ³ /s at Klondyke
Rangitata River– Klondyke to Peel Forest	Family boating	>80 m ³ /s to flood. Flows severely and routinely reduced to levels at which many jet boating values absent because of large off-take by the RDR for irrigation and hydroelectricity generation. WCO on reach.

Hughey *et al* (2015) identified the following use levels for each section of the Rangitata:

- Upper braided section: used by approximately 1000 regional jet boaters per year; used for events; useable about 95% of the time due to high flows; suitable for family boating, salmon fishing, trout fishing and hunting.
- Top of Gorge to RDR intake: used by approximately 2 local jet boaters per year; no events; useable about 5% of the time due to low flows; suitable for adventure boating.
- RDR intake to SH1: used by approximately 20 jet boaters per year; not used for events; useable about 5% of the time due to low flows, rocks and the degree of fall; suitable for adventure boating.
- SH1 to the sea: used by approximately 400 jet boaters per year, not for events; useable about 70% of the time due to low flows; suitable for salmon fishing, white baiting, trout fishing, family boating and duck hunting.

Greenaway *et al* (2015) reports for flows in the reach below the RDR intake:

Flows: There is abstraction for irrigation at the lower end of the gorge. The river from this point to SH1 bridge is very rocky and bouldery, and consequently seldom boated. The RDR takes 30.7 m³/s most of the time during the irrigation season and so while the preferred minimum flow for jet boating is 85 m³/s below the gorge, the Klondyke flow recorder would need to be showing 115 m³/s to ensure the required flows for jet boating below the intake.

Rob Gerrard (pers comm) notes that a critical requirement for jet boating, particularly in the reach below the RDR is a reasonable degree of water clarity, and that this is not often available during high flows.

Jet boating in the River section below SH1 is possible in lower flows than between the Gorge and SH1 due to a lesser gradient and fewer large rocks. The data in Hughey *et al* (2015) indicates that jet boating below SH1 is available 70% of the time and is limited by low flows. During the summer season, 1 November to 30 April, flows of 40 m³/s and above are available 70% of the time. There are no changes to flow bands as a result of the proposed new take

below 77 m³/s. For the purposes of this assessment a higher minimum flow of 77 m³/s is used for jet boating in the SH1 to sea section to illustrate this upper scale of potential effect.

Attachment 6: Revised Draft White Water Course Management Plan

Draft Revised Klondyke White Water Course Management Plan



Draft Revised Klondyke White Water Course Management Plan

Prepared for Rangitata Diversion Race Management Ltd

by Rob Greenaway & Associates

www.greenaway.co.nz

Peer reviewed by New Zealand Recreation Association specialist panel (coordinated by Deb Hurdle):

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- Mark Jones, Senior Lecturer Outdoor Education, Auckland University of Technology
- Tracey Prince, Aquatics Project Manager, New Zealand Recreation Association
- Jonathon Webber, Chief Executive WaterSafe Auckland

The peer review panel is not responsible for any of the recommendations made in this report.

March 2018

Version status:

Revised Draft – hearing version

DRAFT

Draft Revised Klondyke White Water Course Management Plan

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1 Introduction

Rangitata Diversion Race Management Ltd (RDRML) is seeking resource consents to construct a water storage facility between the Rangitata Diversion Race (RDR) and the Rangitata River, close to the existing Mayfield Hinds Irrigation Scheme off-take from the RDR. The proposed impoundment (the Klondyke Storage Pond or 'the Pond'), would have a capacity of 53 million m³ of water.

A recommendation from the Ashburton Zone Committee Regional Implementation Plan included (Annex p6):

In determining the overall viability of any new distributive infrastructure consideration shall be given to delivering at least 1 new regionally significant water based recreation opportunity within 1.5 hours drive of Ashburton, but that there is not a requirement to deliver such a facility where it is found to compromise the viability of any new distributive infrastructure.

Accordingly, bundled with the consent application for the Pond is a standing wave feature adjacent to, and fed by a diversion from the channel of the Mayfield Hinds Irrigation Scheme off-take (fed by the Pond). This will be the White Water Course (WWC or the Course).

The WWC would be located approximately 44 km from central Ashburton – less than 40 minutes' drive.

Lyman & Rivett (2015) indicate the potential for the Course to provide a static standing wave at various flows, with reliability during the peak irrigation season (December to February) ranging from 36% in low irrigation demand (wet) years to 85% during high demand (dry) years, and an average of 67%. Over the longer summer period of November to April average reliability ranges from approximately 53% (modelled) to 72% (measured).

1.1 Draft consent conditions

The proposed ADC consent conditions (at March 2018) for the Klondyke Storage Pond include the following requirements for this management plan (22.2):

- a. The management and maintenance responsibilities for the WWC and associated facilities, including an accepted asset ownership and administration model; (see section 4 of this document)*
- b. The operating procedures for the WWC, including hours of operation and flow-setting protocols; (see section 5)*
- c. The surveillance, emergency and safety management procedures that are to be put in place. This shall include a health and safety plan for the WWC; (see section 3 and those following)*
- d. The protocols for community and commercial events to be held at / hosted at the WWC; (see sections 3 and 5) and*
- e. That, outside of commercial events conducted at the WWC (in accordance with protocols required by condition 22.3(d) of this resource consent), the public will be able to access the WWC without cost. (see section 1.2 and 5).*

Other consent conditions relate to managing water quality via a Water Quality Monitoring Plan (18) and the provision of facilities (22.3 and 22.4) at the WCC.

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1.2 Objectives

The objectives of the Course are to:

- Provide a freely-accessible and fun whitewater feature for the Ashburton District and wider Canterbury communities,
- Attract regional and national visitors to the Mayfield area,
- Provide a venue for clubs, schools and commercial and community event managers to offer education and entertainment programmes.

The objectives of this management plan are to define responsibilities, roles and expectations for the operation, inspection, maintenance and control of the WWC, including:

- Defining the suite of assets required to operate the course,
- Assigning and defining responsibility for asset maintenance and management, and user services,
- Managing the risks associated with a public aquatic facility,
- Controlling asset management costs to limit fees and charges for use, and
- Defining processes for community and commercial agencies to use the asset.

1.3 Method

This draft document is:

- Based on the NZ Recreation Association's (NZRA) *Aquatic Facility Guidelines*.
- Peer reviewed by a specialist aquatics management team convened by the NZ Recreation Association, with the brief to consider:
 - Feasibility of the objectives of the facility from a safety and administrative perspective,
 - Administration systems,
 - Facility requirements (safety, remote surveillance, communications, emergency provisions, etc),
 - Access rules,
 - Supervision requirements,
 - Rules and warnings,
 - Emergency responses.
- Revised in response to feedback from the Ashburton District Council that it has no interest in assisting with management of the facility.

