IN THE MATTER OF the Resource Management Act 1991

AND

IN THE MATTER OF Applications to Canterbury Regional Council by Central Plains Water Trust for resource consents to establish and operate the Central Plains Water Enhancement Scheme and by Central Plains Water Trust and Ashburton Community Water Trust for resource consents to take and use water from the Rakaia River

STATEMENT OF EVIDENCE OF KIRSTY ANN JOYNT
ON BEHALF OF TRUSTPOWER LIMITED

1. INTRODUCTION

1.1 My full name is Kirsty Ann Joynt. I am employed by TrustPower Limited ('**TrustPower**' or '**Company**') as a Senior Environmental Officer and am based at the Company's head office in Tauranga.

1.2 I am a qualified and experienced environmental management professional. I hold a Bachelor of Science from the University of Auckland (1997), specialising in Environmental Management.

1.3 I have been employed by TrustPower for the last four and a half years. I started with TrustPower in its Engineering Team as a Technical Officer, handling TrustPower's Civil Safety Programme and hydrological data associated with resource consent compliance. I then spent approximately three years as an Environmental Officer dealing primarily with resource consent compliance, planning and policy matters, and resource consent applications for generation site works, reconsenting projects and new developments. In January 2008 I was promoted to the role of Senior Environmental Officer at TrustPower.

1.4 Prior to working at TrustPower I spent two years employed at an environmental consultancy in Brisbane, Australia, as a technical officer dealing with water quality monitoring in the aquaculture industry.

1.5 I am authorised to present this evidence on behalf of TrustPower and do so as an employee of the Company.

1.6 Having worked for the Company since September 2003, I have a very good working knowledge of the Company's generation assets, including its Highbank Hydroelectric Power Scheme ('**Power Station**' or '**Scheme**') which is located next to the Rakaia River and downstream of the proposed Central Plains Water Enhancement Scheme.

2. SCOPE OF EVIDENCE

2.1 The purpose of this evidence is to:

(a) outline the reasons for TrustPower's submission that the Central Plains Water Trust ('**Central Plains**') proposal could adversely affect the Highbank Scheme; and

(b) explain the conditions of consent which are proposed to address TrustPower's concerns and on which TrustPower and Central Plains have reached agreement.

3. OVERVIEW OF THE HIGHBANK POWER STATION

3.1 TrustPower is the owner and operator of the Highbank and Montalto Hydroelectric Power Schemes, which utilise water diverted from the Rangitata and Ashburton Rivers via the Rangitata Diversion Race. This water is finally discharged via the Highbank Power Station to the Rakaia River. The location of the Highbank Scheme is shown on the map attached to my evidence as **Annexure 1**.[1]

3.2 The Highbank Scheme was commissioned on June 8th 1945. The station is located at the end of the 67 kilometre long Rangitata Diversion Race, which supplies three upstream irrigation schemes. The Rangitata Diversion Race concept of winter electricity generation and summer irrigation provides significant downstream benefits to the local economy from both generation and irrigation. The traditional operating periods and those reflected in agreements are:

(a) For generation - from 9 May through to 10 September; and

(b) For irrigation - from 10 September to 9 May.

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[1] The map was sourced from Appendix A to the statement of evidence of Walter Lewthwaite dated 31 January 2008 on behalf of the applicant.

It is important to note that during the irrigation season, water diverted and not utilised for irrigation is conveyed down the race to Highbank and used for generation.

3.3 As a result of the Electricity Industry reforms, TrustPower purchased the Highbank and Montalto Schemes during 1999. The Company invested significantly in upgrades and improvements to the plant and machinery. This included an electrical upgrade which embedded the Highbank generator into the Electricity Ashburton electrical network (having previously been connected to the Transpower electrical grid), benefiting consumers by placing the energy at the source of greatest demand and thereby reducing transmission losses.

3.4 The maximum installed capacity of Highbank is 28MW, with Montalto being much smaller at 1.9MW. The combined energy output of both schemes is sufficient to provide the energy requirements for approximately 12,250 typical New Zealand households. The Highbank and Montalto Schemes are a significant resource in Canterbury and hence contribute significantly to the social and economic wellbeing of the region.

3.5 The Highbank Scheme is subject to a number of resource consents and associated conditions which require monitoring and result in consent compliance responsibilities. Condition 2 of consent CRC011249[2], which authorises discharges from the Highbank Power Station into the Rakaia River, requires:

(a) the construction of a salmon barrier to ensure that adult salmon are excluded from entering the formed section of the Highbank tailrace; and

(b) the maintenance of a channel to ensure that the salmon attracted to the barrier are able to return to a main flowing channel of the Rakaia River. A separate consent (CRC011251) is also held to authorise the works necessary to maintain the channel and, in particular, its interconnection with the main flow of the river.

A copy of the consents referred to are attached to my evidence as **Annexure 2** and are considered further below.