The Plan is largely a response to the risk analysis shown in section 3. This identifies the hazards likely to be associated with the whitewater course, the level of risk posed by those hazards, and an appropriate management response. This results in the identification of a preferred management system for the course.

This Plan is considered to be a live document and will be updated as new information becomes available, and annually by the administering authority for the Course. The Plan will require a full review prior to the Course becoming operational, considering its as-built condition.

1.4 Peer review outcome

The NZRA peer review summary is attached as Appendix 2.

Two different areas of speciality were employed in the peer review team: outdoor educators and swimming pool managers. The two outdoor educators considered the proposal to be broadly

acceptable as a community facility but with less supervision than was suggested in the peer review draft, as well as some additional suggestions for safety management. The two swimming pool managers considered the WWC should be managed like a community swimming pool with lifeguards.

The peer review found:

There is not really any middle [ground] when you decide to take responsibility for how people use the whitewater course. You either run a professional operation with the full weight of the Health and Safety at Work Act [if the Course is defined as a place of work due to employing lifeguards, for example] ensuring professional good practice standards; or you ensure it is not a place of work and rely on people exercising good judgement based on disclosure of the risks, fundamental guidelines for safe operation, and every precaution being taken in design to ensure it is safe and user friendly. This is how every boat ramp, wharf structure (that is not a workplace), water-ski ramp, floating pontoon, etc owned by a council operates. It is also how other built wave features in New Zealand operate: e.g. Wairehu Canal in the Central North Island and Hawea Whitewater Park in the South Island.

People recreate on all of these public structures in all manner of ways. Often they have rules concerning their use. There does not appear to be any evidence of excessive risk or near misses that would suggest council supervision of these facilities is desirable.

Philosophically there was [peer reviewer] support for free-access community facilities but disagreement as to whether this facility should be on a key access / no lifeguard basis. Some expressing the view that paid lifeguards would be inconsistent with a free resource. If people are charged for entry to the whitewater course and it becomes a commercial enterprise, then this falls under other legislation. The Consumers Guarantee Act, etc. demanding high standards of customer care, indemnity insurance and the like which will increase the cost to a level that will mean some groups will take their novices to the river instead (which is seen as a much riskier environment).

On that basis it was suggested that there are two options available to run this facility:

- *As a professionally managed commercial enterprise that is fully compliant with the Health and Safety at Work Act; or*
- *Free-access facility where users, recreational and commercial, manage their own risks.*

If the latter, strip back the management of the whitewater course to being supportive of user safety by safe design, regular maintenance, risk disclosure through clear signage, emergency response by break-glass shut-off switch, and basic rules of use helmets/lifejackets/etc. Arguably this will make it considerably safer than other comparable facilities.

If the former, consider on-site supervision by qualified lifeguards and restricted access.

The peer review draft of this management plan took both of these options into account, and included: the requirement for lifeguards and event-specific safety management plans when any payment for services was involved; and controlled public access without lifeguards when users have no requirement to pay for services. This approach is retained in this revised draft, but, as recommended by the outdoor educators – who focused on enabling free public use without lifeguards – the scale of supervision recommended has been reduced. The need to retain a high level of supervision as sought by the pool managers has been retained when the facility is used commercially (as a workplace).

Comparisons were made in the peer review with the Hawea Whitewater Park provided by Contact Energy as conditions of consent for the Clutha hydro scheme, and the kayak playhole constructed on the Wairehu Canal using funding obtained by Whitewater NZ and from Genesis Energy. Neither of these is fenced and neither has a management plan in place. Both operate according to consent conditions, and in the case of the Wairehu Canal, by agreement with the Sir Edmund Hillary Outdoors Pursuits Centre (OPC) and/or Whitewater NZ. The Wairehu Canal feature is maintained by Genesis Energy as part of its routine maintenance of the Tongariro Power Scheme, while any additional features are the responsibility of OPC and/or Whitewater NZ.

Contact is required to ensure that the Hawea River's level is held between 10 and 200m³/s from 1 February to 31 August and between 10 and 60m³/s from 1 September to 31 January and to release 30m³/s of water, 8am to 8pm, on the first Saturday and Sunday of November, December, January and February. Contact also delivers flows for recognised international and national recreational events or flows for educational purposes. Generally Contact does not deliver flows for individual purposes. Onsite safety signage is shown on the following page. This information is provided in addition to an interpretation panel showing the development of the Hawea Whitewater Park, and which includes the yellow warning notice.

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Attention River Users

The Hawea Whitewater Park ("the Park") contains powerful whitewater features designed for use by kayakers trained to manage hazards occurring in grade 3 rapids.

The Park and surrounding area have the following **hazards** which create **recirculation**, **entrapment** or **hypothermia** risks which have the potential to cause **drowning**:

- Two recirculating hydraulic weir and wave features
- Trees on riverbanks create strainer hazards, especially the willow trees downstream of the road bridge
- Two road bridge pillars
- Shallow rocks on the right side of the left bridge pillar
- Fast moving cold river water
- Changing river level which can fluctuate between 10 and 200 cumecs

Note: The risks created by these hazards increase as the river flow increases. River users who cannot safely manage these hazards should **not** go in the water

Users of the Park are asked to comply with the following:

Safety Guidelines

- Correctly sized life jackets and/or wetsuits and crash helmets to be worn;
- Wear clothing appropriate for the water and weather conditions;
- Surf and boogie boards to have quick release leashes;
- All park users to be competent swimmers capable of self rescue;
- Do not surf or kayak alone;
- Unsupervised kayakers to have a proficient eskimo roll;
- All children to be supervised by an adult;
- Adults to be in the water supervising children in their care.

River Etiquette

- Restrict your ride to 2 minutes if others are waiting;
- Consider the safety of others sharing the wave when performing manoeuvres;
- Urgently assist others in difficulty by rescuing swimmers and equipment;
- Be considerate of other park users and cyclists when placing equipment around the park.

Use the Hawea Whitewater park at your own risk



Visit www.centralotagowhitewater.co.nz/hawea-whitewater-park for river flow information

WARNING

The Hawea Whitewater Park is designed for use by **experienced kayakers**.

- The whitewater rapids are powerful hydraulic features that can hold kayakers and other swimmers for prolonged periods.
- Helmets and lifejackets must be worn at all times.
- Swimming in and around the whitewater features, is not recommended.
- Children must be supervised at all times.
- The nature and strength of the whitewater will vary depending on flow.
- The river is subject to river flow fluctuations.
- No camping.
- No fires.
- Use at your own risk.

2 Status of activity

The wave feature is likely to operate as no more than a grade 2 white water feature, defined as (for kayaking):

Easy rapids with waves of up to one metre. Clear channels obvious without scouting. The ability to move your craft across the current is not necessary. (Charles, G. 2013. NZ Whitewater 5)

Waves breaking white but without obstacles in the flow so does not require any degree of boat handling skills. (Egarr, G. 1995. South Island Rivers)

The defining characteristics for the Course, in terms of grade, are the size of the standing wave and the lack of obstacles.

The WWC is intended to operate as a 'public aquatic facility', defined by the NZ Recreation Association's (NZRA) *Aquatic Facility Guidelines* (2015) as:

A public aquatic facility means any pool other than domestic pools. This category includes commercial, school, institutional, club, hospitality industry, community and local authority pools. This definition does not differentiate between local authority, community, trust, school or private facility ownership.

The WWC is likely to be a unique aquatic offering in New Zealand, and the intention is to operate it, most of the time, as a community facility without lifeguards. This management plan therefore treats the Course in a similar manner to a school pool which is made available to a community over summer, unless commercial or community events are staged, when an event-specific safety management plan will be required (most likely requiring lifeguards).

The NZRA *Aquatic Facility Guidelines* have been used for the development of this draft management plan, but are interpreted for what would be an unusual and exciting community aquatic asset.

The Course may be considered as an Adventure Activity as per the Regulation 4 of the Health and Safety in Employment (Adventure Activities) Regulations 2011 where it meets certain requirements. These are, according to WorkSafe NZ¹:

An adventure activity is:

- *an activity that is paid for*
- and*
- *land-based or water-based (planes, helicopters, and hot air balloons are not included but, for example, the skiing aspect of heli-skiing is included because it is a land-based activity)*
- and*
- *an activity that involves the participant being guided, taught how, or assisted to participate in the activity*
- and*
- *recreational or educational*
- and*

¹ <http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/aao-factsheets/what-is-an-adventure-activity>

- *designed to deliberately expose the participant to a risk of serious harm that must be managed by the provider of the activity*

and

- *an activity that, if the provider fails to manage the activity properly, is likely to result in serious harm to the participant*

or

- *an activity in which the participant is deliberately exposed to dangerous terrain or dangerous waters.*

By maintaining the flow of the Course so that it does not exceed a grade 2 white water setting (no obstacles and a wave of less than 1 m), compliance with the Health and Safety in Employment (Adventure Activities) Regulations 2011 will not be required when it is used by the non-paying public (it is not considered to be 'dangerous waters'). If a commercial operator or event manager wishes to use the facility and charge for use, or if any group or agency wishes to operate the Course at more than grade 2 (ie, a wave higher than 1 m), compliance with the Regulations will be required. Applications for such use will be at the discretion of the administering authority (defined below) and work to ensure compliance will be the responsibility of the applicant.

The *Canterbury Regional Council Navigation Safety Bylaw 2016 and Controls* would apply to the course where kayaks, surf and stand-up-paddle boards are used. In these cases, the course will be considered 'navigable waters', and the Maritime Rules (particularly section 91 Navigation Safety) would also apply. In the case of the WWC, this will include the need for buoyancy aids to be worn by kayakers, which is mandatory under the 2016 Bylaw; and that while riders of SUPs do not need to wear a life jacket while surfing a breaking wave, they are required to wear a leg rope (under Exemption 097-EX-143 to Maritime Rule 91.4 – which is valid until the end of June 2018). The Rules and Bylaw do not include consideration of whether the Course should be fenced, for example, and only apply to the use of defined watercraft.

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3 Risks analysis

This section identifies the hazards and risks likely to be associated with the WWC, considering the activities likely to occur in and near the facility. Activities which may result in death are rated as having a high risk. Responses to minimise the potential for harm are identified, and responsible agencies proposed. The responses and responsibilities, in particular, inform the remainder of this draft Plan.

Table 1: Risk analysis

Activity	Hazard	Risk	Responses	Responsibilities
Parking cars and the public accessing the site by car	Vehicle on vehicle, vehicle on pedestrian, and vehicle on object collisions.	Moderate	Speed restrictions and appropriate signs on Shepherds Bush Road. Speed bumps on Shepherds Bush Road if necessary. Car park design for safe use while restricting ability to do burn-outs. Fencing of activity area to separate facility users from cars.	ADC for appropriate road control bylaw and pedestrian warning and speed signs. Remainder in project design.
Use of ablutions – changing, toilets. Located outside fenced facility to allow general public use.	Infection from unsanitary conditions	Moderate	Programmed cleaning schedule. User reporting – information on site. Programmed inspections.	Contractor under direction of administering agency.
	Antisocial behaviour and inappropriate use	Moderate	Natural lighting only to dissuade use after dark.	Project design.
			User induction programme – no solo use (group surveillance).	ADC on behalf of administering agency.
	Slips and falls, injuries from damaged building components	Moderate	Appropriate building design.	Project design.
			Scheduled building inspections.	Contractor under direction of administering agency.
			Warning signs.	Administering agency.
Access to waterbodies outside amenity area	Drowning in water storage pond	High	Fully fenced with signs. Trespass notices.	RDRML
	Drowning in irrigation canal	High	Fenced on true left from pond outlet to 20 metres beyond feature – low fence to allow emergency access. Signs (no access to canal). Trespass notices.	RDRML

Table 1: Risk analysis

Activity	Hazard	Risk	Responses	Responsibilities
Use of grassed area within fenced facility. Picnics, spectating, waiting, surveillance.	Antisocial behaviour and inappropriate use	Moderate	Recorded webcam User induction programme – no solo use (group surveillance). Digital key entry (recorded user).	ADC on behalf of administering agency.
			Trespass notices.	Administering agency.
	Potential to fall in section of moving water or pool above	High	Barriers beside white water section and on sides of upper pool (entry only from the top end of the course). Open entry and exit from exit pool.	Project design.
	Litter, broken glass.	Low	Electronic surveillance (recorded webcam) User induction programme – no solo use (group surveillance).	ADC on behalf of administering agency.
			Take home rubbish policy (no bins).	Administering agency (signs).
Use of still water areas for swimming, waiting and exiting.	Slips and falls	Moderate	Facility design. Steps.	Project design.
			Facility maintenance (slime, grit).	Contractor under direction of administering agency.
	Drowning in still water	High	User induction programme – no solo use (group surveillance). Digital key entry (recorded user)	ADC on behalf of administering agency.
			Rules and signs: No casual swimming upstream of marked line to reduce risk of collision. No swimming when kayaks are in use. No free swimming (buoyancy aids required). Rules to manage crowding and inter-activity conflict. Emergency buoyancy aid on site. PoolSafe age limits. Potential to restrict pool use to only entry and exit for white water feature (no casual swimming). Emergency response procedures information on site. NZRA PoolSafe audits.	Administering authority.