4. SALMON BARRIER AND DIVERSION BYPASS

4.1 The salmon barrier was erected in late 2006 following detailed discussions with the North Canterbury Fish & Game Council ('**Fish and Game**') and Canterbury Regional Council and in response to the consent requirement to install the barrier. It should be

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[2] This consent is held in the name of Rangitata Diversion Race Management Limited on behalf of its shareholder, TrustPower Limited.

noted that when TrustPower purchased the Highbank assets the issue of salmon entrainment within the tailrace had been an issue for many years. TrustPower recognised this at the outset of the Rangitata Diversion Race re-consenting process and proactively sought a solution in conjunction with Fish & Game.[3]

The salmon barrier takes the form of a concrete plinth with vertical columns supporting 7 removable screens and is positioned across the outlet from the formed tailrace section. The formed section of the tailrace discharges into an unformed section of the tailrace which in turn meanders downstream for approximately 1 kilometre where it meets the Rakaia River. Unable to pass through the barrier, adult salmon entering the unformed section of the tailrace are attracted to, and follow, the purpose built return channel back to the Rakaia River. This channel is located immediately adjacent to the barrier structure and must be maintained to ensure an interconnection with the main or active braid of the Rakaia River. A map showing the general layout at the Highbank Power Station is attached to my evidence as **Annexure 3.**

4.2 In terms of normal day to day operation, the screens are placed for the period January through August in any given year. If TrustPower observe the run is late then the barrier is left active for a longer period. TrustPower personnel or contractors check the barrier as a minimum once per week but in reality it is checked more frequently due to blockages and when personnel or contractors are working around the site. If the diversion bypass becomes damaged or blocked (for example in the event of a fresh), TrustPower personnel arrange earthmoving contractors to reinstate the channel.

4.3 I am informed by TrustPower's Production Manager, Mr Ian Lees, that the monitoring of the screen's operation last year clearly shows that the barrier and diversion bypass is operating efficiently.

5. EFFECTS ON SALMON DIVERSION BYPASS

5.1 TrustPower engaged a hydraulics engineer, Mr Graham Levy of Beca, to provide technical comment on the proposed activities associated with the Central Plains Scheme and resulting effects on the Rakaia River.

5.2 The key issue identified to TrustPower was that the Highbank Power Station may be impacted by the possibility of the Central Plains intake construction and management affecting the position of river braids in the Rakaia River near the Highbank tailrace. The particular risk is associated with the need to maintain a bypass flow from the Rakaia

[3] Various options were investigated during 2001 and 2002 and a firm proposal was able to be put to Fish and Game during January 2003. Consent was granted commencing 12th February 2005 and full design was undertaken tendered, constructed and commissioned during 2006.

River past the Highbank tailrace salmon barrier. As I mentioned earlier this is a requirement of TrustPower's consents, and is particularly needed during the salmon migration season of December through May. This period also coincides with the irrigation season when Central Plains will be operating its scheme.

5.3 As I understand the Central Plains intake will involve diverting a major braid of the Rakaia River towards the intake channel on the north bank. The headworks (including diversion channel, intake structure, overflow spillway, fish screen and fish return) which are relatively long,[4] are approximately 2 to 3km above the Highbank bypass channel and tailrace.

5.4 It is my expectation (based on the advice received) that the Central Plains scheme will require strong flow at the north bank. This is likely to include maintaining a braid along the length of the headworks to provide a good braid for fish passage from their fish screen bypass into the main river and to carry sediment away from the sediment flushing outlet.

5.5 On review of topographic maps and aerial photographs from 2000, Mr Levy observed that the dominant trend in the river is for the main flow to leave the north bank between the proposed Central Plains intake channel and overflow spillway. It then reaches and runs against the south bank from about 1 to 1.5km upstream of the Highbank tailrace, which I understand to be a relatively stable pattern.

5.6 The potential is that the Central Plains Scheme could change this pattern through its ongoing activities in the river. The net result being that the main flow of the river does not reach the south bank until at or below the Highbank tailrace thus providing less assurance of a reliable braid reaching the south bank upstream of the Highbank tailrace. This would in turn mean that there is a risk that fish passage in TrustPower's diversion bypass could not be maintained.

5.7 In respect of the flushing of sediment from the settlement ponds – this is not considered to be a major issue[5] provided the flushing is undertaken only when river levels are above an adequate threshold. If not, then there is a risk that sediment flushing into cleaner river water could inhibit fish movement, and therefore affect the operation of the Highbank salmon bypass.

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[4] I have referred to Figure 3-4 Rakaia River Intake in the applicant's Assessment of Environmental Effects dated 23 June 2006, which incidentally does not appear to have changed by reference to the Rakaia Intake plan attached as Appendix B to the statement of evidence of Walter Lewthwaite dated 31 January 2008 on behalf of the applicant.

[5] If the sediment is coarse, it will deposit mostly on the north side of the river. Finer sediment would be able to be carried by the river flow, which (according to the applicant's AEE and evidence) would be high at the time of flushing.

6. PROPOSED CONDTIONS OF CONSENT

6.1 TrustPower has actively sought to work with Central Plains to resolve its concerns before this hearing. These efforts included detailed discussions between the parties respective technical consultants[6] from which the following conditions of consent were agreed as being adequate to protect TrustPower's interests (as outlined in my evidence):

> *In respect of all works associated with the scheme, the consent holder shall ensure that:*
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> (a) *Sediment shall only be flushed from the scheme settlement ponds on the Rakaia River when the flow in the river, as estimated by Canterbury Regional Council from measurements at either the gorge recorder site or the recorder site at Fighting Hill, is greater than 300 m^3/s.*
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> (b) *River diversion activities shall not result in a situation where there is not a significant, continuous river braid reaching the upstream (inlet) end of the salmon bypass channel on the south bank of the Rakaia River at the Highbank power station tailrace. The amount of water in that river braid is to be sufficient to allow the upstream passage of salmon emerging from the Highbank salmon bypass channel.*
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> (c) *Works within the river bed shall not result in an increase in turbidity or reduction in clarity of the river flow which, in the opinion of a suitably qualified expert engaged by the consent authority but paid for by the consent holder, hinders the upstream passage of salmon in the Highbank salmon bypass channel.*

6.2 In conclusion, I ask that these conditions be included in any grant of the Central Plains application.

Kirsty Joynt
Senior Environmental Officer, TrustPower Limited

18 June 2008

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[6] Mr Graham Levy for TrustPower and Mr Walter Lewthwaite for Central Plains.