Table 1: Risk analysis

Activity	Hazard	Risk	Responses	Responsibilities
			Emergency phone on site. Emergency flow shut-off. Automatic flow shut-down 30 minutes before sunset (no use in low light).	Project design, administering authority.
			Within Vodafone and Spark mobile coverage area.	To note.
	Broken glass, litter in pools	Low	Facility inspection.	Contractor under direction of administering agency.
			User induction programme (self-check).	ADC on behalf of administering agency.
	Pinning and drowning in flow discharge structure	High	Structure design.	Project design.
			As for 'drowning in still water'. As for 'use of white water section'.	
	Illness from contact with contaminated water	Low	Continuous flushing of water feature.	Project design.
			Testing of water quality.	RDRML via Water Quality Monitoring Plan
	Antisocial behaviour and inappropriate use	Moderate	As for 'Use of grassed area'.	
	Use of white water section	High	User induction programme – rules and risk awareness.	ADC on behalf of administering agency.
			Signs and rules: Helmets required for kayaking. No other 'standing' activities permitted without helmets (surfing, SUP). No free swimming (buoyancy aid must be used at all times). Leg ropes required for surf boards and SUPs to reduce the chance of other users being struck.	Administering authority.

Table 1: Risk analysis

Activity	Hazard	Risk	Responses	Responsibilities
			Maintaining flow at a maximum of grade 2 for general use. Compliance with Health and Safety in Employment (Adventure Activities) Regulations 2011 for higher grade flows.	Administering authority, with applicant for flows above grade 2 or otherwise when Health and Safety in Employment (Adventure Activities) Regulations 2011 apply.
	Drowning after immersion and/or injury.	High	Signs and rules: Flotation devices required for all wave activities.	Administering authority.
			As for 'drowning in still water'.	
	Congestion and conflict between users.	Moderate	Clock to show half hour blocks of exclusive use for kayaks and other users if they are present at the same time. Appropriate rules for use, with maximum numbers of simultaneous users of the feature stated.	Administering authority.
Events and booked community or commercial uses.	Injury or death during staged commercial or community events – any cause.	Varies	Event and activity-specific health and safety plan reviewed and agreed. All events and booked activities to have life guards .	Administering authority (proposal review, contractual agreement), independent event manager or activity operator.
			Compliance with Adventure Activity Regulations 2011 and other relevant legislation.	Independent event manager or activity operator (where applicable).

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4 Proposed administration

Several responsible agencies are proposed in the risk analysis. Ultimate responsibility will lie with an appropriate administering authority, proposed here to be an incorporated society that is established by RDRML prior to the Pond being developed. However, RDRML will hold the consents for the Course and be responsible for ensuring compliance.

Should any of the named parties in this section not be interested in supporting the proposal via the suggested roles, ensuring those roles are fulfilled will remain the responsibility of RDRML and the administering authority.

4.1 Administering authority

The administering authority is proposed to be responsible for:

- Asset ownership and funding,
- Project design and implementation,
- Completion of the final WWC management plan, including user induction package and process,
- Asset inspections, cleaning and maintenance (via contract),
- Asset operation (via contract or agreement) and operation protocols,
- Setting user rules,
- User information services and signage, including a live webcam of the Course and the publication online of, for example, flow availability data and when the course is booked for exclusive use,
- Asset surveillance (via contract or agreement),
- Coordination of all other services associated with the WWC via relationships with other agencies, particularly the Ashburton District Council and the RDRML – particularly in relation to flow availability for the latter (discussed in more detail for each agency below),
- Approving event proposals and commercial use agreements,
- Setting preferred flows, either via a set schedule or by request,
- Communicating with users via the user database,
- Issuing trespass notices to the lease area if required,
- Managing and implementing PoolSafe assessments, noting that these would need interpretation for the WWC,
- Liaising with users to define preferred water flows,
- Annual review of this Management Plan, and its update as required,
- Inducting users to the facility,
- Issuing keys and refunding deposits on their return,
- Maintaining a database of inducted users and supplying a contact list to the administering authority,
- Ensuring flows have ceased when necessary (before dusk, for example),
- Responding to emergency contacts via the on-site emergency contact system (automatic warning when the emergency flow stop is activated),
- Managing an incident and accident register (with reporting required by users as part of the induction agreement),

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- Working with the Ashburton District Council to manage local road bylaws to restrict vehicle speed on Shepherds Bush Road and to install relevant speed and pedestrian presence signs.
- Administering the authority as an incorporated society.

An incorporated society is, according to the Companies Office:

a group or organisation that has been registered under the Incorporated Societies Act 1908 and, when incorporated, is authorised by law to run its affairs as though it were an individual person. This means that the members are not personally liable for the society's debts, contracts or other obligations. Likewise, members do not have any personal interest in any property or assets owned by the society.

An incorporated society must have a minimum of 15 members and will require a committee and rules. Members are proposed to be drawn from, at least initially, RDRML, Mayfield and District Citizens Association, Ashburton District Council and Experience Mid Canterbury. Invitations for membership will be made to White Water New Zealand, local schools and local adventure operators. A charitable trust is another option, but surplus assets must be distributed to other charitable organisations on its wind-up.

An 'event' can be defined as any:

- Use of the WWC that includes a payment for a service or access,
- Use by an educational institution,
- Party of more than 15 people,
- Exclusive use.

4.2 Rangitata Diversion Race Management Ltd

RDRML will own the land upon which the WWC will be constructed and will lease the land to the administering authority of the WWC at a peppercorn rental. RDRML will also be responsible for ensuring compliance with the consent conditions which apply to the Course.

The WWC will rely on water from the Klondyke Storage Pond and the administering authority will not be able to control the quality of the water, which may be affected by bird droppings and/or other effects of storage. RDRML will be responsible for providing water into the course and managing the diversion control gates, as these will be an RDRML asset. However, RDRML will not be responsible for deciding on the flows required within the Course, which will be identified and requested by the administering authority (or its delegate). RDRML will be responsible for:

- Water quality testing in the pond discharge via the Water Quality Monitoring Plan and reporting any exceedances of relevant contact recreation water standards,
- Supply of flow availability data and reporting these online for Course users and managers,
- Operation of the flow diversion gates (inflow and outlet) at the request of the administering authority (or their delegate),
- Fencing of water and fall hazards near the Course and on accessible RDRML land,
- Installation of appropriate warning signs for hazards on accessible RDRML land,
- Issuing trespass notices for areas not associated with the lease.

4.3 Ashburton District Council, Mayfield and District Citizens Association and Experience Mid Canterbury

The Ashburton District Council, Mayfield and District Citizens Association and Experience Mid Canterbury would assist in ensuring the Course is appropriately managed and promoted for the benefit of locals and visitors to the District via engagement with the administering authority as, potentially, members of the incorporated society.

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5 Course management

It is likely that a permanent part-time facility manager will be required, and employed by the administering authority. The authority would be responsible for ensuring the following operational facilities and services are implemented (as well as all items listed in section 4.1).

5.1 Facilities

The proposed design of the WWC is shown in Appendix 1. Components of the Course not shown and required for the management of the Course will include:

- Fencing and electronic entry gate with digital recording of the key number,
- Webcam (recorded but not actively monitored, live online),
- Emergency flow shut-off system with automatic notification to EA Networks Centre and RDRML,
- Time-use allocation clock for different activities,
- Pool depth markings,
- Website with rules of use, induction requirements, contacts and live webcam during the season,
- Signs and warnings.

Artificial lighting is not proposed so as to discourage night use.

5.2 Access

Use of the facility will be limited to groups of people who must have one member who has been inducted into use of the Course, and has a key to the facility (the 'responsible user'). Key use will be recorded and the responsible user will agree to ensuring group compliance with the Course rules. Keys will expire annually and a deposit will be refunded on their return. Induction will need to be carried out annually.

The responsible user must be aged 20 or over and may be responsible for a maximum group size of eight other people, only three of whom may be aged under 10.

5.3 Flow setting

The inflow control gate will define how much water enters the course and the position and size of the wave. The required flow rates are not yet defined and will likely require some experimentation, but the desired outcome will be a grade 2 water feature for general public use as discussed in section 2 of this draft Plan, and higher grades on request and with an appropriate event or user-specific safety management plan in place in accord with the Health and Safety in Employment (Adventure Activities) Regulations 2011 and other relevant legislation. RDRML will be responsible for the management of the control gates as this will remain its asset, and will deliver flows as requested by the administering authority – which will generally be the defined flow for a grade 2 feature.

Any change in flow (operation of the control gate) will be marked by a flashing light and siren.

5.4 Supervision

Supervision for general public use will be the responsibility of the responsible person. PoolSafe signage will be used which normally requires for 'all children under 8 must be actively supervised by a caregiver 16 or over'.

During commercial events or other paid use, and when the site is operating as a 'workplace', supervision will be according to a specific activity management plan which will include supervision via either a lifeguard or suitably trained service provider (such as a kayak coach or appointed club member).

5.5 Rules and warnings

Rules will include (and will form part of the induction package):

- Induction requirements as above, with the onus for compliance placed on the responsible user,
- Age restrictions as above,
- Helmet required for kayaks, SUPs and other stand-up activities,
- Buoyancy aids for all users,
- Exclusive use for kayaks with time limits when other users are present and the Course has not been exclusively booked,
- Time limits on access, partly enforced by automatic close of control gates before dusk.

Signs will be mounted to state those rules, plus:

- Trespass notices for those not accompanied by a responsible user,
- Reminder of the onus on the responsible user,
- PoolSafe warning signs,
- Shared use rules and maximum use limits,
- Requirement to exit the course when the control gate siren and light operate (possible flow change),
- Notices regarding the recorded surveillance in operation,
- Emergency response information (use of a 111 call),
- Operating instructions for emergency control gate closure and emergency communications.

5.6 Emergency management and responses

Emergency management and prevention protocols will include:

- Course familiarisation visits and refreshers for police, ambulance and fire, with access keys issued to all agencies (otherwise bolt cutters would work),
- Notification to emergency response agencies (111) as to the location, function and emergency operation and contacts for the Course,
- Annual induction process for users (the 'responsible person'),
- Communications with inducted users via a digital newsletter (safety reminders) and periodic direct survey of users,
- Incident and accident recording (a requirement of the induction),
- Recording of key use, assignment of that key to the one responsible person allowing access to their contact details.

Emergency responses will include:

- Closure of control gates via on-site or remote operation,
- Automatic warning of gate operation to RDRML and EA Network Centre and the ability to see events onsite via the webcam,

- Emergency response via 111 (user first, RDRML and EA Network Centre as backup).

5.7 Maintenance and audit

The final course design will define a list of specific assets which will require audit, and the frequency of checks. This would include, for example, exposure of any items which may lead to puncture wounds or electric shock, unauthorised access, the legibility of signs, and the functioning of emergency devices and the webcam.

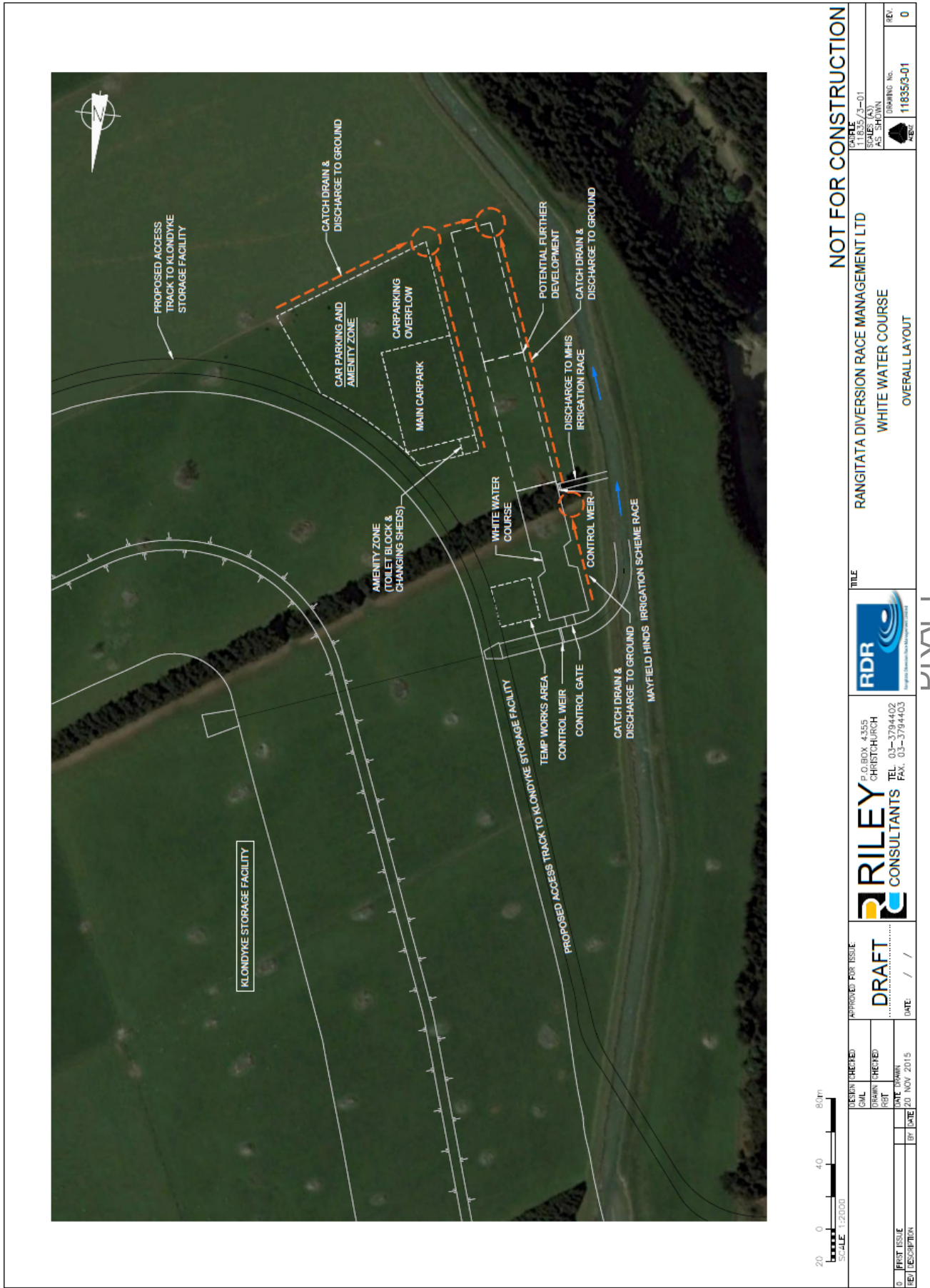
Maintenance contracts for the ablutions will need to be specified.

Consent conditions require monitoring and reporting of water quality by RDRML.

Depending on flow conditions, the course itself is likely to need periodic draining and removal of grit and algae, particularly if they create slip hazards.

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6 Appendix 1: Preliminary course design



7 Appendix 1: NZRA Peer Review summary

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Draft Klondyke White Water Course Management Plan Peer Review

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Introduction

Rangitata Diversion Race Management Ltd (RDRML) is seeking resource consents to construct a water storage facility between the Rangitata Diversion Race (RDR) and the Rangitata River, close to the existing Mayfield Hinds Irrigation Scheme off-take from the RDR. The proposed impoundment (the Klondyke Storage Pond or 'the Pond'), would have a capacity of 53 million m³ of water.

A recommendation from the Ashburton Zone Committee Regional Implementation Plan included:

In determining the overall viability of any new distributive infrastructure consideration shall be given to delivering at least 1 new regionally significant water based recreation opportunity within 1.5 hours drive of Ashburton, but that there is not a requirement to deliver such a facility where it is found to compromise the viability of any new distributive infrastructure.

Accordingly, bundled with the consent application for the Pond is a standing wave feature adjacent to, and fed by a diversion from the channel of the Mayfield Hinds Irrigation Scheme off-take (fed by the Pond). This will be the White Water Course (WWC or the Course).

The WWC would be located approximately 44 km from central Ashburton – less than 40 minutes' drive.

Lyman & Rivett (2015) indicate the potential for the Course to provide a static standing wave at various flows, with reliability during the peak irrigation season (December to February) ranging from 36% in low irrigation demand (wet) years to 85% during high demand (dry) years, and an average of 67%. Over the longer summer period of November to April average reliability ranges from approximately 53% (modelled) to 72% (measured).

Draft consent conditions

The draft consent conditions for the Klondyke Storage Pond include the following requirements for a management plan:

- a. The management and maintenance responsibilities for the WWC and associated facilities, including an accepted asset ownership and administration model;*
- b. The operating procedures for the WWC, including hours of operation and flow-setting protocols;*
- c. The surveillance, emergency and safety management procedures that are to be put in place. This shall include a health and safety plan for the WWC;*
- d. The protocols for community and commercial events to be held at / hosted at the WWC; and*
- e. That, outside of commercial events conducted at the WWC (in accordance with protocols required by condition 22.3(d) of this resource consent), the public will be able to access the WWC without cost.*

Having drafted a Management Plan for the Klondyke White Water Course, in response to the draft consent conditions, Rob Greenaway of Rob Greenaway & Associates sought an independent peer review of industry experts to consider the draft Management Plan in relation to the terms of reference referred to below.

Members of the Peer Review Team have individually considered the draft Management Plan and provided feedback under the headings referred to in the project terms of reference.

The Peer Review Team was made up of:

- Matt Barker - Senior Lecturer Outdoor Education, Auckland University of Technology
 - Mark Jones - Senior Lecturer Outdoor Education, Auckland University of Technology
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- Tracey Prince – Aquatics Project Manager, NZ Recreation Association
- Jonathon Webber – Chief Executive, WaterSafe Auckland

Peer Review Terms of Reference

Rangitata Diversion Race Management Ltd (RDRML) is proposing the construction of a standing wave feature (called a whitewater course) as part of the construction of a 53 million m³ water storage facility on the true left of the Rangitata River near Mayfield in the Ashburton District. A draft management plan for the facility is required to accompany the resource consent application.

The draft objectives of the whitewater course are to:

- Provide a freely-accessible and fun whitewater feature for the Ashburton District and wider Canterbury communities which operates in much the same way as an unsupervised school pool available for community use,
- Attract regional and national visitors to the Mayfield area,
- Provide a venue for clubs, schools and commercial and community event managers to offer education and entertainment programmes.

The draft objectives of the management plan are to:

- Define the suite of assets required to operate the course,
- Assign and define responsibility for asset maintenance and management, and user services,
- Manage the risks associated with what is likely to be a unique public aquatic facility,
- Control asset management costs to limit fees and charges for use (if any), and to sustain the service, and
- Define the processes which will enable community and commercial agencies to use the asset.

NZRA will undertake a peer review of the draft management plan for Rob Greenaway, the author of the management plan. This peer review will involve both aquatic and outdoor education / recreation experts, Matt Barker, Senior Lecturer Outdoor Education, AUT; Tracey Prince, Aquatics Project Manager, NZRA; Mark Jones, Senior Lecturer Outdoor Education, AUT and Jonathon Webber, CE, WaterSafe Auckland.

The peer review will consider:

- Feasibility of the objectives of the facility from a safety and administrative perspective,
- Administration systems,
- Facility requirements (safety, remote surveillance, communications, emergency provisions, etc),
- Access rules (for example, all parties using the facility must have one member who has been inducted and is responsible for rule compliance),
- Supervision requirements,
- Rules and warnings,
- Emergency responses.

Supplementary question:

If there are issues with turbidity, should the entry or exit pools be painted a particular colour so it is easier to spot bodies, or a cut off where if turbidity is above a certain level, the facility needs to be shut?

A robust review of these elements of the management plan will provide the author with an informed critique of the management plan and an opportunity to modify it as appropriate.

Disclaimer

The purpose of this peer review is to provide independent and voluntary feedback and perspectives to enhance the decision making process for RDRML and Rob Greenaway & Associates regarding the proposed Management Plan for the Klondyke White Water Course. There is no 'pass' or 'fail' with the peer review and RDRML and Rob Greenaway & Associates are free to accept commentary and suggestions as they wish. The Peer Review Team hope the feedback will be taken in the same positive manner in which it is given.

The Peer Review Team cannot be held legally responsible for comments made or actions taken subsequent to this review as this is feedback to documentation supplied and individual perspectives on what further information might be required to assist the development process in relation to the proposed Management Plan.

Draft Klondyke White Water Course Management Plan Peer Review

Report Summary

There was a philosophical divide between the peer reviewers, with the outdoor educator/recreationalists seeking a more relaxed unsupervised / personal responsibility approach than the more pool focused / life guard approach.

If the facility is to be run as a place of work, then there is a good case for improvements that need to be addressed in the current plan. As a workplace one would want that level of control over people's actions in order to comply with the Health and Safety at Work Act (HSW Act).

There is not really any middle group when you decide to take responsibility for how people use the whitewater course. You either run a professional operation with the full weight of the HSW Act ensuring professional good practice standards; or you ensure it is not a place of work and rely on people exercising good judgement based on disclosure of the risks, fundamental guidelines for safe operation, and every precaution being taken in design to ensure it is safe and user friendly. This is how every boat ramp, wharf structure (that is not a workplace), water-ski ramp, floating pontoon, etc owned by a council operates. It is also how other built wave features in New Zealand operate: e.g. Wairehu Canal in the Central North Island and Hawea Whitewater Park in the South Island.

People recreate on all of these public structures in all manner of ways. Often they have rules concerning their use. There does not appear to be any evidence of excessive risk or near misses that would suggest council supervision of these facilities is desirable.

Philosophically there was support for free-access community facilities but disagreement as to whether this facility should be on a key access / no lifeguard basis. Some expressing the view that paid life guards would be inconsistent with a free resource. If people are charged for entry to the whitewater course and it becomes a commercial enterprise, then this falls under other legislation. The Consumers Guarantee Act, etc. demanding high standards of customer care, indemnity insurance and the like which will increase the cost to a level that will mean some groups will take their novices to the river instead (which is seen as a much riskier environment).

On that basis it was suggested that there are two options available to run this facility:

- As a professionally managed commercial enterprise that is fully compliant with the HSW Act; or
- Free-access facility where users, recreational and commercial, manage their own risks.

If the latter, strip back the management of the whitewater course to being supportive of user safety by safe design, regular maintenance, risk disclosure through clear signage, emergency response by break-glass shut-off switch, and basic rules of use helmets/lifejackets/etc. Arguably this will make it considerably safer than other comparable facilities.

If the former, consider on-site supervision by qualified lifeguards and restricted access.

Areas for specific consideration (note the responses reflect the two different approaches taken by the peer reviewers)

Feasibility of the objectives of the facility from a safety and administrative perspective:

There was agreement that this project is a great opportunity to provide a free facility to users, especially those learning to kayak and do other activities in whitewater that might otherwise be forced to use riskier natural environments. However due to the background of the peer reviewers they had differing views as to the appropriateness of the proposed management plan. The pool/lifeguards saw the proposed plan falling well short of best practice that would see on-site dedicated lifeguards when the course is in use. They were unhappy with responsibility being placed on a particular user who would have limited training and with the comparison to a school pool situation that had user access by key, as they see this as being a riskier environment than a school pool because of the moving water.

The view of the outdoor educators/recreators was that the proposed plan was overly administrative and will potentially set a bad precedent for such facilities that currently have open access and expect full user responsibility, such as skateboard and mountain bike parks, community playgrounds and other whitewater facilities.

A comparison was made to the Hawea Whitewater Park that is a purpose built community facility located on the Hawea River at Camphill Bridge. Constructed in late 2012 the park provides two river-waves for kayakers, bodyboarders, surfers, and rafters to surf, play and train on. Flows in the Hawea River are managed by Contact Energy by way of the Hawea Dam. Within the constraints of its resource consents Contact also delivers flows for recognised international and national recreational events or flows for educational purposes – school groups and the like. Generally Contact does not deliver flows for individual purposes. So in essence, very similar to what is proposed for the Klondyke White Water Course. The Hawea Whitewater Park is made available for public use, has warning signage, is designed to eliminate unexpected hazards, and relies on the public exercising due care and taking responsibility for their actions.

It was the view of the outdoor educators/regulators that this is in keeping with the intent of relevant legislation and the nature of New Zealand society. New Zealand citizens value the unregulated nature of outdoor recreation and free and open access to outdoor spaces. While the water course is an artificial space, it is an outdoor space that will be used by outdoor recreators. It is worth considering that the course will provide an alternative to a wild river as a space to train and learn to kayak. They expressed a fear that undue regulation will dissuade a number of people from using the facility that might otherwise, result in them using a riskier alternative.

Suitable access and egress from the water was seen to be a critical safety component.

It was suggested that best practice would be to have someone on site when the whitewater course is flowing to act as a lifeguard, security and induction administrator. Depending on the number of users, more than one person would be necessary if there were to provide true uninterrupted lifeguard supervision, this was also the concern regarding off-site monitoring. The counter view to this was that industry practice would be to have no

one present and free access for recreation use, as is the case with other whitewater facilities in New Zealand and many Council owned publically access facilities such as wharfs (that are not workplaces), boat ramps, water-ski ramps and pontoons.

The general view was that the draft management plan falls between the two and is limited on both accounts.

Administration systems:

There was some agreement that these were complicated and unwieldy. It was suggested by the pool/ lifeguards that rather than having an 'outsource model', with remote supervision for compliance with safety rules, the resource could be better utilised in the supervision and safety systems for the facility. This should include a staff member on-site to conduct any induction/training with the key holders and to provide supervision of activities, their preference was for this to be a qualified lifeguard. These peer reviewers were of the view that any form of induction should involve more than just showing people around the facility.

Other suggestions were that there should be regular checks for degradation and exposure of rebar, water quality, maintenance of fencing and signage and that RDRML as proposed is the correct authority to undertake those responsibilities.

Ashburton District Council is well situated to serve as an interface between the public and RDRML and some of those responsibilities are identified in the plan – responding to rescues, collecting analysing incident data, and setting up a process to request flows etc.

Facility requirements (safety, remote surveillance, communications, emergency provisions, etc):

From an outdoor educator/recreator perspective, remote supervision and policing of the rules is seen as an unnecessary burden on the management authority and is out of step with other rural outdoor recreation spaces.

If good cellular reception is available this is entirely satisfactory as a public/commercial 111 response. If there is not good cellular reception, an alternative communication device should be available on-site. Emergency provisions should focus on enabling self-rescue by those on the course. In reality by the time emergency services arrive they are likely to be looking at a body recovery. A life buoy is recommended as a suitable rescue aid to have on-site.

Remote supervision raised issues in itself:

- How will this be done and by who?
- What qualifications and training will they have to direct rescue/first aid/resuscitation?
- What other responsibilities will they have that may distract them from this role – oversight of behaviour around the water feature and car parks, something entirely different on another site?

Access rules (e.g. all parties using the facility must have one member who has been inducted and is responsible for rule compliance):

The pool/lifeguard view was that the system is not robust and open to abuse, with nothing to stop a key holder from passing the key onto someone else who hasn't had any training or induction and nothing in place to enable a remote supervisor to know who is in charge and be able to keep track of them.

The outdoor educators/recreators took the view that the proposed access rules could limit use and that no such access restrictions apply to the Hawea wave. They proposed that safe use guidelines be 'loudly' sign posted on-site and on a website.

Supervision requirements (if any):

There were divergent views on this depending on which camp the peer reviewers were in. There were mutual concerns that vesting supervision duties in the hands of a 'responsible' person regardless of how qualified and experienced they were could in the worst case present a risk to public safety or at the very least deter people from stepping up to take on that responsibility because of the heightened awareness of health and safety requirements.

The outdoor educator/recreator view was that it is an appropriate New Zealand response for recreational users to self-manage with clearly stated site hazards and safe-use guidelines. In addition to this Commercial users should comply with relevant legislation to ensure an appropriate duty of care to staff and others. Recreational users are not paying for supervision and should not expect this, nor rely upon it. Clients of commercial uses are paying for a suitable duty of care and should expect an appropriate level of guidance and supervision from the commercial entity providing their experience.

It was also suggested that a childproof pool gate that allows user access but prevents young children from accessing the site is appropriate.

Rules and warnings:

There was agreement with the following:

- Helmet and buoyancy aid requirements for kayaks, SUPs and other stand-up activities
- Exclusive use for kayaks with time limits when other users are present and the Course has not been exclusively booked
- PoolSafe warning signs
- Water quality / health issues
- Time limits on access, partly enforced by automatic close of control gates before dusk. Signs will be mounted to state those rules
- Emergency response procedures (use of both or either of a 111 call or the onsite communications with the EA Networks Centre and on-site life buoy use))
- Operating instructions for emergency control gate closure and emergency communications

It was also suggested that the following be included:

- No free swimming i.e. without some form of flotation device – tyre, kayak, SUP
- Flow increase and deep water fast currents (also install an audible warning for these situations)

Demanding parental or guardian supervision for users under 16 was seen to be appropriate. However, a restriction of no under 10s was not agreed on. With the view that age is not a good indicator of competence.

All rules and warnings should be available on-line as well as on-site.

Emergency responses:

The outdoor educators/recreators were supportive of these proposed responses:

- Course familiarisation visits and refreshers for police, ambulance and fire
- Notification to emergency response agencies (111) as to the location, function and emergency operation and contacts for the Course
- Incident and accident recording (an expectation of users with a suitable on-site mechanism)
- Emergency responses will include:
 - Closure of control gates via on-site (preferably) or remote operation
 - Emergency response via 111 (user call or via EA Networks Centre)

The pool/lifeguards found this section one of the most concerning aspect of the plan, as they felt it places an undue and unfair reliance on a person who may not have any specific drowning detection, water rescue, first aid or resuscitation training and on emergency services to provide a response. The plan does not state what, if any, water rescue, first aid and resuscitation equipment is available.

Could any of the management responses be pegged back and if so what could they look like?

Again there were two quite different responses, the more restrictive being that the current plan is inadequate to ensure public safety and to run the facility without lifeguards is unacceptable. The other view was that it could be significantly pegged back to mirror the approach taken for other built wave facilities e.g. Wairehu Canal in the Central North Island and Hawea Whitewater Park in the South Island.

Is there anything else that could/should have been considered in the draft management plan to provide an appropriate, efficient, effective and safe whitewater feature?

The pool/lifeguard view is that there should have been greater consideration of qualified lifeguards, rescue and resuscitation equipment present during the hours of operation. The opposing view was that design requirements of access and egress and the grate system over the inflow and outflow is critical to safety and should be considered.

The Hawea Wave has issues with congestion and potential conflict between different user groups due to the different way they use the resource. These should be considered and addressed now rather than when they become an issue. A suggestion was made to install a clock with time segments for boarders and kayakers if both user groups are present at the same time. Also the ability for user groups to book the course for specific events was suggested.

If there are issues with turbidity, should the entry or exit pools be painted a particular colour so it is easier to spot bodies, or a cut off where if turbidity is above a certain level, the facility needs to be shut?

The issue with turbidity is users not being able to judge the depth of the water and hence the extent of the hazard of the shallowness of the bottom substrate at the wave. It is likely that algae growth on the walls and bed of the facility will mean any paint is likely to be obscured. In addition to this once water is moving/aerated it is virtually impossible to see anything beneath it anyway, so turning the water off quickly and on-site is a better way of finding a body.

Stating turbidity as a hazard for users should stop an assumption that the water is deeper than it is. Advice of the depth on-site and on-line will further reduce the extent of this hazard.

Recommendations:

- Consider the Management Plans for Wairehu Canal and Hawea Whitewater Park
- Determine whether the facility will be best practice and therefore fully supervised with restricted access and use or industry practice and unsupervised, with open access and an expectation of personal responsibility and amend the management plan accordingly